APPENDIX

0.78% PLAGIARISM APPROXIMATELY

Report #13366275

CHAPTER 1 INTRODUCTION 1.1 Background Rain is one of the hydrological cycles which is a cycle of water rotation from the earth to the atmosphere and back to the earth continously. High Rainfall may cause some areas that are in lowlands or those with low water infiltration systems will be very susceptible to flooding. For that it is neccesary to have a system to classify weather data and rainfall in each city and district so the city that has high rainfall and extreme weather can be given special attention to prevent any natural disaster like flooding. To make that system, then an algorithm is needed to classify rainfall and weather data. Rainfall can be classified into 6 types that is cloudy (0mm), light (0.5-20mm), moderate (20mm 50mm), heav y (50mm-100mm), very heavy (100mm-150mm), and extreme (>150mm). With this classification, we can easily determine the district or city that need to be given special attention. The collected data will be processed with K-Means algorithm to classify the cities or district that have low, medium, high,

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1. drop database if exists dbKmeans;
2. create database dbKmeans;
3. use dbKmeans;
4.
5. -- table master data
6. create table tblCentroidAwal(
7.     varC1aAwal double,
8.     varC1bAwal double,
9.     varC1cAwal double,
10.      varC1dAwal double,
11.      varC1eAwal double,
12.      varC1fAwal double,
13.      varC1gAwal double,
14.      varC1hAwal double,
15.      varC2aAwal double,
16.      varC2bAwal double,
17.      varC2cAwal double,
18.      varC2dAwal double,
19.      varC2eAwal double,
20.      varC2fAwal double,
21.      varC2gAwal double,
22.      varC2hAwal double,
23.      varC3aAwal double,
24.      varC3bAwal double,
25.      varC3cAwal double,
26.      varC3dAwal double,
27.      varC3eAwal double,
28.      varC3fAwal double,
29.      varC3gAwal double,
30.      varC3hAwal double,
31.      varC4aAwal double,
32.      varC4bAwal double,
33.      varC4cAwal double,
34.      varC4dAwal double,
35.      varC4eAwal double,
36.      varC4fAwal double,
37.      varC4gAwal double,
38.      varC4hAwal double,
39.      varC5aAwal double,
40.      varC5bAwal double,
41.      varC5cAwal double,
42.      varC5dAwal double,
43.      varC5eAwal double,
44.      varC5fAwal double,
45.      varC5gAwal double,
46.      varC5hAwal double
47.  );
48.
49.  create table tblMasterData
50.  (
51.      tanggal varchar(25),
52.      TemperaturMinimum double,
53.      TemperaturMaksimum double,
54.      TemperaturRataRata double,
55.      KelembapanRatarata double,
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```
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    kota varchar(25)
);

create table tblMasterDataMaster
(
    tanggal date,
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    kota varchar(25)
);
-- tabel data
create table tblData
(
    tanggal date,
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double
);

--
create table tblCountIterasi(
  kluster int,
  jumlahIterasi int
);
insert into tblCountIterasi (kluster) values
(1),
(2),
(3),
(4),
(5);
-- tabel Iterasi masing masing K
create table tblIterasiK1(
    tanggal varchar(255),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
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    KecepatanAnginRataRata double,
    jarakC1 double,
    kelas varchar(5)
);

create table tblIterasiK2(
    tanggal varchar(255),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    jarakC1 double,
    jarakC2 double,
    kelas varchar(5)
);

create table tblIterasiK3(
    tanggal varchar(255),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    jarakC1 double,
    jarakC2 double,
    jarakC3 double,
    kelas varchar(5)
);

create table tblIterasiK4(
    tanggal varchar(255),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    jarakC1 double,
    jarakC2 double,
    jarakC3 double,
    jarakC4 double,
    kelas varchar(5)
);

create table tblIterasiK5(
    tanggal varchar(255),
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166.     TemperaturMinimum double,
167.     TemperaturMaksimum double,
168.     TemperaturRataRata double,
169.     KelembapanRatarata double,
170.     CurahHujan double,
171.     PenyinaranMatahari double,
172.     KecepatanAnginMaksimum double,
173.     KecepatanAnginRataRata double,
174.     jarakC1 double,
175.     jarakC2 double,
176.     jarakC3 double,
177.     jarakC4 double,
178.     jarakC5 double,
179.     kelas varchar(5)
180. );
181.
182. create table tblsimpanTemporaryK5(
183.     tanggal varchar(255),
184.     TemperaturMinimum double,
185.     TemperaturMaksimum double,
186.     TemperaturRataRata double,
187.     KelembapanRatarata double,
188.     CurahHujan double,
189.     PenyinaranMatahari double,
190.     KecepatanAnginMaksimum double,
191.     KecepatanAnginRataRata double,
192.     jarakC1 double,
193.     jarakC2 double,
194.     jarakC3 double,
195.     jarakC4 double,
196.     kelas varchar(5)
197. );
198.
199. create table tblSimpanCentroidK5(
200.     Kelas varchar(5),
201.     TemperaturMinimum double,
202.     TemperaturMaksimum double,
203.     TemperaturRataRata double,
204.     KelembapanRatarata double,
205.     CurahHujan double,
206.     PenyinaranMatahari double,
207.     KecepatanAnginMaksimum double,
208.     KecepatanAnginRataRata double,
209.     jarakC1 double,
210.     jarakC2 double,
211.     jarakC3 double,
212.     jarakC4 double,
213.     jarakC5 double,
214.     JarakTerdekat varchar(5)
215. );
216. -- tabel simpan Temporary untuk menyimpan dan membandingkan data dengan
     iterasi sebelum nya
217. create table tblsimpanTemporaryK1(
218.     tanggal varchar(255),
219.     TemperaturMinimum double,
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220.     TemperaturMaksimum double,
221.     TemperaturRataRata double,
222.     KelembapanRatarata double,
223.     CurahHujan double,
224.     PenyinaranMatahari double,
225.     KecepatanAnginMaksimum double,
226.     KecepatanAnginRataRata double,
227.     jarakC1 double,
228.     kelas varchar(5)
229. );
230.
231. create table tblsimpanTemporaryK2(
232.     tanggal varchar(255),
233.     TemperaturMinimum double,
234.     TemperaturMaksimum double,
235.     TemperaturRataRata double,
236.     KelembapanRatarata double,
237.     CurahHujan double,
238.     PenyinaranMatahari double,
239.     KecepatanAnginMaksimum double,
240.     KecepatanAnginRataRata double,
241.     jarakC1 double,
242.     jarakC2 double,
243.     kelas varchar(5)
244. );
245.
246. create table tblsimpanTemporaryK3(
247.     tanggal varchar(255),
248.     TemperaturMinimum double,
249.     TemperaturMaksimum double,
250.     TemperaturRataRata double,
251.     KelembapanRatarata double,
252.     CurahHujan double,
253.     PenyinaranMatahari double,
254.     KecepatanAnginMaksimum double,
255.     KecepatanAnginRataRata double,
256.     jarakC1 double,
257.     jarakC2 double,
258.     jarakC3 double,
259.     kelas varchar(5)
260. );
261.
262. create table tblsimpanTemporaryK4(
263.     tanggal varchar(255),
264.     TemperaturMinimum double,
265.     TemperaturMaksimum double,
266.     TemperaturRataRata double,
267.     KelembapanRatarata double,
268.     CurahHujan double,
269.     PenyinaranMatahari double,
270.     KecepatanAnginMaksimum double,
271.     KecepatanAnginRataRata double,
272.     jarakC1 double,
273.     jarakC2 double,
274.     jarakC3 double,
```

```
    jarakC4 double,
    kelas varchar(5)
);

-- tabel untuk menyimpan centroid, digunakan untuk menghitung siilhouette score

create table tblSimpanCentroidK2(
    Kelas varchar(5),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    JarakTerdekat varchar(5)
);

create table tblSimpanCentroidK3(
    Kelas varchar(5),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    jarakC1 double,
    jarakC2 double,
    jarakC3 double,
    JarakTerdekat varchar(5)
);

create table tblSimpanCentroidK4(
    Kelas varchar(5),
    TemperaturMinimum double,
    TemperaturMaksimum double,
    TemperaturRataRata double,
    KelembapanRatarata double,
    CurahHujan double,
    PenyinaranMatahari double,
    KecepatanAnginMaksimum double,
    KecepatanAnginRataRata double,
    jarakC1 double,
    jarakC2 double,
    jarakC3 double,
    jarakC4 double,
    JarakTerdekat varchar(5)
);

-- tabel WCSS
create table tblWcss(
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```
    k varchar(5),
    wcss double
);
insert into tblWcss (k) values(1);
insert into tblWcss (k) values(2);
insert into tblWcss (k) values(3);
insert into tblWcss (k) values(4);
insert into tblWcss (k) values(5);

-- tabel Silhouette score tiap K
create table tblSilhouette(
    kluster int,
    silhouetteScore double
);
insert into tblSilhouette (kluster) values(2);
insert into tblSilhouette (kluster) values(3);
insert into tblSilhouette (kluster) values(4);
insert into tblSilhouette (kluster) values(5);
delimiter //

create trigger tgAutoInsert after insert on tblData
for each row
begin
  insert into tblIterasiK1(tanggal, TemperaturMinimum,
  TemperaturMaksimum, TemperaturRataRata, KelembapanRatarata, CurahHujan,
  PenyinaranMatahari, KecepatanAnginMaksimum, KecepatanAnginRataRata)
    values(NEW.tanggal, NEW.TemperaturMinimum, NEW.TemperaturMaksimum,
  NEW.TemperaturRataRata, NEW.KelembapanRatarata, NEW.CurahHujan,
  NEW.PenyinaranMatahari, NEW.KecepatanAnginMaksimum,
  NEW.KecepatanAnginRataRata);

  insert into tblIterasiK2(tanggal, TemperaturMinimum,
  TemperaturMaksimum, TemperaturRataRata, KelembapanRatarata, CurahHujan,
  PenyinaranMatahari, KecepatanAnginMaksimum, KecepatanAnginRataRata)
    values(NEW.tanggal, NEW.TemperaturMinimum, NEW.TemperaturMaksimum,
  NEW.TemperaturRataRata, NEW.KelembapanRatarata, NEW.CurahHujan,
  NEW.PenyinaranMatahari, NEW.KecepatanAnginMaksimum,
  NEW.KecepatanAnginRataRata);

  insert into tblIterasiK3(tanggal, TemperaturMinimum,
  TemperaturMaksimum, TemperaturRataRata, KelembapanRatarata, CurahHujan,
  PenyinaranMatahari, KecepatanAnginMaksimum, KecepatanAnginRataRata)
    values(NEW.tanggal, NEW.TemperaturMinimum, NEW.TemperaturMaksimum,
  NEW.TemperaturRataRata, NEW.KelembapanRatarata, NEW.CurahHujan,
  NEW.PenyinaranMatahari, NEW.KecepatanAnginMaksimum,
  NEW.KecepatanAnginRataRata);

  insert into tblIterasiK4(tanggal, TemperaturMinimum,
  TemperaturMaksimum, TemperaturRataRata, KelembapanRatarata, CurahHujan,
  PenyinaranMatahari, KecepatanAnginMaksimum, KecepatanAnginRataRata)
    values(NEW.tanggal, NEW.TemperaturMinimum, NEW.TemperaturMaksimum,
  NEW.TemperaturRataRata, NEW.KelembapanRatarata, NEW.CurahHujan,
  NEW.PenyinaranMatahari, NEW.KecepatanAnginMaksimum,
  NEW.KecepatanAnginRataRata);

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364.  insert      into      tblIterasiK5(tanggal,      TemperaturMinimum,
   TemperaturMaksimum, TemperaturRataRata, KelembapanRatarata, CurahHujan,
   PenyinaranMatahari, KecepatanAnginMaksimum, KecepatanAnginRataRata)
365.     values(NEW.tanggal, NEW.TemperaturMinimum, NEW.TemperaturMaksimum,
   NEW.TemperaturRataRata,     NEW.KelembapanRatarata,     NEW.CurahHujan,
   NEW.PenyinaranMatahari,                        NEW.KecepatanAnginMaksimum,
   NEW.KecepatanAnginRataRata);
366. end //
367.
368. delimiter ;
369.
370. -- delete data after upload
371. delimiter //
372.
373. create procedure spDeletealldata()
374. begin
375.   delete from tblCentroidAwal;
376.   delete from tblData;
377.   delete from tblIterasiK1;
378.   delete from tblIterasiK2;
379.   delete from tblIterasiK3;
380.   delete from tblIterasiK4;
381.   delete from tblIterasiK5;
382.   delete from tblsimpanTemporaryK1;
383.   delete from tblsimpanTemporaryK2;
384.   delete from tblsimpanTemporaryK3;
385.   delete from tblsimpanTemporaryK4;
386.   delete from tblsimpanTemporaryK5;
387.   delete from tblSimpanCentroidK2;
388.   delete from tblSimpanCentroidK3;
389.   delete from tblSimpanCentroidK4;
390.   delete from tblSimpanCentroidK5;
391. end//
392. delimiter ;
393.
394.
395. -- menghitung jarak euclidian
396. delimiter //
397. create function jarakEuclidian(
398.     var1 double,
399.     var2 double,
400.     var3 double,
401.     var4 double,
402.     var5 double,
403.     var6 double,
404.     var7 double,
405.     var8 double,
406.     ca double,
407.     cb double,
408.     cc double,
409.     cd double,
410.     ce double,
411.     cf double,
412.     cg double,
413.     ch double
```

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414.     )
415.   RETURNS double
416.   BEGIN
417.    declare vJarak double;
418.    set vJarak= SQRT(POW((var1 - ca),2) + POW((var2-cb),2) + POW((var3-
   cc),2)  +  POW((var4-cd),2)  +  POW((var5-ce),2)  +  POW((var6-cf),2)  +
   POW((var7-cg),2) + POW((var8-ch),2));
419.     RETURN(vJarak);
420.   end //
421. delimiter ;
422.
423. -- Kluster 1
424.
425. delimiter //
426. create procedure spIterasiK1(
427.     c11 double,
428.     c12 double,
429.     c13 double,
430.     c14 double,
431.     c15 double,
432.     c16 double,
433.     c17 double,
434.     c18 double
435.   )
436.     begin
437.       declare i int default 0;
438.       declare varTotal int default 0;
439.       -- declare vC1 decimal(8,2);
440.       -- declare vC2 decimal(8,2);
441.       -- declare vbarang varchar(5);
442.       declare varTempMin double;
443.       declare varTempMaks double;
444.       declare varTempRata double;
445.       declare varCurahHujan double;
446.       declare varKelembapanRata double;
447.       declare varPenyinaranMatahari double;
448.       declare varKecepatanAnginMaks double;
449.       declare varArahangin double;
450.       declare varKecepatanAnginRata double;
451.       declare vJarakC1 double;
452.       declare varTanggal varchar(255);
453.       declare varCektanggal double;
454.
455.       declare cHitung cursor for
456.         select     tanggal,     TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblIterasiK1;
457.
458.
459.       select count(*) into varTotal from tblIterasiK1;
460.       open cHitung;
461.       while i<>varTotal do
462.           fetch  cHitung  into  varTanggal,  varTempMin,  varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata;
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```
463.           set vJarakC1 = jarakEuclidian(
464.             c11,
465.             c12,
466.             c13,
467.             c14,
468.             c15,
469.             c16,
470.             c17,
471.             c18,
472.             varTempMin,
473.             varTempMaks,
474.             varTempRata,
475.             varKelembapanRata,
476.             varCurahHujan,
477.             varPenyinaranMatahari,
478.             varKecepatanAnginMaks,
479.             varKecepatanAnginRata
480.           );
481.           update tblIterasiK1 set jarakC1 = vJarakC1 where
   tanggal=varTanggal;
482.           update tblIterasiK1 set kelas = 'C1' where tanggal =
   varTanggal;
483.           set i=i+1;
484.       end while;
485.       close cHitung;
486.     --   select * from tblIterasiK1;
487.     end //
488.
489. delimiter ;
490.
491. delimiter //
492. create procedure cekIterasiK1()
493.   begin
494.     declare countIterasi int default 1;
495.     declare i int default 0;
496.     declare counterCount int default 0;
497.     declare varTotal varchar(255);
498.     declare varIterasiSebelum varchar(255);
499.     declare varIterasiSesudah varchar(255);
500.     declare varTempMin double;
501.     declare varTempMaks double;
502.     declare varTempRata double;
503.     declare varCurahHujan double;
504.     declare varKelembapanRata double;
505.     declare varPenyinaranMatahari double;
506.     declare varKecepatanAnginMaks double;
507.     declare varArahangin double;
508.     declare varKecepatanAnginRata double;
509.     declare vJarakC1 double;
510.     declare varKelas varchar(5);
511.     declare varTanggal varchar(255);
512.
513.     declare curr1 cursor for
514.       select    tanggal,    TemperaturMinimum,    TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
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```
   KecepatanAnginMaksimum, KecepatanAnginRataRata, jarakC1, kelas from
   tblIterasiK1;
515.
516.     select count(*) into varTotal from tblIterasiK1;
517.     loopIterasi: WHILE (counterCount <> 1) do
518.       open curr1;
519.       while i<>varTotal do
520.         fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, vJarakC1, varKelas;
521.         insert into tblsimpanTemporaryK1 values (varTanggal,
   varTempMin, varTempMaks, varTempRata, varKelembapanRata, varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata,
   vJarakC1, varKelas);
522.         set i=i+1;
523.       end while;
524.       close curr1;
525.       set i=0;
526.
527.       select hitungC1BaruK1('TemperaturMinimum') into @c1k1a;
528.       select hitungC1BaruK1('TemperaturMaksimum') into @c1k1b;
529.       select hitungC1BaruK1('TemperaturRataRata') into @c1k1c;
530.       select hitungC1BaruK1('KelembapanRatarata') into @c1k1d;
531.       select hitungC1BaruK1('CurahHujan') into @c1k1e;
532.       select hitungC1BaruK1('PenyinaranMatahari') into @c1k1f;
533.       select hitungC1BaruK1('KecepatanAnginMaksimum') into @c1k1g;
534.       select hitungC1BaruK1('KecepatanAnginRataRata') into @c1k1i;
535.
536.       call spIterasiK1(@c1k1a, @c1k1b, @c1k1c, @c1k1d, @c1k1e, @c1k1f,
   @c1k1g, @c1k1i);
537.
538.       select group_concat(kelas) into varIterasiSesudah from
   tblIterasiK1;
539.       select group_concat(kelas) into varIterasiSebelum from
   tblsimpanTemporaryK1;
540.
541.       set countIterasi = countIterasi + 1;
542.       if (varIterasiSebelum = varIterasiSesudah) then
543.         LEAVE loopIterasi;
544.       end if;
545.       delete from tblsimpanTemporaryK1;
546.
547.     end while loopIterasi;
548.     update tblCountIterasi
549.       set jumlahIterasi = countIterasi
550.     where kluster = 1;
551.   end //
552.
553. delimiter ;
554.
555. delimiter //
556. create function hitungC1BaruK1(parameter varchar(50))
557. RETURNS double
558. BEGIN
559.   declare i int default 0;
```

```
560.   declare varTotal varchar(255);
561.   declare varIterasiSebelum varchar(255);
562.   declare varIterasiSesudah varchar(255);
563.   declare varVariable double;
564.   declare varKelas varchar(5);
565.   declare vJumlahC1 int;
566.   declare varSum double default 0;
567.
568.   declare curr1 cursor for
569.     select TemperaturMinimum,kelas from tblIterasiK1;
570.
571.   declare curr2 cursor for
572.     select TemperaturMaksimum,kelas from tblIterasiK1;
573.
574.   declare curr3 cursor for
575.     select TemperaturRataRata,kelas from tblIterasiK1;
576.
577.   declare curr4 cursor for
578.     select KelembapanRatarata,kelas from tblIterasiK1;
579.
580.   declare curr5 cursor for
581.     select CurahHujan,kelas from tblIterasiK1;
582.
583.   declare curr6 cursor for
584.     select PenyinaranMatahari,kelas from tblIterasiK1;
585.
586.   declare curr7 cursor for
587.     select KecepatanAnginMaksimum,kelas from tblIterasiK1;
588.
589.   declare curr9 cursor for
590.     select KecepatanAnginRataRata,kelas from tblIterasiK1;
591.
592.
593.   select count(*) into varTotal from tblIterasiK1;
594.   select count(*) into vJumlahC1 from tblIterasiK1 where kelas = 'C1';
595.
596.   if (parameter = 'TemperaturMinimum') THEN
597.     open curr1;
598.       while i<>varTotal do
599.         fetch curr1 into varVariable,varKelas;
600.         if(varKelas = 'C1') THEN
601.           set varSum = varSum+varVariable;
602.         end if;
603.         set i=i+1;
604.       end while;
605.     close curr1;
606.
607.   elseif (parameter = 'TemperaturMaksimum') THEN
608.     open curr2;
609.       while i<>varTotal do
610.         fetch curr2 into varVariable,varKelas;
611.         if(varKelas = 'C1') THEN
612.           set varSum = varSum+varVariable;
613.         end if;
614.         set i=i+1;
```

```
615.       end while;
616.     close curr2;
617.
618.   elseif (parameter = 'TemperaturRataRata') THEN
619.     open curr3;
620.       while i<>varTotal do
621.         fetch curr3 into varVariable,varKelas;
622.         if(varKelas = 'C1') THEN
623.           set varSum = varSum+varVariable;
624.         end if;
625.         set i=i+1;
626.       end while;
627.     close curr3;
628.
629.   elseif (parameter = 'KelembapanRatarata') THEN
630.     open curr4;
631.       while i<>varTotal do
632.         fetch curr4 into varVariable,varKelas;
633.         if(varKelas = 'C1') THEN
634.           set varSum = varSum+varVariable;
635.         end if;
636.         set i=i+1;
637.       end while;
638.     close curr4;
639.
640.   elseif (parameter = 'CurahHujan') THEN
641.     open curr5;
642.       while i<>varTotal do
643.         fetch curr5 into varVariable,varKelas;
644.         if(varKelas = 'C1') THEN
645.           set varSum = varSum+varVariable;
646.         end if;
647.         set i=i+1;
648.       end while;
649.     close curr5;
650.
651.   elseif (parameter = 'PenyinaranMatahari') THEN
652.     open curr6;
653.       while i<>varTotal do
654.         fetch curr6 into varVariable,varKelas;
655.         if(varKelas = 'C1') THEN
656.           set varSum = varSum+varVariable;
657.         end if;
658.         set i=i+1;
659.       end while;
660.     close curr6;
661.
662.   elseif (parameter = 'KecepatanAnginMaksimum') THEN
663.     open curr7;
664.       while i<>varTotal do
665.         fetch curr7 into varVariable,varKelas;
666.         if(varKelas = 'C1') THEN
667.           set varSum = varSum+varVariable;
668.         end if;
669.         set i=i+1;
```

```
670.       end while;
671.     close curr7;
672.
673.   elseif (parameter = 'KecepatanAnginRataRata') THEN
674.     open curr9;
675.       while i<>varTotal do
676.         fetch curr9 into varVariable,varKelas;
677.         if(varKelas = 'C1') THEN
678.           set varSum = varSum+varVariable;
679.         end if;
680.         set i=i+1;
681.       end while;
682.     close curr9;
683.
684.   end if;
685.   set varSum = varSum/vJumlahC1;
686.   return (varSum);
687. end //
688.
689. delimiter ;
690.
691. delimiter //
692. create procedure spWcssK1()
693. BEGIN
694.   declare vSum double default 0;
695.   declare vJarakC1S double;
696.   declare varTotal double;
697.   declare varSquare double;
698.   declare varSumC1 double default 0;
699.   declare varSumC2 double default 0;
700.   declare varKelas1 varchar(5);
701.   declare varKelas2 varchar(5);
702.   declare varWcss double default 0;
703.   declare i int default 0;
704.
705.   declare curr1 cursor for
706.     select jarakC1,kelas from tblIterasiK1;
707.
708.
709.   select count(*) into varTotal from tblIterasiK1;
710.
711.   open curr1;
712.   while (i <> varTotal) do
713.     fetch curr1 into vJarakC1S,varKelas1;
714.     if (varKelas1='C1') THEN
715.       set varSumC1 = varSumC1 + POWER(vJarakC1S,2);
716.     end if;
717.     set i = i+1;
718.   end while;
719.   close curr1;
720.   set varWcss = varSumC1;
721.   update tblWcss
722.   set wcss = varwcss
723.   where k = '1';
724. end //
```

```
725. delimiter ;
726.
727.
728. -- Kluster 2
729.
730. delimiter //
731. create procedure spIterasiK2(
732.     c11 double,
733.     c12 double,
734.     c13 double,
735.     c14 double,
736.     c15 double,
737.     c16 double,
738.     c17 double,
739.     c18 double,
740.     c21 double,
741.     c22 double,
742.     c23 double,
743.     c24 double,
744.     c25 double,
745.     c26 double,
746.     c27 double,
747.     c28 double
748.   )
749.     begin
750.       declare i int default 0;
751.       declare varTotal int default 0;
752.       -- declare vC1 decimal(8,2);
753.       -- declare vC2 decimal(8,2);
754.       -- declare vbarang varchar(5);
755.       declare varTempMin double;
756.       declare varTempMaks double;
757.       declare varTempRata double;
758.       declare varCurahHujan double;
759.       declare varKelembapanRata double;
760.       declare varPenyinaranMatahari double;
761.       declare varKecepatanAnginMaks double;
762.       declare varArahangin double;
763.       declare varKecepatanAnginRata double;
764.       declare vJarakC1 double;
765.       declare vJarakC2 double;
766.       declare varTanggal varchar(255);
767.       declare varCektanggal double;
768.
769.       declare cHitung cursor for
770.         select      tanggal,      TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblIterasiK2;
771.
772.
773.       select count(*) into varTotal from tblIterasiK2;
774.       open cHitung;
775.       while i<>varTotal do
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776.           fetch cHitung into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata;
777.           set vJarakC1 = jarakEuclidian(
778.             c11,
779.             c12,
780.             c13,
781.             c14,
782.             c15,
783.             c16,
784.             c17,
785.             c18,
786.             varTempMin,
787.             varTempMaks,
788.             varTempRata,
789.             varKelembapanRata,
790.             varCurahHujan,
791.             varPenyinaranMatahari,
792.             varKecepatanAnginMaks,
793.             varKecepatanAnginRata
794.           );
795.           -- select vJarakC1;
796.           set vJarakC2 = jarakEuclidian(
797.             c21,
798.             c22,
799.             c23,
800.             c24,
801.             c25,
802.             c26,
803.             c27,
804.             c28,
805.             varTempMin,
806.             varTempMaks,
807.             varTempRata,
808.             varKelembapanRata,
809.             varCurahHujan,
810.             varPenyinaranMatahari,
811.             varKecepatanAnginMaks,
812.             varKecepatanAnginRata
813.           );
814.           update tblIterasiK2 set jarakC1 = vJarakC1 where
   tanggal=varTanggal;
815.           update tblIterasiK2 set jarakC2 = vJarakC2 where
   tanggal=varTanggal;
816.             if(vJarakC1<vJarakC2) then
817.                update tblIterasiK2 set kelas = 'C1' where
   tanggal=varTanggal;
818.             else
819.               update tblIterasiK2 set kelas = 'C2' where
   tanggal=varTanggal;
820.             end if;
821.           set i=i+1;
822.       end while;
823.       close cHitung;
824.     end //
```

```
825.
826. delimiter ;
827.
828. delimiter //
829. create procedure cekIterasiK2()
830.   begin
831.     declare countIterasi int default 1;
832.     declare varCtbl1 varchar(5);
833.     declare varCtbl2 varchar(5);
834.     declare i int default 0;
835.     declare counterCount int default 0;
836.     declare varTotal varchar(255);
837.     declare varIterasiSebelum varchar(255);
838.     declare varIterasiSesudah varchar(255);
839.     declare varTempMin double;
840.     declare varTempMaks double;
841.     declare varTempRata double;
842.     declare varCurahHujan double;
843.     declare varKelembapanRata double;
844.     declare varPenyinaranMatahari double;
845.     declare varKecepatanAnginMaks double;
846.     declare varArahangin double;
847.     declare varKecepatanAnginRata double;
848.     declare vJarakC1 double;
849.     declare vJarakC2 double;
850.     declare varKelas varchar(5);
851.     declare varTanggal varchar(255);
852.
853.     declare curr1 cursor for
854.       select    tanggal,    TemperaturMinimum,    TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, jarakC1, jarakC2, kelas
   from tblIterasiK2;
855.
856.     select count(*) into varTotal from tblIterasiK2;
857.
858.     loopIterasi: WHILE (counterCount <> 1) do
859.       open curr1;
860.       while i<>varTotal do
861.         fetch   curr1   into   varTanggal,   varTempMin,   varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks,   varKecepatanAnginRata,   vJarakC1,   vJarakC2,
   varKelas;
862.         insert   into   tblsimpanTemporaryK2   values   (varTanggal,
   varTempMin, varTempMaks, varTempRata, varKelembapanRata, varCurahHujan,
   varPenyinaranMatahari,   varKecepatanAnginMaks,   varKecepatanAnginRata,
   vJarakC1, vJarakC2, varKelas);
863.         set i=i+1;
864.       end while;
865.       close curr1;
866.       set i=0;
867.
868.       select hitungC1BaruK2('TemperaturMinimum') into @c1a;
869.       select hitungC1BaruK2('TemperaturMaksimum') into @c1b;
870.       select hitungC1BaruK2('TemperaturRataRata') into @c1c;
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871.       select hitungC1BaruK2('KelembapanRatarata') into @c1d;
872.       select hitungC1BaruK2('CurahHujan') into @c1e;
873.       select hitungC1BaruK2('PenyinaranMatahari') into @c1f;
874.       select hitungC1BaruK2('KecepatanAnginMaksimum') into @c1g;
875.       select hitungC1BaruK2('KecepatanAnginRataRata') into @c1i;
876.
877.       select hitungC2BaruK2('TemperaturMinimum') into @c2a;
878.       select hitungC2BaruK2('TemperaturMaksimum') into @c2b;
879.       select hitungC2BaruK2('TemperaturRataRata') into @c2c;
880.       select hitungC2BaruK2('KelembapanRatarata') into @c2d;
881.       select hitungC2BaruK2('CurahHujan') into @c2e;
882.       select hitungC2BaruK2('PenyinaranMatahari') into @c2f;
883.       select hitungC2BaruK2('KecepatanAnginMaksimum') into @c2g;
884.       select hitungC2BaruK2('KecepatanAnginRataRata') into @c2i;
885.
886.
887.
888.       call spIterasiK2(@c1a, @c1b, @c1c, @c1d, @c1e, @c1f, @c1g, @c1i,
   @c2a, @c2b, @c2c, @c2d, @c2e, @c2f, @c2g, @c2i);
889.
890.       select    group_concat(kelas)    into    varIterasiSesudah    from
   tblIterasiK2;
891.       select    group_concat(kelas)    into    varIterasiSebelum    from
   tblsimpanTemporaryK2;
892.
893.       set countIterasi = countIterasi + 1;
894.       if (varIterasiSebelum = varIterasiSesudah) then
895.         LEAVE loopIterasi;
896.       end if;
897.       delete from tblsimpanTemporaryK2;
898.
899.     end while loopIterasi;
900.
901.     update tblCountIterasi
902.       set jumlahIterasi = countIterasi
903.     where kluster = 2;
904.
905.     insert          into          tblSimpanCentroidK2          (kelas,
   TemperaturMinimum,TemperaturMaksimum,                TemperaturRataRata,
   KelembapanRatarata,           CurahHujan,           PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata) values
906.     ('C1',@c1a, @c1b, @c1c, @c1d, @c1e, @c1f, @c1g, @c1i),
907.     ('C2',@c2a, @c2b, @c2c, @c2d, @c2e, @c2f, @c2g, @c2i);
908.
909.   end //
910.
911. delimiter ;
912.
913. delimiter //
914.
915. create function hitungC1BaruK2(parameter varchar(50))
916. RETURNS double
917. BEGIN
918.   declare i int default 0;
919.   declare varTotal varchar(255);
```

```
920.   declare varIterasiSebelum varchar(255);
921.   declare varIterasiSesudah varchar(255);
922.   declare varVariable double;
923.   declare varKelas varchar(5);
924.   declare vJumlahC1 int;
925.   declare varSum double default 0;
926.
927.   declare curr1 cursor for
928.     select TemperaturMinimum,kelas from tblIterasiK2;
929.
930.   declare curr2 cursor for
931.     select TemperaturMaksimum,kelas from tblIterasiK2;
932.
933.   declare curr3 cursor for
934.     select TemperaturRataRata,kelas from tblIterasiK2;
935.
936.   declare curr4 cursor for
937.     select KelembapanRatarata,kelas from tblIterasiK2;
938.
939.   declare curr5 cursor for
940.     select CurahHujan,kelas from tblIterasiK2;
941.
942.   declare curr6 cursor for
943.     select PenyinaranMatahari,kelas from tblIterasiK2;
944.
945.   declare curr7 cursor for
946.     select KecepatanAnginMaksimum,kelas from tblIterasiK2;
947.
948.   declare curr9 cursor for
949.     select KecepatanAnginRataRata,kelas from tblIterasiK2;
950.
951.
952.   select count(*) into varTotal from tblIterasiK2;
953.   select count(*) into vJumlahC1 from tblIterasiK2 where kelas = 'C1';
954.
955.   if (parameter = 'TemperaturMinimum') THEN
956.     open curr1;
957.       while i<>varTotal do
958.         fetch curr1 into varVariable,varKelas;
959.         if(varKelas = 'C1') THEN
960.           set varSum = varSum+varVariable;
961.         end if;
962.         set i=i+1;
963.       end while;
964.     close curr1;
965.
966.   elseif (parameter = 'TemperaturMaksimum') THEN
967.     open curr2;
968.       while i<>varTotal do
969.         fetch curr2 into varVariable,varKelas;
970.         if(varKelas = 'C1') THEN
971.           set varSum = varSum+varVariable;
972.         end if;
973.         set i=i+1;
974.       end while;
```

```
975.     close curr2;
976.
977.   elseif (parameter = 'TemperaturRataRata') THEN
978.     open curr3;
979.       while i<>varTotal do
980.         fetch curr3 into varVariable,varKelas;
981.         if(varKelas = 'C1') THEN
982.           set varSum = varSum+varVariable;
983.         end if;
984.         set i=i+1;
985.       end while;
986.     close curr3;
987.
988.   elseif (parameter = 'KelembapanRatarata') THEN
989.     open curr4;
990.       while i<>varTotal do
991.         fetch curr4 into varVariable,varKelas;
992.         if(varKelas = 'C1') THEN
993.           set varSum = varSum+varVariable;
994.         end if;
995.         set i=i+1;
996.       end while;
997.     close curr4;
998.
999.   elseif (parameter = 'CurahHujan') THEN
1000.          open curr5;
1001.            while i<>varTotal do
1002.              fetch curr5 into varVariable,varKelas;
1003.              if(varKelas = 'C1') THEN
1004.                set varSum = varSum+varVariable;
1005.              end if;
1006.              set i=i+1;
1007.            end while;
1008.          close curr5;
1009.
1010.        elseif (parameter = 'PenyinaranMatahari') THEN
1011.          open curr6;
1012.            while i<>varTotal do
1013.              fetch curr6 into varVariable,varKelas;
1014.              if(varKelas = 'C1') THEN
1015.                set varSum = varSum+varVariable;
1016.              end if;
1017.              set i=i+1;
1018.            end while;
1019.          close curr6;
1020.
1021.        elseif (parameter = 'KecepatanAnginMaksimum') THEN
1022.          open curr7;
1023.            while i<>varTotal do
1024.              fetch curr7 into varVariable,varKelas;
1025.              if(varKelas = 'C1') THEN
1026.                set varSum = varSum+varVariable;
1027.              end if;
1028.              set i=i+1;
1029.            end while;
```

```
1030.           close curr7;
1031.
1032.         elseif (parameter = 'KecepatanAnginRataRata') THEN
1033.           open curr9;
1034.             while i<>varTotal do
1035.               fetch curr9 into varVariable,varKelas;
1036.               if(varKelas = 'C1') THEN
1037.                 set varSum = varSum+varVariable;
1038.               end if;
1039.               set i=i+1;
1040.             end while;
1041.           close curr9;
1042.
1043.         end if;
1044.         set varSum = varSum/vJumlahC1;
1045.         return (varSum);
1046.       end //
1047.
1048.       delimiter ;
1049.
1050.       delimiter //
1051.
1052.       create function hitungC2BaruK2(parameter varchar(50))
1053.       RETURNS double
1054.       BEGIN
1055.         declare i int default 0;
1056.         declare varTotal varchar(255);
1057.         declare varIterasiSebelum varchar(255);
1058.         declare varIterasiSesudah varchar(255);
1059.         declare varVariable double;
1060.         declare varKelas varchar(5);
1061.         declare vJumlahC2 int;
1062.         declare varSum double default 0;
1063.
1064.         declare curr1 cursor for
1065.           select TemperaturMinimum,kelas from tblIterasiK2;
1066.
1067.         declare curr2 cursor for
1068.           select TemperaturMaksimum,kelas from tblIterasiK2;
1069.
1070.         declare curr3 cursor for
1071.           select TemperaturRataRata,kelas from tblIterasiK2;
1072.
1073.         declare curr4 cursor for
1074.           select KelembapanRatarata,kelas from tblIterasiK2;
1075.
1076.         declare curr5 cursor for
1077.           select CurahHujan,kelas from tblIterasiK2;
1078.
1079.         declare curr6 cursor for
1080.           select PenyinaranMatahari,kelas from tblIterasiK2;
1081.
1082.         declare curr7 cursor for
1083.           select KecepatanAnginMaksimum,kelas from tblIterasiK2;
1084.
```

```
1085.
1086.          declare curr9 cursor for
1087.            select KecepatanAnginRataRata,kelas from tblIterasiK2;
1088.
1089.
1090.          select count(*) into varTotal from tblIterasiK2;
1091.          select count(*) into vJumlahC2 from tblIterasiK2 where kelas
   = 'C2';
1092.
1093.          if (parameter = 'TemperaturMinimum') THEN
1094.            open curr1;
1095.              while i<>varTotal do
1096.                fetch curr1 into varVariable,varKelas;
1097.                if(varKelas = 'C2') THEN
1098.                  set varSum = varSum+varVariable;
1099.                end if;
1100.                set i=i+1;
1101.              end while;
1102.            close curr1;
1103.
1104.          elseif (parameter = 'TemperaturMaksimum') THEN
1105.            open curr2;
1106.              while i<>varTotal do
1107.                fetch curr2 into varVariable,varKelas;
1108.                if(varKelas = 'C2') THEN
1109.                  set varSum = varSum+varVariable;
1110.                end if;
1111.                set i=i+1;
1112.              end while;
1113.            close curr2;
1114.
1115.          elseif (parameter = 'TemperaturRataRata') THEN
1116.            open curr3;
1117.              while i<>varTotal do
1118.                fetch curr3 into varVariable,varKelas;
1119.                if(varKelas = 'C2') THEN
1120.                  set varSum = varSum+varVariable;
1121.                end if;
1122.                set i=i+1;
1123.              end while;
1124.            close curr3;
1125.
1126.          elseif (parameter = 'KelembapanRatarata') THEN
1127.            open curr4;
1128.              while i<>varTotal do
1129.                fetch curr4 into varVariable,varKelas;
1130.                if(varKelas = 'C2') THEN
1131.                  set varSum = varSum+varVariable;
1132.                end if;
1133.                set i=i+1;
1134.              end while;
1135.            close curr4;
1136.
1137.          elseif (parameter = 'CurahHujan') THEN
1138.            open curr5;
```

```
1139.             while i<>varTotal do
1140.               fetch curr5 into varVariable,varKelas;
1141.               if(varKelas = 'C2') THEN
1142.                 set varSum = varSum+varVariable;
1143.               end if;
1144.               set i=i+1;
1145.             end while;
1146.           close curr5;
1147.
1148.         elseif (parameter = 'PenyinaranMatahari') THEN
1149.           open curr6;
1150.             while i<>varTotal do
1151.               fetch curr6 into varVariable,varKelas;
1152.               if(varKelas = 'C2') THEN
1153.                 set varSum = varSum+varVariable;
1154.               end if;
1155.               set i=i+1;
1156.             end while;
1157.           close curr6;
1158.
1159.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
1160.           open curr7;
1161.             while i<>varTotal do
1162.               fetch curr7 into varVariable,varKelas;
1163.               if(varKelas = 'C2') THEN
1164.                 set varSum = varSum+varVariable;
1165.               end if;
1166.               set i=i+1;
1167.             end while;
1168.           close curr7;
1169.
1170.         elseif (parameter = 'KecepatanAnginRataRata') THEN
1171.           open curr9;
1172.             while i<>varTotal do
1173.               fetch curr9 into varVariable,varKelas;
1174.               if(varKelas = 'C2') THEN
1175.                 set varSum = varSum+varVariable;
1176.               end if;
1177.               set i=i+1;
1178.             end while;
1179.           close curr9;
1180.
1181.         end if;
1182.         set varSum = varSum/vJumlahC2;
1183.         return (varSum);
1184.       end //
1185.
1186.       delimiter ;
1187.
1188.       delimiter //
1189.       create procedure spWcssK2()
1190.       BEGIN
1191.         declare vSum double default 0;
1192.         declare vJarakC1S double;
1193.         declare vJarakC2S double;
```

```
1194.         declare varTotal double;
1195.         declare varSquare double;
1196.         declare varSumC1 double default 0;
1197.         declare varSumC2 double default 0;
1198.         declare varKelas1 varchar(5);
1199.         declare varKelas2 varchar(5);
1200.         declare varWcss double default 0;
1201.         declare i int default 0;
1202.
1203.         declare curr1 cursor for
1204.           select jarakC1,kelas from tblIterasiK2;
1205.
1206.         declare curr2 cursor for
1207.           select jarakC2,kelas from tblIterasiK2;
1208.
1209.         select count(*) into varTotal from tblIterasiK2;
1210.
1211.         open curr1;
1212.         open curr2;
1213.         while (i <> varTotal) do
1214.           fetch curr1 into vJarakC1S,varKelas1;
1215.           fetch curr2 into vJarakC2S,varKelas2;
1216.           if (varKelas1='C1') THEN
1217.             set varSumC1 = varSumC1 + POWER(vJarakC1S,2);
1218.           end if;
1219.           if (varKelas2='C2') THEN
1220.             set varSumC2 = varSumC2 + POWER(vJarakC2S,2);
1221.           end if;
1222.           set i = i+1;
1223.         end while;
1224.         close curr1;
1225.         close curr2;
1226.         set varWcss = varSumC1 + varSUmC2;
1227.         update tblWcss
1228.         set wcss = varwcss
1229.         where k = '2';
1230.       end //
1231.       delimiter ;
1232.
1233.       delimiter //
1234.       create procedure spSilhouetteK2()
1235.       BEGIN
1236.         declare i int default 0;
1237.         declare j int default 0;
1238.         declare k int default 0;
1239.         declare varTotal int default 0;
1240.         declare varTanggal varchar(25);
1241.         declare varTempMin double;
1242.         declare varTempMaks double;
1243.         declare varTempRata double;
1244.         declare varCurahHujan double;
1245.         declare varKelembapanRata double;
1246.         declare varPenyinaranMatahari double;
1247.         declare varKecepatanAnginMaks double;
1248.         declare varArahangin double;
```

```
1249.         declare varKecepatanAnginRata double;
1250.
1251.         declare varTanggal2 varchar(25);
1252.         declare varTempMin2 double;
1253.         declare varTempMaks2 double;
1254.         declare varTempRata2 double;
1255.         declare varCurahHujan2 double;
1256.         declare varKelembapanRata2 double;
1257.         declare varPenyinaranMatahari2 double;
1258.         declare varKecepatanAnginMaks2 double;
1259.         declare varArahangin2 double;
1260.         declare varKecepatanAnginRata2 double;
1261.
1262.         declare varTanggal3 varchar(25);
1263.         declare varTempMin3 double;
1264.         declare varTempMaks3 double;
1265.         declare varTempRata3 double;
1266.         declare varCurahHujan3 double;
1267.         declare varKelembapanRata3 double;
1268.         declare varPenyinaranMatahari3 double;
1269.         declare varKecepatanAnginMaks3 double;
1270.         declare varArahangin3 double;
1271.         declare varKecepatanAnginRata3 double;
1272.
1273.         declare varTempMinC1 double;
1274.         declare varTempMaksC1 double;
1275.         declare varTempRataC1 double;
1276.         declare varCurahHujanC1 double;
1277.         declare varKelembapanRataC1 double;
1278.         declare varPenyinaranMatahariC1 double;
1279.         declare varKecepatanAnginMaksC1 double;
1280.         declare varArahanginC1 double;
1281.         declare varKecepatanAnginRataC1 double;
1282.
1283.         declare varTempMinC2 double;
1284.         declare varTempMaksC2 double;
1285.         declare varTempRataC2 double;
1286.         declare varCurahHujanC2 double;
1287.         declare varKelembapanRataC2 double;
1288.         declare varPenyinaranMatahariC2 double;
1289.         declare varKecepatanAnginMaksC2 double;
1290.         declare varArahanginC2 double;
1291.         declare varKecepatanAnginRataC2 double;
1292.
1293.         declare varKelas varchar(25);
1294.         declare varKelas2 varchar(25);
1295.         declare varKelas3 varchar(25);
1296.         declare varCsama varchar(5);
1297.         declare varTotalSesamaCluster int default 0;
1298.         declare varTotalClusterTerdekat int default 0;
1299.         declare varSumai double default 0;
1300.         declare varSumbi double default 0;
1301.         declare varCterdekat varchar(5);
1302.         declare varSilhouetteCoefficient double default 0;
1303.         declare varSilhouetteScore double default 0;
```

```
1304.
1305.         declare vJarakC1danC2 double;
1306.         declare vJarakC2danC1 double;
1307.
1308.         declare vJarakTerdekatC1 varchar(5);
1309.         declare vJarakTerdekatC2 varchar(5);
1310.
1311.         declare curr1 cursor for
1312.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK2;
1313.
1314.         declare curr2 cursor for
1315.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK2
   where kelas = 'C1';
1316.
1317.         declare curr3 cursor for
1318.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK2
   where kelas = 'C2';
1319.
1320.         declare curr4 cursor for
1321.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK2;
1322.
1323.         declare curr5 cursor for
1324.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK2;
1325.
1326.         declare curr6 cursor for
1327.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK2;
1328.
1329.         declare curr7 cursor for
1330.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK2;
1331.
1332.         declare curr8 cursor for
1333.               select  jarakTerdekat  from  tblSimpanCentroidK2  where
   kelas = 'C1';
1334.
1335.         declare curr9 cursor for
1336.               select  jarakTerdekat  from  tblSimpanCentroidK2  where
   kelas = 'C2';
1337.
1338.         open curr2;
1339.           fetch    curr2    into    varTempMinC1,    varTempMaksC1,
   varTempRataC1,          varKelembapanRataC1,          varCurahHujanC1,
```

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   varPenyinaranMatahariC1,                          varKecepatanAnginMaksC1,
   varKecepatanAnginRataC1;
1340.          close curr2;
1341.
1342.          open curr3;
1343.            fetch    curr3    into    varTempMinC2,    varTempMaksC2,
   varTempRataC2,           varKelembapanRataC2,           varCurahHujanC2,
   varPenyinaranMatahariC2,                          varKecepatanAnginMaksC2,
   varKecepatanAnginRataC2;
1344.          close curr3;
1345.
1346.          update tblSimpanCentroidK2
1347.          set jarakTerdekat ='C1'
1348.          where kelas ='C2';
1349.          update tblSimpanCentroidK2
1350.          set jarakTerdekat ='C2'
1351.          where kelas ='C1';
1352.
1353.          open curr8;
1354.            fetch curr8 into vJarakTerdekatC1;
1355.          close curr8;
1356.
1357.          open curr9;
1358.            fetch curr9 into vJarakTerdekatC2;
1359.          close curr9;
1360.
1361.          select count(*) into varTotal from tblIterasiK2;
1362.          set vJarakC1danC2 = jarakEuclidian(
1363.                                varTempMinC1, varTempMaksC1, varTempRataC1,
   varKelembapanRataC1,      varCurahHujanC1,      varPenyinaranMatahariC1,
   varKecepatanAnginMaksC1, varKecepatanAnginRataC1,
1364.                                varTempMinC2, varTempMaksC2, varTempRataC2,
   varKelembapanRataC2,      varCurahHujanC2,      varPenyinaranMatahariC2,
   varKecepatanAnginMaksC2, varKecepatanAnginRataC2
1365.                                );
1366.          set vJarakC2danC1 = jarakEuclidian(
1367.                                varTempMinC1, varTempMaksC1, varTempRataC1,
   varKelembapanRataC1,      varCurahHujanC1,      varPenyinaranMatahariC1,
   varKecepatanAnginMaksC1, varKecepatanAnginRataC1,
1368.                                varTempMinC2, varTempMaksC2, varTempRataC2,
   varKelembapanRataC2,      varCurahHujanC2,      varPenyinaranMatahariC2,
   varKecepatanAnginMaksC2, varKecepatanAnginRataC2
1369.                                );
1370.          open curr1;
1371.          -- looping data point
1372.          while (i<>varTotal) do
1373.            fetch  curr1  into  varTanggal,  varTempMin,  varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, varKelas;
1374.            set j=0;
1375.            set k=0;
1376.            set varSumai = 0;
1377.            set varSumbi = 0;
1378.            set varTotalSesamaCluster = 0;
1379.            set varTotalClusterTerdekat = 0;
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dd

```
1380.           if (varKelas = 'C2') then
1381.             set varCterdekat = vJarakTerdekatC2;
1382.           elseif (varKelas = 'C1') then
1383.             set varCterdekat = vJarakTerdekatC1;
1384.           end if;
1385.           open curr5;
1386.           open curr6;
1387.           -- looping menghitung data a(i) dan b(i) pada tiap data
   point
1388.             while (j<>varTotal) do
1389.               -- menghitung a(i)
1390.               fetch curr5 into varTanggal2, varTempMin2,
   varTempMaks2, varTempRata2, varKelembapanRata2, varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2,
   varKelas2;
1391.               if (varTanggal <> varTanggal2) then
1392.                 if(varKelas = varKelas2) then
1393.                   set varSumai = varSumai + jarakEuclidian(
1394.                             varTempMin, varTempMaks, varTempRata,
   varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
1395.                             varTempMin2, varTempMaks2, varTempRata2,
   varKelembapanRata2, varCurahHujan2, varPenyinaranMatahari2,
   varKecepatanAnginMaks2, varKecepatanAnginRata2
1396.                           );
1397.                   set varTotalSesamaCluster = varTotalSesamaCluster +
   1;
1398.                 -- menghitung b(i)
1399.                 elseif(varKelas <> varKelas2 && varKelas2 =
   varCterdekat ) then
1400.                   while ( k <> varTotal) do
1401.                     fetch curr6 into varTanggal3, varTempMin3,
   varTempMaks3, varTempRata3, varKelembapanRata3, varCurahHujan3,
   varPenyinaranMatahari3, varKecepatanAnginMaks3, varKecepatanAnginRata3,
   varKelas3;
1402.                       if (varKelas3 = varCterdekat ) then
1403.                         set varTotalClusterTerdekat =
   varTotalClusterTerdekat + 1;
1404.                       end if;
1405.                     set k = k+1;
1406.                   end while;
1407.                   set varSumbi = varSumbi + jarakEuclidian(
1408.                                         varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
1409.                                         varTempMin2, varTempMaks2,
   varTempRata2, varKelembapanRata2, varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2
1410.                                       );
1411.                 end if;
1412.               end if;
1413.               -- menghitung b(i)
1414.
1415.               set j=j+1;
1416.             end while;
```

```
1417.             close curr5;
1418.             close curr6;
1419.             set varSumai = varSumai / varTotalSesamaCluster;
1420.             set varSumbi = varSumbi / varTotalClusterTerdekat;
1421.             if (varSumai is NULL or '') then
1422.               set varSumai = 0;
1423.               set varTotalSesamaCluster = 0;
1424.             end if;
1425.             if (varSumbi is NULL or '') then
1426.               set varSumbi = 0;
1427.               set varTotalClusterTerdekat = 0;
1428.             end if;
1429.             set    varSilhouetteCoefficient    =    (varSumbi    -
   varSumai)/greatest(varSumbi,varSumai);
1430.             set   varSilhouetteScore   =   varSilhouetteScore   +
   varSilhouetteCoefficient;
1431.             set i=i+1;
1432.         end while;
1433.         close curr1;
1434.         set varSilhouetteScore = varSilhouetteScore / varTotal;
1435.         update tblSilhouette
1436.         set silhouetteScore = varSilhouetteScore
1437.         where kluster = 2;
1438.       end//
1439.
1440.       delimiter ;
1441.
1442.       -- Kluster 3
1443.
1444.       delimiter //
1445.       create procedure spIterasiK3(
1446.           c11 double,
1447.           c12 double,
1448.           c13 double,
1449.           c14 double,
1450.           c15 double,
1451.           c16 double,
1452.           c17 double,
1453.           c18 double,
1454.           c21 double,
1455.           c22 double,
1456.           c23 double,
1457.           c24 double,
1458.           c25 double,
1459.           c26 double,
1460.           c27 double,
1461.           c28 double,
1462.           c31 double,
1463.           c32 double,
1464.           c33 double,
1465.           c34 double,
1466.           c35 double,
1467.           c36 double,
1468.           c37 double,
1469.           c38 double
```

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1470.         )
1471.           begin
1472.             declare i int default 0;
1473.             declare varTotal int default 0;
1474.             declare varTempMin double;
1475.             declare varTempMaks double;
1476.             declare varTempRata double;
1477.             declare varCurahHujan double;
1478.             declare varKelembapanRata double;
1479.             declare varPenyinaranMatahari double;
1480.             declare varKecepatanAnginMaks double;
1481.             declare varArahangin double;
1482.             declare varKecepatanAnginRata double;
1483.             declare vJarakC1 double;
1484.             declare vJarakC2 double;
1485.             declare vJarakC3 double;
1486.             declare varTanggal varchar(255);
1487.             declare varCektanggal double;
1488.
1489.             declare cHitung cursor for
1490.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblIterasiK3;
1491.
1492.
1493.             select count(*) into varTotal from tblIterasiK3;
1494.             open cHitung;
1495.             while i<>varTotal do
1496.                 fetch   cHitung   into   varTanggal,   varTempMin,
   varTempMaks,     varTempRata,     varKelembapanRata,     varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata;
1497.                 set vJarakC1 = jarakEuclidian(
1498.                   c11,
1499.                   c12,
1500.                   c13,
1501.                   c14,
1502.                   c15,
1503.                   c16,
1504.                   c17,
1505.                   c18,
1506.                   varTempMin,
1507.                   varTempMaks,
1508.                   varTempRata,
1509.                   varKelembapanRata,
1510.                   varCurahHujan,
1511.                   varPenyinaranMatahari,
1512.                   varKecepatanAnginMaks,
1513.                   varKecepatanAnginRata
1514.                 );
1515.                 -- select vJarakC1;
1516.                 set vJarakC2 = jarakEuclidian(
1517.                   c21,
1518.                   c22,
1519.                   c23,
1520.                   c24,
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1521.                   c25,
1522.                   c26,
1523.                   c27,
1524.                   c28,
1525.                   varTempMin,
1526.                   varTempMaks,
1527.                   varTempRata,
1528.                   varKelembapanRata,
1529.                   varCurahHujan,
1530.                   varPenyinaranMatahari,
1531.                   varKecepatanAnginMaks,
1532.                   varKecepatanAnginRata
1533.                 );
1534.                 set vJarakC3 = jarakEuclidian(
1535.                   c31,
1536.                   c32,
1537.                   c33,
1538.                   c34,
1539.                   c35,
1540.                   c36,
1541.                   c37,
1542.                   c38,
1543.                   varTempMin,
1544.                   varTempMaks,
1545.                   varTempRata,
1546.                   varKelembapanRata,
1547.                   varCurahHujan,
1548.                   varPenyinaranMatahari,
1549.                   varKecepatanAnginMaks,
1550.                   varKecepatanAnginRata
1551.                 );
1552.                 update tblIterasiK3 set jarakC1 = vJarakC1 where
   tanggal=varTanggal;
1553.                 update tblIterasiK3 set jarakC2 = vJarakC2 where
   tanggal=varTanggal;
1554.                 update tblIterasiK3 set jarakC3 = vJarakC3 where
   tanggal=varTanggal;
1555.                   if(vJarakC1<vJarakC2 && vJarakC1<vJarakC3) then
1556.                     update tblIterasiK3 set kelas = 'C1' where
   tanggal=varTanggal;
1557.                   elseif (vJarakC2<vJarakC1 && vJarakC2<vJarakC3)
   then
1558.                     update tblIterasiK3 set kelas = 'C2' where
   tanggal=varTanggal;
1559.                   elseif (vJarakC3<vJarakC1 && vJarakC3<vJarakC2)
   then
1560.                     update tblIterasiK3 set kelas = 'C3' where
   tanggal=varTanggal;
1561.                   end if;
1562.                 set i=i+1;
1563.               end while;
1564.               close cHitung;
1565.             end //
1566.
1567.       delimiter ;
```

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1568.
1569.       delimiter //
1570.       create procedure cekIterasiK3()
1571.         begin
1572.           declare countIterasi int default 0;
1573.           declare varCtbl1 varchar(5);
1574.           declare varCtbl2 varchar(5);
1575.           declare i int default 0;
1576.           declare counterCount int default 0;
1577.           declare varTotal varchar(255);
1578.           declare varIterasiSebelum varchar(255);
1579.           declare varIterasiSesudah varchar(255);
1580.           declare varTempMin double;
1581.           declare varTempMaks double;
1582.           declare varTempRata double;
1583.           declare varCurahHujan double;
1584.           declare varKelembapanRata double;
1585.           declare varPenyinaranMatahari double;
1586.           declare varKecepatanAnginMaks double;
1587.           declare varArahangin double;
1588.           declare varKecepatanAnginRata double;
1589.           declare vJarakC1 double;
1590.           declare vJarakC2 double;
1591.           declare vJarakC3 double;
1592.           declare varKelas varchar(5);
1593.           declare varTanggal varchar(255);
1594.
1595.           declare curr1 cursor for
1596.             select tanggal, TemperaturMinimum, TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, jarakC1, jarakC2,
   jarakC3, kelas from tblIterasiK3;
1597.
1598.           select count(*) into varTotal from tblIterasiK3;
1599.
1600.           loopIterasi: WHILE (counterCount <> 1) do
1601.             open curr1;
1602.             while i<>varTotal do
1603.               fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, vJarakC1, vJarakC2,
   vJarakC3, varKelas;
1604.               insert into tblsimpanTemporaryK3 values (varTanggal,
   varTempMin, varTempMaks, varTempRata, varKelembapanRata, varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata,
   vJarakC1, vJarakC2, vJarakC3, varKelas);
1605.               set i=i+1;
1606.             end while;
1607.             close curr1;
1608.             set i=0;
1609.
1610.             select hitungC1BaruK3('TemperaturMinimum') into @c1k3a;
1611.             select hitungC1BaruK3('TemperaturMaksimum') into @c1k3b;
1612.             select hitungC1BaruK3('TemperaturRataRata') into @c1k3c;
1613.             select hitungC1BaruK3('KelembapanRatarata') into @c1k3d;
```

```
1614.             select hitungC1BaruK3('CurahHujan') into @c1k3e;
1615.             select hitungC1BaruK3('PenyinaranMatahari') into @c1k3f;
1616.             select   hitungC1BaruK3('KecepatanAnginMaksimum')   into
   @c1k3g;
1617.             select   hitungC1BaruK3('KecepatanAnginRataRata')   into
   @c1k3i;
1618.
1619.             select hitungC2BaruK3('TemperaturMinimum') into @c2k3a;
1620.             select hitungC2BaruK3('TemperaturMaksimum') into @c2k3b;
1621.             select hitungC2BaruK3('TemperaturRataRata') into @c2k3c;
1622.             select hitungC2BaruK3('KelembapanRatarata') into @c2k3d;
1623.             select hitungC2BaruK3('CurahHujan') into @c2k3e;
1624.             select hitungC2BaruK3('PenyinaranMatahari') into @c2k3f;
1625.             select   hitungC2BaruK3('KecepatanAnginMaksimum')   into
   @c2k3g;
1626.             select   hitungC2BaruK3('KecepatanAnginRataRata')   into
   @c2k3i;
1627.
1628.             select hitungC3BaruK3('TemperaturMinimum') into @c3k3a;
1629.             select hitungC3BaruK3('TemperaturMaksimum') into @c3k3b;
1630.             select hitungC3BaruK3('TemperaturRataRata') into @c3k3c;
1631.             select hitungC3BaruK3('KelembapanRatarata') into @c3k3d;
1632.             select hitungC3BaruK3('CurahHujan') into @c3k3e;
1633.             select hitungC3BaruK3('PenyinaranMatahari') into @c3k3f;
1634.             select   hitungC3BaruK3('KecepatanAnginMaksimum')   into
   @c3k3g;
1635.             select   hitungC3BaruK3('KecepatanAnginRataRata')   into
   @c3k3i;
1636.
1637.
1638.             call spIterasiK3(@c1k3a, @c1k3b, @c1k3c, @c1k3d, @c1k3e,
   @c1k3f, @c1k3g, @c1k3i, @c2k3a, @c2k3b, @c2k3c, @c2k3d, @c2k3e, @c2k3f,
   @c2k3g, @c2k3i, @c3k3a, @c3k3b, @c3k3c, @c3k3d, @c3k3e, @c3k3f, @c3k3g,
   @c3k3i);
1639.
1640.             select  group_concat(kelas)  into  varIterasiSesudah  from
   tblIterasiK3;
1641.             select  group_concat(kelas)  into  varIterasiSebelum  from
   tblsimpanTemporaryK3;
1642.
1643.             set countIterasi = countIterasi + 1;
1644.             if (varIterasiSebelum = varIterasiSesudah) then
1645.               LEAVE loopIterasi;
1646.             end if;
1647.             delete from tblsimpanTemporaryK3;
1648.
1649.           end while loopIterasi;
1650.
1651.           update tblCountIterasi
1652.             set jumlahIterasi = countIterasi
1653.           where kluster = 3;
1654.
1655.           insert       into       tblSimpanCentroidK3       (kelas,
   TemperaturMinimum,TemperaturMaksimum,                TemperaturRataRata,
```

```
   KelembapanRatarata,           CurahHujan,           PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata) values
1656.           ('C1',@c1k3a,  @c1k3b,  @c1k3c,  @c1k3d,  @c1k3e,  @c1k3f,
   @c1k3g, @c1k3i),
1657.           ('C2',@c2k3a,  @c2k3b,  @c2k3c,  @c2k3d,  @c2k3e,  @c2k3f,
   @c2k3g, @c2k3i),
1658.           ('C3',@c3k3a,  @c3k3b,  @c3k3c,  @c3k3d,  @c3k3e,  @c3k3f,
   @c3k3g, @c3k3i);
1659.
1660.         end //
1661.
1662.       delimiter ;
1663.
1664.       delimiter //
1665.       create function hitungC1BaruK3(parameter varchar(50))
1666.       RETURNS double
1667.       BEGIN
1668.         declare i int default 0;
1669.         declare varTotal varchar(255);
1670.         declare varIterasiSebelum varchar(255);
1671.         declare varIterasiSesudah varchar(255);
1672.         declare varVariable double;
1673.         declare varKelas varchar(5);
1674.         declare vJumlahC1 int;
1675.         declare varSum double default 0;
1676.
1677.         declare curr1 cursor for
1678.           select TemperaturMinimum,kelas from tblIterasiK3;
1679.
1680.         declare curr2 cursor for
1681.           select TemperaturMaksimum,kelas from tblIterasiK3;
1682.
1683.         declare curr3 cursor for
1684.           select TemperaturRataRata,kelas from tblIterasiK3;
1685.
1686.         declare curr4 cursor for
1687.           select KelembapanRatarata,kelas from tblIterasiK3;
1688.
1689.         declare curr5 cursor for
1690.           select CurahHujan,kelas from tblIterasiK3;
1691.
1692.         declare curr6 cursor for
1693.           select PenyinaranMatahari,kelas from tblIterasiK3;
1694.
1695.         declare curr7 cursor for
1696.           select KecepatanAnginMaksimum,kelas from tblIterasiK3;
1697.
1698.         declare curr9 cursor for
1699.           select KecepatanAnginRataRata,kelas from tblIterasiK3;
1700.
1701.
1702.         select count(*) into varTotal from tblIterasiK3;
1703.         select count(*) into vJumlahC1 from tblIterasiK3 where kelas
   = 'C1';
1704.
```

kk

```
1705.          if (parameter = 'TemperaturMinimum') THEN
1706.            open curr1;
1707.              while i<>varTotal do
1708.                fetch curr1 into varVariable,varKelas;
1709.                if(varKelas = 'C1') THEN
1710.                  set varSum = varSum+varVariable;
1711.                end if;
1712.                set i=i+1;
1713.              end while;
1714.            close curr1;
1715.
1716.          elseif (parameter = 'TemperaturMaksimum') THEN
1717.            open curr2;
1718.              while i<>varTotal do
1719.                fetch curr2 into varVariable,varKelas;
1720.                if(varKelas = 'C1') THEN
1721.                  set varSum = varSum+varVariable;
1722.                end if;
1723.                set i=i+1;
1724.              end while;
1725.            close curr2;
1726.
1727.          elseif (parameter = 'TemperaturRataRata') THEN
1728.            open curr3;
1729.              while i<>varTotal do
1730.                fetch curr3 into varVariable,varKelas;
1731.                if(varKelas = 'C1') THEN
1732.                  set varSum = varSum+varVariable;
1733.                end if;
1734.                set i=i+1;
1735.              end while;
1736.            close curr3;
1737.
1738.          elseif (parameter = 'KelembapanRatarata') THEN
1739.            open curr4;
1740.              while i<>varTotal do
1741.                fetch curr4 into varVariable,varKelas;
1742.                if(varKelas = 'C1') THEN
1743.                  set varSum = varSum+varVariable;
1744.                end if;
1745.                set i=i+1;
1746.              end while;
1747.            close curr4;
1748.
1749.          elseif (parameter = 'CurahHujan') THEN
1750.            open curr5;
1751.              while i<>varTotal do
1752.                fetch curr5 into varVariable,varKelas;
1753.                if(varKelas = 'C1') THEN
1754.                  set varSum = varSum+varVariable;
1755.                end if;
1756.                set i=i+1;
1757.              end while;
1758.            close curr5;
1759.
```

```
1760.         elseif (parameter = 'PenyinaranMatahari') THEN
1761.           open curr6;
1762.             while i<>varTotal do
1763.               fetch curr6 into varVariable,varKelas;
1764.               if(varKelas = 'C1') THEN
1765.                 set varSum = varSum+varVariable;
1766.               end if;
1767.               set i=i+1;
1768.             end while;
1769.           close curr6;
1770.
1771.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
1772.           open curr7;
1773.             while i<>varTotal do
1774.               fetch curr7 into varVariable,varKelas;
1775.               if(varKelas = 'C1') THEN
1776.                 set varSum = varSum+varVariable;
1777.               end if;
1778.               set i=i+1;
1779.             end while;
1780.           close curr7;
1781.
1782.         elseif (parameter = 'KecepatanAnginRataRata') THEN
1783.           open curr9;
1784.             while i<>varTotal do
1785.               fetch curr9 into varVariable,varKelas;
1786.               if(varKelas = 'C1') THEN
1787.                 set varSum = varSum+varVariable;
1788.               end if;
1789.               set i=i+1;
1790.             end while;
1791.           close curr9;
1792.
1793.         end if;
1794.         set varSum = varSum/vJumlahC1;
1795.         return (varSum);
1796.       end //
1797.
1798.       delimiter ;
1799.
1800.       delimiter //
1801.       create function hitungC2BaruK3(parameter varchar(50))
1802.       RETURNS double
1803.       BEGIN
1804.         declare i int default 0;
1805.         declare varTotal varchar(255);
1806.         declare varIterasiSebelum varchar(255);
1807.         declare varIterasiSesudah varchar(255);
1808.         declare varVariable double;
1809.         declare varKelas varchar(5);
1810.         declare vJumlahC2 int;
1811.         declare varSum double default 0;
1812.
1813.         declare curr1 cursor for
1814.           select TemperaturMinimum,kelas from tblIterasiK3;
```

```
1815.
1816.          declare curr2 cursor for
1817.            select TemperaturMaksimum,kelas from tblIterasiK3;
1818.
1819.          declare curr3 cursor for
1820.            select TemperaturRataRata,kelas from tblIterasiK3;
1821.
1822.          declare curr4 cursor for
1823.            select KelembapanRatarata,kelas from tblIterasiK3;
1824.
1825.          declare curr5 cursor for
1826.            select CurahHujan,kelas from tblIterasiK3;
1827.
1828.          declare curr6 cursor for
1829.            select PenyinaranMatahari,kelas from tblIterasiK3;
1830.
1831.          declare curr7 cursor for
1832.            select KecepatanAnginMaksimum,kelas from tblIterasiK3;
1833.
1834.          declare curr9 cursor for
1835.            select KecepatanAnginRataRata,kelas from tblIterasiK3;
1836.
1837.
1838.          select count(*) into varTotal from tblIterasiK3;
1839.          select count(*) into vJumlahC2 from tblIterasiK3 where kelas
   = 'C2';
1840.
1841.          if (parameter = 'TemperaturMinimum') THEN
1842.            open curr1;
1843.              while i<>varTotal do
1844.                fetch curr1 into varVariable,varKelas;
1845.                if(varKelas = 'C2') THEN
1846.                  set varSum = varSum+varVariable;
1847.                end if;
1848.                set i=i+1;
1849.              end while;
1850.            close curr1;
1851.
1852.          elseif (parameter = 'TemperaturMaksimum') THEN
1853.            open curr2;
1854.              while i<>varTotal do
1855.                fetch curr2 into varVariable,varKelas;
1856.                if(varKelas = 'C2') THEN
1857.                  set varSum = varSum+varVariable;
1858.                end if;
1859.                set i=i+1;
1860.              end while;
1861.            close curr2;
1862.
1863.          elseif (parameter = 'TemperaturRataRata') THEN
1864.            open curr3;
1865.              while i<>varTotal do
1866.                fetch curr3 into varVariable,varKelas;
1867.                if(varKelas = 'C2') THEN
1868.                  set varSum = varSum+varVariable;
```

```
1869.               end if;
1870.               set i=i+1;
1871.             end while;
1872.           close curr3;
1873.
1874.         elseif (parameter = 'KelembapanRatarata') THEN
1875.           open curr4;
1876.             while i<>varTotal do
1877.               fetch curr4 into varVariable,varKelas;
1878.               if(varKelas = 'C2') THEN
1879.                 set varSum = varSum+varVariable;
1880.               end if;
1881.               set i=i+1;
1882.             end while;
1883.           close curr4;
1884.
1885.         elseif (parameter = 'CurahHujan') THEN
1886.           open curr5;
1887.             while i<>varTotal do
1888.               fetch curr5 into varVariable,varKelas;
1889.               if(varKelas = 'C2') THEN
1890.                 set varSum = varSum+varVariable;
1891.               end if;
1892.               set i=i+1;
1893.             end while;
1894.           close curr5;
1895.
1896.         elseif (parameter = 'PenyinaranMatahari') THEN
1897.           open curr6;
1898.             while i<>varTotal do
1899.               fetch curr6 into varVariable,varKelas;
1900.               if(varKelas = 'C2') THEN
1901.                 set varSum = varSum+varVariable;
1902.               end if;
1903.               set i=i+1;
1904.             end while;
1905.           close curr6;
1906.
1907.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
1908.           open curr7;
1909.             while i<>varTotal do
1910.               fetch curr7 into varVariable,varKelas;
1911.               if(varKelas = 'C2') THEN
1912.                 set varSum = varSum+varVariable;
1913.               end if;
1914.               set i=i+1;
1915.             end while;
1916.           close curr7;
1917.
1918.         elseif (parameter = 'KecepatanAnginRataRata') THEN
1919.           open curr9;
1920.             while i<>varTotal do
1921.               fetch curr9 into varVariable,varKelas;
1922.               if(varKelas = 'C2') THEN
1923.                 set varSum = varSum+varVariable;
```

```
1924.               end if;
1925.               set i=i+1;
1926.             end while;
1927.           close curr9;
1928.
1929.         end if;
1930.         set varSum = varSum/vJumlahC2;
1931.         return (varSum);
1932.       end //
1933.
1934.       delimiter ;
1935.
1936.       delimiter //
1937.       create function hitungC3BaruK3(parameter varchar(50))
1938.       RETURNS double
1939.       BEGIN
1940.         declare i int default 0;
1941.         declare varTotal varchar(255);
1942.         declare varIterasiSebelum varchar(255);
1943.         declare varIterasiSesudah varchar(255);
1944.         declare varVariable double;
1945.         declare varKelas varchar(5);
1946.         declare vJumlahC2 int;
1947.         declare varSum double default 0;
1948.
1949.         declare curr1 cursor for
1950.           select TemperaturMinimum,kelas from tblIterasiK3;
1951.
1952.         declare curr2 cursor for
1953.           select TemperaturMaksimum,kelas from tblIterasiK3;
1954.
1955.         declare curr3 cursor for
1956.           select TemperaturRataRata,kelas from tblIterasiK3;
1957.
1958.         declare curr4 cursor for
1959.           select KelembapanRatarata,kelas from tblIterasiK3;
1960.
1961.         declare curr5 cursor for
1962.           select CurahHujan,kelas from tblIterasiK3;
1963.
1964.         declare curr6 cursor for
1965.           select PenyinaranMatahari,kelas from tblIterasiK3;
1966.
1967.         declare curr7 cursor for
1968.           select KecepatanAnginMaksimum,kelas from tblIterasiK3;
1969.
1970.         declare curr9 cursor for
1971.           select KecepatanAnginRataRata,kelas from tblIterasiK3;
1972.
1973.
1974.         select count(*) into varTotal from tblIterasiK3;
1975.         select count(*) into vJumlahC2 from tblIterasiK3 where kelas
   = 'C3';
1976.
1977.         if (parameter = 'TemperaturMinimum') THEN
```

```
1978.           open curr1;
1979.             while i<>varTotal do
1980.               fetch curr1 into varVariable,varKelas;
1981.               if(varKelas = 'C3') THEN
1982.                 set varSum = varSum+varVariable;
1983.               end if;
1984.               set i=i+1;
1985.             end while;
1986.           close curr1;
1987.
1988.         elseif (parameter = 'TemperaturMaksimum') THEN
1989.           open curr2;
1990.             while i<>varTotal do
1991.               fetch curr2 into varVariable,varKelas;
1992.               if(varKelas = 'C3') THEN
1993.                 set varSum = varSum+varVariable;
1994.               end if;
1995.               set i=i+1;
1996.             end while;
1997.           close curr2;
1998.
1999.         elseif (parameter = 'TemperaturRataRata') THEN
2000.           open curr3;
2001.             while i<>varTotal do
2002.               fetch curr3 into varVariable,varKelas;
2003.               if(varKelas = 'C3') THEN
2004.                 set varSum = varSum+varVariable;
2005.               end if;
2006.               set i=i+1;
2007.             end while;
2008.           close curr3;
2009.
2010.         elseif (parameter = 'KelembapanRatarata') THEN
2011.           open curr4;
2012.             while i<>varTotal do
2013.               fetch curr4 into varVariable,varKelas;
2014.               if(varKelas = 'C3') THEN
2015.                 set varSum = varSum+varVariable;
2016.               end if;
2017.               set i=i+1;
2018.             end while;
2019.           close curr4;
2020.
2021.         elseif (parameter = 'CurahHujan') THEN
2022.           open curr5;
2023.             while i<>varTotal do
2024.               fetch curr5 into varVariable,varKelas;
2025.               if(varKelas = 'C3') THEN
2026.                 set varSum = varSum+varVariable;
2027.               end if;
2028.               set i=i+1;
2029.             end while;
2030.           close curr5;
2031.
2032.         elseif (parameter = 'PenyinaranMatahari') THEN
```

```
2033.           open curr6;
2034.             while i<>varTotal do
2035.               fetch curr6 into varVariable,varKelas;
2036.               if(varKelas = 'C3') THEN
2037.                 set varSum = varSum+varVariable;
2038.               end if;
2039.               set i=i+1;
2040.             end while;
2041.           close curr6;
2042.
2043.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
2044.           open curr7;
2045.             while i<>varTotal do
2046.               fetch curr7 into varVariable,varKelas;
2047.               if(varKelas = 'C3') THEN
2048.                 set varSum = varSum+varVariable;
2049.               end if;
2050.               set i=i+1;
2051.             end while;
2052.           close curr7;
2053.
2054.         elseif (parameter = 'KecepatanAnginRataRata') THEN
2055.           open curr9;
2056.             while i<>varTotal do
2057.               fetch curr9 into varVariable,varKelas;
2058.               if(varKelas = 'C3') THEN
2059.                 set varSum = varSum+varVariable;
2060.               end if;
2061.               set i=i+1;
2062.             end while;
2063.           close curr9;
2064.
2065.         end if;
2066.         set varSum = varSum/vJumlahC2;
2067.         return (varSum);
2068.       end //
2069.
2070.       delimiter ;
2071.
2072.       delimiter //
2073.       create procedure spWcssK3()
2074.       BEGIN
2075.         declare vSum double default 0;
2076.         declare vJarakC1S double;
2077.         declare vJarakC2S double;
2078.         declare vJarakC3S double;
2079.         declare varTotal double;
2080.         declare varSquare double;
2081.         declare varSumC1 double default 0;
2082.         declare varSumC2 double default 0;
2083.         declare varSumC3 double default 0;
2084.         declare varKelas1 varchar(5);
2085.         declare varKelas2 varchar(5);
2086.         declare varKelas3 varchar(5);
2087.         declare varWcss double default 0;
```

```
2088.         declare i int default 0;
2089.
2090.         declare curr1 cursor for
2091.           select jarakC1,kelas from tblIterasiK3;
2092.
2093.         declare curr2 cursor for
2094.           select jarakC2,kelas from tblIterasiK3;
2095.
2096.         declare curr3 cursor for
2097.           select jarakC3,kelas from tblIterasiK3;
2098.
2099.         select count(*) into varTotal from tblIterasiK3;
2100.
2101.         open curr1;
2102.         open curr2;
2103.         open curr3;
2104.         while (i <> varTotal) do
2105.           fetch curr1 into vJarakC1S,varKelas1;
2106.           fetch curr2 into vJarakC2S,varKelas2;
2107.           fetch curr3 into vJarakC3S,varKelas3;
2108.           if (varKelas1='C1') THEN
2109.             set varSumC1 = varSumC1 + POWER(vJarakC1S,2);
2110.           end if;
2111.           if (varKelas2='C2') THEN
2112.             set varSumC2 = varSumC2 + POWER(vJarakC2S,2);
2113.           end if;
2114.           if (varKelas3='C3') THEN
2115.             set varSumC3 = varSumC3 + POWER(vJarakC3S,2);
2116.           end if;
2117.           set i = i+1;
2118.         end while;
2119.         close curr1;
2120.         close curr2;
2121.         close curr3;
2122.         set varWcss = varSumC1 + varSumC2 + varSumC3;
2123.         update tblWcss
2124.         set wcss = varwcss
2125.         where k = '3';
2126.       end //
2127.       delimiter ;
2128.
2129.       delimiter //
2130.       create procedure spSilhouetteK3()
2131.       BEGIN
2132.         declare i int default 0;
2133.         declare j int default 0;
2134.         declare k int default 0;
2135.         declare l int default 0;
2136.         declare varTotal int default 0;
2137.         declare varTanggal varchar(25);
2138.         declare varTempMin double;
2139.         declare varTempMaks double;
2140.         declare varTempRata double;
2141.         declare varCurahHujan double;
2142.         declare varKelembapanRata double;
```

```
2143.         declare varPenyinaranMatahari double;
2144.         declare varKecepatanAnginMaks double;
2145.         declare varArahangin double;
2146.         declare varKecepatanAnginRata double;
2147.         declare varTotaltblCentroid int default 0;
2148.         declare vJarakC1 double;
2149.         declare vJarakC2 double;
2150.         declare vJarakC3 double;
2151.         declare c11 double;
2152.         declare c12 double;
2153.         declare c13 double;
2154.         declare c14 double;
2155.         declare c15 double;
2156.         declare c16 double;
2157.         declare c17 double;
2158.         declare c18 double;
2159.         declare c19 double;
2160.         declare c21 double;
2161.         declare c22 double;
2162.         declare c23 double;
2163.         declare c24 double;
2164.         declare c25 double;
2165.         declare c26 double;
2166.         declare c27 double;
2167.         declare c28 double;
2168.         declare c29 double;
2169.         declare c31 double;
2170.         declare c32 double;
2171.         declare c33 double;
2172.         declare c34 double;
2173.         declare c35 double;
2174.         declare c36 double;
2175.         declare c37 double;
2176.         declare c38 double;
2177.         declare c39 double;
2178.
2179.         declare varTanggal2 varchar(25);
2180.         declare varTempMin2 double;
2181.         declare varTempMaks2 double;
2182.         declare varTempRata2 double;
2183.         declare varCurahHujan2 double;
2184.         declare varKelembapanRata2 double;
2185.         declare varPenyinaranMatahari2 double;
2186.         declare varKecepatanAnginMaks2 double;
2187.         declare varArahangin2 double;
2188.         declare varKecepatanAnginRata2 double;
2189.
2190.         declare varTanggal3 varchar(25);
2191.         declare varTempMin3 double;
2192.         declare varTempMaks3 double;
2193.         declare varTempRata3 double;
2194.         declare varCurahHujan3 double;
2195.         declare varKelembapanRata3 double;
2196.         declare varPenyinaranMatahari3 double;
2197.         declare varKecepatanAnginMaks3 double;
```

```
2198.          declare varArahangin3 double;
2199.          declare varKecepatanAnginRata3 double;
2200.
2201.          declare varKelas4 varchar(5);
2202.          declare varTanggal4 varchar(25);
2203.          declare varTempMin4 double;
2204.          declare varTempMaks4 double;
2205.          declare varTempRata4 double;
2206.          declare varCurahHujan4 double;
2207.          declare varKelembapanRata4 double;
2208.          declare varPenyinaranMatahari4 double;
2209.          declare varKecepatanAnginMaks4 double;
2210.          declare varArahangin4 double;
2211.          declare varKecepatanAnginRata4 double;
2212.
2213.          declare varTempMinC1 double;
2214.          declare varTempMaksC1 double;
2215.          declare varTempRataC1 double;
2216.          declare varCurahHujanC1 double;
2217.          declare varKelembapanRataC1 double;
2218.          declare varPenyinaranMatahariC1 double;
2219.          declare varKecepatanAnginMaksC1 double;
2220.          declare varArahanginC1 double;
2221.          declare varKecepatanAnginRataC1 double;
2222.
2223.          declare varTempMinC2 double;
2224.          declare varTempMaksC2 double;
2225.          declare varTempRataC2 double;
2226.          declare varCurahHujanC2 double;
2227.          declare varKelembapanRataC2 double;
2228.          declare varPenyinaranMatahariC2 double;
2229.          declare varKecepatanAnginMaksC2 double;
2230.          declare varArahanginC2 double;
2231.          declare varKecepatanAnginRataC2 double;
2232.
2233.          declare varTempMinC3 double;
2234.          declare varTempMaksC3 double;
2235.          declare varTempRataC3 double;
2236.          declare varCurahHujanC3 double;
2237.          declare varKelembapanRataC3 double;
2238.          declare varPenyinaranMatahariC3 double;
2239.          declare varKecepatanAnginMaksC3 double;
2240.          declare varArahanginC3 double;
2241.          declare varKecepatanAnginRataC3 double;
2242.
2243.          declare varKelas varchar(25);
2244.          declare varKelas2 varchar(25);
2245.          declare varKelas3 varchar(25);
2246.          declare varCsama varchar(5);
2247.          declare varTotalSesamaCluster int default 0;
2248.          declare varTotalClusterTerdekat int default 0;
2249.          declare varSumai double default 0;
2250.          declare varSumbi double default 0;
2251.          declare varCterdekat varchar(5);
2252.          declare varSilhouetteCoefficient double default 0;
```

```
2253.         declare varSilhouetteScore double default 0;
2254.
2255.         declare vJarakC1danC2 double;
2256.         declare vJarakC1danC3 double;
2257.         declare vJarakC2danC1 double;
2258.         declare vJarakC2danC3 double;
2259.         declare vJarakC3danC1 double;
2260.         declare vJarakC3danC2 double;
2261.
2262.         declare vJarakTerdekatC1 varchar(5);
2263.         declare vJarakTerdekatC2 varchar(5);
2264.         declare vJarakTerdekatC3 varchar(5);
2265.
2266.         declare cHitung cursor for
2267.               select     kelas,TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK3;
2268.
2269.         declare curr1 cursor for
2270.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK3;
2271.
2272.         declare curr2 cursor for
2273.               select          TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK3
   where kelas = 'C1';
2274.
2275.         declare curr3 cursor for
2276.               select          TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK3
   where kelas = 'C2';
2277.
2278.         declare curr10 cursor for
2279.               select          TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK3
   where kelas = 'C3';
2280.
2281.         declare curr4 cursor for
2282.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK3;
2283.
2284.         declare curr5 cursor for
2285.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK3;
2286.
2287.         declare curr6 cursor for
2288.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK3;
```

```
2289.
2290.         declare curr7 cursor for
2291.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK3;
2292.
2293.         declare curr8 cursor for
2294.               select  jarakTerdekat  from  tblSimpanCentroidK3  where
   kelas = 'C1';
2295.
2296.         declare curr9 cursor for
2297.               select  jarakTerdekat  from  tblSimpanCentroidK3  where
   kelas = 'C2';
2298.
2299.         declare curr11 cursor for
2300.               select  jarakTerdekat  from  tblSimpanCentroidK3  where
   kelas = 'C3';
2301.
2302.
2303.         open curr2;
2304.           fetch    curr2    into    varTempMinC1,    varTempMaksC1,
   varTempRataC1,          varKelembapanRataC1,          varCurahHujanC1,
   varPenyinaranMatahariC1,                varKecepatanAnginMaksC1,
   varKecepatanAnginRataC1;
2305.         close curr2;
2306.
2307.         open curr3;
2308.           fetch    curr3    into    varTempMinC2,    varTempMaksC2,
   varTempRataC2,          varKelembapanRataC2,          varCurahHujanC2,
   varPenyinaranMatahariC2,                varKecepatanAnginMaksC2,
   varKecepatanAnginRataC2;
2309.         close curr3;
2310.
2311.         open curr10;
2312.           fetch    curr10    into    varTempMinC3,    varTempMaksC3,
   varTempRataC3,          varKelembapanRataC3,          varCurahHujanC3,
   varPenyinaranMatahariC3,                varKecepatanAnginMaksC3,
   varKecepatanAnginRataC3;
2313.         close curr10;
2314.
2315.
2316.         select     count(*)     into     varTotaltblCentroid     from
   tblSimpanCentroidK3;
2317.
2318.         open cHitung;
2319.         while (1 <> varTotaltblCentroid) do
2320.           fetch  cHitung  into  varKelas4,varTempMin4,  varTempMaks4,
   varTempRata4,           varKelembapanRata4,           varCurahHujan4,
   varPenyinaranMatahari4, varKecepatanAnginMaks4, varKecepatanAnginRata4;
2321.           set vJarakC1 = jarakEuclidian(
2322.                   varTempMinC1,
2323.                   varTempMaksC1,
2324.                   varTempRataC1,
2325.                   varKelembapanRataC1,
2326.                   varCurahHujanC1,
```

```
2327.                   varPenyinaranMatahariC1,
2328.                   varKecepatanAnginMaksC1,
2329.                   varKecepatanAnginRataC1,
2330.                   varTempMin4,
2331.                   varTempMaks4,
2332.                   varTempRata4,
2333.                   varKelembapanRata4,
2334.                   varCurahHujan4,
2335.                   varPenyinaranMatahari4,
2336.                   varKecepatanAnginMaks4,
2337.                   varKecepatanAnginRata4
2338.                 );
2339.           set vJarakC2 = jarakEuclidian(
2340.                   varTempMinC2,
2341.                   varTempMaksC2,
2342.                   varTempRataC2,
2343.                   varKelembapanRataC2,
2344.                   varCurahHujanC2,
2345.                   varPenyinaranMatahariC2,
2346.                   varKecepatanAnginMaksC2,
2347.                   varKecepatanAnginRataC2,
2348.                   varTempMin4,
2349.                   varTempMaks4,
2350.                   varTempRata4,
2351.                   varKelembapanRata4,
2352.                   varCurahHujan4,
2353.                   varPenyinaranMatahari4,
2354.                   varKecepatanAnginMaks4,
2355.                   varKecepatanAnginRata4
2356.                 );
2357.           set vJarakC3 = jarakEuclidian(
2358.                   varTempMinC3,
2359.                   varTempMaksC3,
2360.                   varTempRataC3,
2361.                   varKelembapanRataC3,
2362.                   varCurahHujanC3,
2363.                   varPenyinaranMatahariC3,
2364.                   varKecepatanAnginMaksC3,
2365.                   varKecepatanAnginRataC3,
2366.                   varTempMin4,
2367.                   varTempMaks4,
2368.                   varTempRata4,
2369.                   varKelembapanRata4,
2370.                   varCurahHujan4,
2371.                   varPenyinaranMatahari4,
2372.                   varKecepatanAnginMaks4,
2373.                   varKecepatanAnginRata4
2374.                 );
2375.                 update tblSimpanCentroidK3 set jarakC1 = vJarakC1,
   jarakC2 = vJarakC2, jarakC3 = vJarakC3 where kelas = varKelas4;
2376.           set l=l+1;
2377.         end while;
2378.         close cHitung;
2379.
```

```
2380.          select jarakC2,jarakC3 into vJarakC1danC2,vJarakC1danC3 from
   tblSimpanCentroidK3 where kelas = 'C1';
2381.          select jarakC1,jarakC3 into vJarakC2danC1,vJarakC2danC3 from
   tblSimpanCentroidK3 where kelas = 'C2';
2382.          select jarakC1,jarakC2 into vJarakC3danC1,vJarakC3danC2 from
   tblSimpanCentroidK3 where kelas = 'C3';
2383.
2384.          if (vJarakC1danC2<vJarakC1danC3) then
2385.            update tblSimpanCentroidK3
2386.            set jarakTerdekat='C2'
2387.            where kelas = 'C1';
2388.          else
2389.            update tblSimpanCentroidK3
2390.            set jarakTerdekat='C3'
2391.            where kelas = 'C1';
2392.          end if;
2393.
2394.          if (vJarakC2danC1<vJarakC2danC3) then
2395.            update tblSimpanCentroidK3
2396.            set jarakTerdekat='C1'
2397.            where kelas = 'C2';
2398.          else
2399.            update tblSimpanCentroidK3
2400.            set jarakTerdekat='C3'
2401.            where kelas = 'C2';
2402.          end if;
2403.
2404.          if (vJarakC3danC1<vJarakC3danC2) then
2405.            update tblSimpanCentroidK3
2406.            set jarakTerdekat='C1'
2407.            where kelas = 'C3';
2408.          else
2409.            update tblSimpanCentroidK3
2410.            set jarakTerdekat='C2'
2411.            where kelas = 'C3';
2412.          end if;
2413.
2414.          open curr8;
2415.            fetch curr8 into vJarakTerdekatC1;
2416.          close curr8;
2417.
2418.          open curr9;
2419.            fetch curr9 into vJarakTerdekatC2;
2420.          close curr9;
2421.
2422.          open curr11;
2423.            fetch curr11 into vJarakTerdekatC3;
2424.          close curr11;
2425.
2426.          select count(*) into varTotal from tblIterasiK3;
2427.
2428.          open curr1;
2429.          -- looping data point
2430.          while (i<>varTotal) do
```

```
2431.           fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, varKelas;
2432.           set j=0;
2433.           set k=0;
2434.           set varSumai = 0;
2435.           set varSumbi = 0;
2436.           set varTotalSesamaCluster = 0;
2437.           set varTotalClusterTerdekat = 0;
2438.           if (varKelas = 'C1') then
2439.             set varCterdekat = vJarakTerdekatC1;
2440.           elseif (varKelas = 'C2') then
2441.             set varCterdekat = vJarakTerdekatC2;
2442.           elseif (varKelas = 'C3') then
2443.             set varCterdekat = vJarakTerdekatC3;
2444.           end if;
2445.           open curr5;
2446.           open curr6;
2447.           -- looping menghitung data a(i) dan b(i) pada tiap data
   point
2448.             while (j<>varTotal) do
2449.               -- menghitung a(i)
2450.               fetch curr5 into varTanggal2, varTempMin2,
   varTempMaks2, varTempRata2, varKelembapanRata2, varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2,
   varKelas2;
2451.
2452.               if (varTanggal <> varTanggal2) then
2453.                 if(varKelas = varKelas2) then
2454.                   set varSumai = varSumai + jarakEuclidian(
2455.                             varTempMin, varTempMaks, varTempRata,
   varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
2456.                             varTempMin2, varTempMaks2, varTempRata2,
   varKelembapanRata2, varCurahHujan2, varPenyinaranMatahari2,
   varKecepatanAnginMaks2, varKecepatanAnginRata2
2457.                             );
2458.                   set varTotalSesamaCluster = varTotalSesamaCluster +
   1;
2459.                 -- menghitung b(i)
2460.                 elseif(varKelas <> varKelas2 && varKelas2 =
   varCterdekat ) then
2461.                   while ( k <> varTotal) do
2462.                     fetch curr6 into varTanggal3, varTempMin3,
   varTempMaks3, varTempRata3, varKelembapanRata3, varCurahHujan3,
   varPenyinaranMatahari3, varKecepatanAnginMaks3, varKecepatanAnginRata3,
   varKelas3;
2463.                       if (varKelas3 = varCterdekat ) then
2464.                         set varTotalClusterTerdekat =
   varTotalClusterTerdekat + 1;
2465.                       end if;
2466.                     set k = k+1;
2467.                   end while;
2468.                   set varSumbi = varSumbi + jarakEuclidian(
```

```
2469.                                          varTempMin,       varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
2470.                                          varTempMin2,      varTempMaks2,
   varTempRata2,            varKelembapanRata2,            varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2
2471.                                       );
2472.                 end if;
2473.
2474.               end if;
2475.               -- menghitung b(i)
2476.
2477.               set j=j+1;
2478.             end while;
2479.             close curr5;
2480.             close curr6;
2481.             set varSumai = varSumai / varTotalSesamaCluster;
2482.             set varSumbi = varSumbi / varTotalClusterTerdekat;
2483.             if (varSumai is NULL or '') then
2484.               set varSumai = 0;
2485.               set varTotalSesamaCluster = 0;
2486.             end if;
2487.             if (varSumbi is NULL or '') then
2488.               set varSumbi = 0;
2489.               set varTotalClusterTerdekat = 0;
2490.             end if;
2491.             set    varSilhouetteCoefficient    =    (varSumbi    -
   varSumai)/greatest(varSumbi,varSumai);
2492.             set    varSilhouetteScore    =    varSilhouetteScore    +
   varSilhouetteCoefficient;
2493.             set i=i+1;
2494.         end while;
2495.         close curr1;
2496.         set varSilhouetteScore = varSilhouetteScore / varTotal;
2497.         update tblSilhouette
2498.         set silhouetteScore = varSilhouetteScore
2499.         where kluster = 3;
2500.       end//
2501.
2502.       delimiter ;
2503.       -- Kluster 4
2504.
2505.       delimiter //
2506.       create procedure spIterasiK4(
2507.           c11 double,
2508.           c12 double,
2509.           c13 double,
2510.           c14 double,
2511.           c15 double,
2512.           c16 double,
2513.           c17 double,
2514.           c18 double,
2515.           c21 double,
2516.           c22 double,
2517.           c23 double,
```

```
2518.           c24 double,
2519.           c25 double,
2520.           c26 double,
2521.           c27 double,
2522.           c28 double,
2523.           c31 double,
2524.           c32 double,
2525.           c33 double,
2526.           c34 double,
2527.           c35 double,
2528.           c36 double,
2529.           c37 double,
2530.           c38 double,
2531.           c41 double,
2532.           c42 double,
2533.           c43 double,
2534.           c44 double,
2535.           c45 double,
2536.           c46 double,
2537.           c47 double,
2538.           c48 double
2539.         )
2540.           begin
2541.             declare i int default 0;
2542.             declare varTotal int default 0;
2543.             -- declare vC1 decimal(8,2);
2544.             -- declare vC2 decimal(8,2);
2545.             -- declare vbarang varchar(5);
2546.             declare varTempMin double;
2547.             declare varTempMaks double;
2548.             declare varTempRata double;
2549.             declare varCurahHujan double;
2550.             declare varKelembapanRata double;
2551.             declare varPenyinaranMatahari double;
2552.             declare varKecepatanAnginMaks double;
2553.             declare varArahangin double;
2554.             declare varKecepatanAnginRata double;
2555.             declare vJarakC1 double;
2556.             declare vJarakC2 double;
2557.             declare vJarakC3 double;
2558.             declare vJarakC4 double;
2559.             declare varTanggal varchar(255);
2560.             declare varCektanggal double;
2561.
2562.
2563.             declare cHitung cursor for
2564.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblIterasiK4;
2565.
2566.
2567.             select count(*) into varTotal from tblIterasiK4;
2568.             open cHitung;
2569.             while i<>varTotal do
```

```
2570.                 fetch cHitung into varTanggal, varTempMin,
   varTempMaks,     varTempRata,     varKelembapanRata,     varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata;
2571.                 set vJarakC1 = jarakEuclidian(
2572.                   c11,
2573.                   c12,
2574.                   c13,
2575.                   c14,
2576.                   c15,
2577.                   c16,
2578.                   c17,
2579.                   c18,
2580.                   varTempMin,
2581.                   varTempMaks,
2582.                   varTempRata,
2583.                   varKelembapanRata,
2584.                   varCurahHujan,
2585.                   varPenyinaranMatahari,
2586.                   varKecepatanAnginMaks,
2587.                   varKecepatanAnginRata
2588.                 );
2589.                 -- select vJarakC1;
2590.                 set vJarakC2 = jarakEuclidian(
2591.                   c21,
2592.                   c22,
2593.                   c23,
2594.                   c24,
2595.                   c25,
2596.                   c26,
2597.                   c27,
2598.                   c28,
2599.                   varTempMin,
2600.                   varTempMaks,
2601.                   varTempRata,
2602.                   varKelembapanRata,
2603.                   varCurahHujan,
2604.                   varPenyinaranMatahari,
2605.                   varKecepatanAnginMaks,
2606.                   varKecepatanAnginRata
2607.                 );
2608.                 set vJarakC3 = jarakEuclidian(
2609.                   c31,
2610.                   c32,
2611.                   c33,
2612.                   c34,
2613.                   c35,
2614.                   c36,
2615.                   c37,
2616.                   c38,
2617.                   varTempMin,
2618.                   varTempMaks,
2619.                   varTempRata,
2620.                   varKelembapanRata,
2621.                   varCurahHujan,
2622.                   varPenyinaranMatahari,
```

```
2623.                   varKecepatanAnginMaks,
2624.                   varKecepatanAnginRata
2625.                 );
2626.                 set vJarakC4 = jarakEuclidian(
2627.                   c41,
2628.                   c42,
2629.                   c43,
2630.                   c44,
2631.                   c45,
2632.                   c46,
2633.                   c47,
2634.                   c48,
2635.                   varTempMin,
2636.                   varTempMaks,
2637.                   varTempRata,
2638.                   varKelembapanRata,
2639.                   varCurahHujan,
2640.                   varPenyinaranMatahari,
2641.                   varKecepatanAnginMaks,
2642.                   varKecepatanAnginRata
2643.                 );
2644.
2645.                 update tblIterasiK4 set jarakC1 = vJarakC1 where
   tanggal=varTanggal;
2646.                 update tblIterasiK4 set jarakC2 = vJarakC2 where
   tanggal=varTanggal;
2647.                 update tblIterasiK4 set jarakC3 = vJarakC3 where
   tanggal=varTanggal;
2648.                 update tblIterasiK4 set jarakC4 = vJarakC4 where
   tanggal=varTanggal;
2649.
2650.                   if(vJarakC1<vJarakC2   &&   vJarakC1<vJarakC3   &&
   vJarakC1<vJarakC4) then
2651.                     update tblIterasiK4 set kelas = 'C1' where
   tanggal=varTanggal;
2652.                   elseif (vJarakC2<vJarakC1 && vJarakC2<vJarakC3 &&
   vJarakC2<vJarakC4) then
2653.                     update tblIterasiK4 set kelas = 'C2' where
   tanggal=varTanggal;
2654.                   elseif (vJarakC3<vJarakC1 && vJarakC3<vJarakC2 &&
   vJarakC3<vJarakC4) then
2655.                     update tblIterasiK4 set kelas = 'C3' where
   tanggal=varTanggal;
2656.                   elseif (vJarakC4<vJarakC1 && vJarakC4<vJarakC2 &&
   vJarakC4<vJarakC3) then
2657.                     update tblIterasiK4 set kelas = 'C4' where
   tanggal=varTanggal;
2658.                   end if;
2659.                 set i=i+1;
2660.             end while;
2661.             close cHitung;
2662.                   -- select * from tblIterasiK4;
2663.           end //
2664.
2665.       delimiter ;
```

ddd

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2666.
2667.       delimiter //
2668.       create procedure cekIterasiK4()
2669.         begin
2670.           declare countIterasi int default 1;
2671.           declare varCtbl1 varchar(5);
2672.           declare varCtbl2 varchar(5);
2673.           declare i int default 0;
2674.           declare counterCount int default 0;
2675.           declare varTotal varchar(255);
2676.           declare varIterasiSebelum varchar(255);
2677.           declare varIterasiSesudah varchar(255);
2678.           declare varTempMin double;
2679.           declare varTempMaks double;
2680.           declare varTempRata double;
2681.           declare varCurahHujan double;
2682.           declare varKelembapanRata double;
2683.           declare varPenyinaranMatahari double;
2684.           declare varKecepatanAnginMaks double;
2685.           declare varArahangin double;
2686.           declare varKecepatanAnginRata double;
2687.           declare vJarakC1 double;
2688.           declare vJarakC2 double;
2689.           declare vJarakC3 double;
2690.           declare vJarakC4 double;
2691.           declare varKelas varchar(5);
2692.           declare varTanggal varchar(255);
2693.
2694.           declare curr1 cursor for
2695.             select tanggal, TemperaturMinimum, TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, jarakC1, jarakC2,
   jarakC3, jarakC4, kelas from tblIterasiK4;
2696.
2697.           select count(*) into varTotal from tblIterasiK4;
2698.
2699.           loopIterasi: WHILE (counterCount <> 1) do
2700.             open curr1;
2701.             while i<>varTotal do
2702.               fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, vJarakC1, vJarakC2,
   vJarakC3, vJarakC4, varKelas;
2703.               insert into tblsimpanTemporaryK4 values (varTanggal,
   varTempMin, varTempMaks, varTempRata, varKelembapanRata, varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata,
   vJarakC1, vJarakC2, vJarakC3, vJarakC4, varKelas);
2704.               set i=i+1;
2705.             end while;
2706.             close curr1;
2707.             set i=0;
2708.
2709.             select hitungC1BaruK4('TemperaturMinimum') into @c1k4a;
2710.             select hitungC1BaruK4('TemperaturMaksimum') into @c1k4b;
2711.             select hitungC1BaruK4('TemperaturRataRata') into @c1k4c;
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2712.             select hitungC1BaruK4('KelembapanRatarata') into @c1k4d;
2713.             select hitungC1BaruK4('CurahHujan') into @c1k4e;
2714.             select hitungC1BaruK4('PenyinaranMatahari') into @c1k4f;
2715.             select   hitungC1BaruK4('KecepatanAnginMaksimum')   into
   @c1k4g;
2716.             select   hitungC1BaruK4('KecepatanAnginRataRata')   into
   @c1k4i;
2717.
2718.             select hitungC2BaruK4('TemperaturMinimum') into @c2k4a;
2719.             select hitungC2BaruK4('TemperaturMaksimum') into @c2k4b;
2720.             select hitungC2BaruK4('TemperaturRataRata') into @c2k4c;
2721.             select hitungC2BaruK4('KelembapanRatarata') into @c2k4d;
2722.             select hitungC2BaruK4('CurahHujan') into @c2k4e;
2723.             select hitungC2BaruK4('PenyinaranMatahari') into @c2k4f;
2724.             select   hitungC2BaruK4('KecepatanAnginMaksimum')   into
   @c2k4g;
2725.             select   hitungC2BaruK4('KecepatanAnginRataRata')   into
   @c2k4i;
2726.
2727.             select hitungC3BaruK4('TemperaturMinimum') into @c3k4a;
2728.             select hitungC3BaruK4('TemperaturMaksimum') into @c3k4b;
2729.             select hitungC3BaruK4('TemperaturRataRata') into @c3k4c;
2730.             select hitungC3BaruK4('KelembapanRatarata') into @c3k4d;
2731.             select hitungC3BaruK4('CurahHujan') into @c3k4e;
2732.             select hitungC3BaruK4('PenyinaranMatahari') into @c3k4f;
2733.             select   hitungC3BaruK4('KecepatanAnginMaksimum')   into
   @c3k4g;
2734.             select   hitungC3BaruK4('KecepatanAnginRataRata')   into
   @c3k4i;
2735.
2736.             select hitungC4BaruK4('TemperaturMinimum') into @c4k4a;
2737.             select hitungC4BaruK4('TemperaturMaksimum') into @c4k4b;
2738.             select hitungC4BaruK4('TemperaturRataRata') into @c4k4c;
2739.             select hitungC4BaruK4('KelembapanRatarata') into @c4k4d;
2740.             select hitungC4BaruK4('CurahHujan') into @c4k4e;
2741.             select hitungC4BaruK4('PenyinaranMatahari') into @c4k4f;
2742.             select   hitungC4BaruK4('KecepatanAnginMaksimum')   into
   @c4k4g;
2743.             select   hitungC4BaruK4('KecepatanAnginRataRata')   into
   @c4k4i;
2744.
2745.
2746.             call spIterasiK4(@c1k4a, @c1k4b, @c1k4c, @c1k4d, @c1k4e,
   @c1k4f, @c1k4g, @c1k4i,@c2k4a, @c2k4b, @c2k4c, @c2k4d, @c2k4e, @c2k4f,
   @c2k4g, @c2k4i, @c3k4a, @c3k4b, @c3k4c, @c3k4d, @c3k4e, @c3k4f, @c3k4g,
   @c3k4i, @c4k4a, @c4k4b, @c4k4c, @c4k4d, @c4k4e, @c4k4f, @c4k4g, @c4k4i);
2747.
2748.             select  group_concat(kelas)  into  varIterasiSesudah  from
   tblIterasiK4;
2749.             select  group_concat(kelas)  into  varIterasiSebelum  from
   tblsimpanTemporaryK4;
2750.
2751.             set countIterasi = countIterasi + 1;
2752.             if (varIterasiSebelum = varIterasiSesudah) then
2753.               LEAVE loopIterasi;
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2754.             end if;
2755.             delete from tblsimpanTemporaryK4;
2756.
2757.           end while loopIterasi;
2758.
2759.           update tblCountIterasi
2760.             set jumlahIterasi = countIterasi
2761.           where kluster = 4;
2762.           -- select @c1k4a, @c1k4b, @c1k4c, @c1k4d, @c1k4e, @c1k4f,
   @c1k4g, @c1k4h, @c1k4i,@c2k4a, @c2k4b, @c2k4c, @c2k4d, @c2k4e, @c2k4f,
   @c2k4g, @c2k4h, @c2k4i, @c3k4a, @c3k4b, @c3k4c, @c3k4d, @c3k4e, @c3k4f,
   @c3k4g, @c3k4h, @c3k4i, @c4k4a, @c4k4b, @c4k4c, @c4k4d, @c4k4e, @c4k4f,
   @c4k4g, @c4k4h, @c4k4i;
2763.           insert       into       tblSimpanCentroidK4       (kelas,
   TemperaturMinimum,TemperaturMaksimum,               TemperaturRataRata,
   KelembapanRatarata,          CurahHujan,          PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata) values
2764.           ('C1',@c1k4a,  @c1k4b,  @c1k4c,  @c1k4d,  @c1k4e,  @c1k4f,
   @c1k4g, @c1k4i),
2765.           ('C2',@c2k4a,  @c2k4b,  @c2k4c,  @c2k4d,  @c2k4e,  @c2k4f,
   @c2k4g, @c2k4i),
2766.           ('C3',@c3k4a,  @c3k4b,  @c3k4c,  @c3k4d,  @c3k4e,  @c3k4f,
   @c3k4g, @c3k4i),
2767.           ('C4',@c4k4a,  @c4k4b,  @c4k4c,  @c4k4d,  @c4k4e,  @c4k4f,
   @c4k4g, @c4k4i);
2768.         end //
2769.
2770.       delimiter ;
2771.
2772.       delimiter //
2773.       create function hitungC1BaruK4(parameter varchar(50))
2774.       RETURNS double
2775.       BEGIN
2776.         declare i int default 0;
2777.         declare varTotal varchar(255);
2778.         declare varIterasiSebelum varchar(255);
2779.         declare varIterasiSesudah varchar(255);
2780.         declare varVariable double;
2781.         declare varKelas varchar(5);
2782.         declare vJumlahC1 int;
2783.         declare varSum double default 0;
2784.
2785.         declare curr1 cursor for
2786.           select TemperaturMinimum,kelas from tblIterasiK4;
2787.
2788.         declare curr2 cursor for
2789.           select TemperaturMaksimum,kelas from tblIterasiK4;
2790.
2791.         declare curr3 cursor for
2792.           select TemperaturRataRata,kelas from tblIterasiK4;
2793.
2794.         declare curr4 cursor for
2795.           select KelembapanRatarata,kelas from tblIterasiK4;
2796.
2797.         declare curr5 cursor for
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2798.           select CurahHujan,kelas from tblIterasiK4;
2799.
2800.         declare curr6 cursor for
2801.           select PenyinaranMatahari,kelas from tblIterasiK4;
2802.
2803.         declare curr7 cursor for
2804.           select KecepatanAnginMaksimum,kelas from tblIterasiK4;
2805.
2806.         declare curr9 cursor for
2807.           select KecepatanAnginRataRata,kelas from tblIterasiK4;
2808.
2809.
2810.         select count(*) into varTotal from tblIterasiK4;
2811.         select count(*) into vJumlahC1 from tblIterasiK4 where kelas
   = 'C1';
2812.
2813.         if (parameter = 'TemperaturMinimum') THEN
2814.           open curr1;
2815.             while i<>varTotal do
2816.               fetch curr1 into varVariable,varKelas;
2817.               if(varKelas = 'C1') THEN
2818.                 set varSum = varSum+varVariable;
2819.               end if;
2820.               set i=i+1;
2821.             end while;
2822.           close curr1;
2823.
2824.         elseif (parameter = 'TemperaturMaksimum') THEN
2825.           open curr2;
2826.             while i<>varTotal do
2827.               fetch curr2 into varVariable,varKelas;
2828.               if(varKelas = 'C1') THEN
2829.                 set varSum = varSum+varVariable;
2830.               end if;
2831.               set i=i+1;
2832.             end while;
2833.           close curr2;
2834.
2835.         elseif (parameter = 'TemperaturRataRata') THEN
2836.           open curr3;
2837.             while i<>varTotal do
2838.               fetch curr3 into varVariable,varKelas;
2839.               if(varKelas = 'C1') THEN
2840.                 set varSum = varSum+varVariable;
2841.               end if;
2842.               set i=i+1;
2843.             end while;
2844.           close curr3;
2845.
2846.         elseif (parameter = 'KelembapanRatarata') THEN
2847.           open curr4;
2848.             while i<>varTotal do
2849.               fetch curr4 into varVariable,varKelas;
2850.               if(varKelas = 'C1') THEN
2851.                 set varSum = varSum+varVariable;
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2852.              end if;
2853.              set i=i+1;
2854.            end while;
2855.          close curr4;
2856.
2857.        elseif (parameter = 'CurahHujan') THEN
2858.          open curr5;
2859.            while i<>varTotal do
2860.              fetch curr5 into varVariable,varKelas;
2861.              if(varKelas = 'C1') THEN
2862.                set varSum = varSum+varVariable;
2863.              end if;
2864.              set i=i+1;
2865.            end while;
2866.          close curr5;
2867.
2868.        elseif (parameter = 'PenyinaranMatahari') THEN
2869.          open curr6;
2870.            while i<>varTotal do
2871.              fetch curr6 into varVariable,varKelas;
2872.              if(varKelas = 'C1') THEN
2873.                set varSum = varSum+varVariable;
2874.              end if;
2875.              set i=i+1;
2876.            end while;
2877.          close curr6;
2878.
2879.        elseif (parameter = 'KecepatanAnginMaksimum') THEN
2880.          open curr7;
2881.            while i<>varTotal do
2882.              fetch curr7 into varVariable,varKelas;
2883.              if(varKelas = 'C1') THEN
2884.                set varSum = varSum+varVariable;
2885.              end if;
2886.              set i=i+1;
2887.            end while;
2888.          close curr7;
2889.
2890.        elseif (parameter = 'KecepatanAnginRataRata') THEN
2891.          open curr9;
2892.            while i<>varTotal do
2893.              fetch curr9 into varVariable,varKelas;
2894.              if(varKelas = 'C1') THEN
2895.                set varSum = varSum+varVariable;
2896.              end if;
2897.              set i=i+1;
2898.            end while;
2899.          close curr9;
2900.
2901.        end if;
2902.        set varSum = varSum/vJumlahC1;
2903.        return (varSum);
2904.      end //
2905.
2906.      delimiter ;
```

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2907.
2908.       delimiter //
2909.       create function hitungC2BaruK4(parameter varchar(50))
2910.       RETURNS double
2911.       BEGIN
2912.         declare i int default 0;
2913.         declare varTotal varchar(255);
2914.         declare varIterasiSebelum varchar(255);
2915.         declare varIterasiSesudah varchar(255);
2916.         declare varVariable double;
2917.         declare varKelas varchar(5);
2918.         declare vJumlahC2 int;
2919.         declare varSum double default 0;
2920.
2921.         declare curr1 cursor for
2922.           select TemperaturMinimum,kelas from tblIterasiK4;
2923.
2924.         declare curr2 cursor for
2925.           select TemperaturMaksimum,kelas from tblIterasiK4;
2926.
2927.       declare curr3 cursor for
2928.           select TemperaturRataRata,kelas from tblIterasiK4;
2929.
2930.         declare curr4 cursor for
2931.           select KelembapanRatarata,kelas from tblIterasiK4;
2932.
2933.         declare curr5 cursor for
2934.           select CurahHujan,kelas from tblIterasiK4;
2935.
2936.         declare curr6 cursor for
2937.           select PenyinaranMatahari,kelas from tblIterasiK4;
2938.
2939.         declare curr7 cursor for
2940.           select KecepatanAnginMaksimum,kelas from tblIterasiK4;
2941.
2942.         declare curr9 cursor for
2943.           select KecepatanAnginRataRata,kelas from tblIterasiK4;
2944.
2945.
2946.         select count(*) into varTotal from tblIterasiK4;
2947.         select count(*) into vJumlahC2 from tblIterasiK4 where kelas
   = 'C2';
2948.
2949.         if (parameter = 'TemperaturMinimum') THEN
2950.           open curr1;
2951.             while i<>varTotal do
2952.               fetch curr1 into varVariable,varKelas;
2953.               if(varKelas = 'C2') THEN
2954.                 set varSum = varSum+varVariable;
2955.               end if;
2956.               set i=i+1;
2957.             end while;
2958.           close curr1;
2959.
2960.         elseif (parameter = 'TemperaturMaksimum') THEN
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2961.           open curr2;
2962.             while i<>varTotal do
2963.               fetch curr2 into varVariable,varKelas;
2964.               if(varKelas = 'C2') THEN
2965.                 set varSum = varSum+varVariable;
2966.               end if;
2967.               set i=i+1;
2968.             end while;
2969.           close curr2;
2970.
2971.         elseif (parameter = 'TemperaturRataRata') THEN
2972.           open curr3;
2973.             while i<>varTotal do
2974.               fetch curr3 into varVariable,varKelas;
2975.               if(varKelas = 'C2') THEN
2976.                 set varSum = varSum+varVariable;
2977.               end if;
2978.               set i=i+1;
2979.             end while;
2980.           close curr3;
2981.
2982.         elseif (parameter = 'KelembapanRatarata') THEN
2983.           open curr4;
2984.             while i<>varTotal do
2985.               fetch curr4 into varVariable,varKelas;
2986.               if(varKelas = 'C2') THEN
2987.                 set varSum = varSum+varVariable;
2988.               end if;
2989.               set i=i+1;
2990.             end while;
2991.           close curr4;
2992.
2993.         elseif (parameter = 'CurahHujan') THEN
2994.           open curr5;
2995.             while i<>varTotal do
2996.               fetch curr5 into varVariable,varKelas;
2997.               if(varKelas = 'C2') THEN
2998.                 set varSum = varSum+varVariable;
2999.               end if;
3000.               set i=i+1;
3001.             end while;
3002.           close curr5;
3003.
3004.         elseif (parameter = 'PenyinaranMatahari') THEN
3005.           open curr6;
3006.             while i<>varTotal do
3007.               fetch curr6 into varVariable,varKelas;
3008.               if(varKelas = 'C2') THEN
3009.                 set varSum = varSum+varVariable;
3010.               end if;
3011.               set i=i+1;
3012.             end while;
3013.           close curr6;
3014.
3015.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
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3016.           open curr7;
3017.             while i<>varTotal do
3018.               fetch curr7 into varVariable,varKelas;
3019.               if(varKelas = 'C2') THEN
3020.                 set varSum = varSum+varVariable;
3021.               end if;
3022.               set i=i+1;
3023.             end while;
3024.           close curr7;
3025.
3026.         elseif (parameter = 'KecepatanAnginRataRata') THEN
3027.           open curr9;
3028.             while i<>varTotal do
3029.               fetch curr9 into varVariable,varKelas;
3030.               if(varKelas = 'C2') THEN
3031.                 set varSum = varSum+varVariable;
3032.               end if;
3033.               set i=i+1;
3034.             end while;
3035.           close curr9;
3036.
3037.         end if;
3038.         set varSum = varSum/vJumlahC2;
3039.         return (varSum);
3040.       end //
3041.
3042.       delimiter ;
3043.
3044.       delimiter //
3045.       create function hitungC3BaruK4(parameter varchar(50))
3046.       RETURNS double
3047.       BEGIN
3048.         declare i int default 0;
3049.         declare varTotal varchar(255);
3050.         declare varIterasiSebelum varchar(255);
3051.         declare varIterasiSesudah varchar(255);
3052.         declare varVariable double;
3053.         declare varKelas varchar(5);
3054.         declare vJumlahC2 int;
3055.         declare varSum double default 0;
3056.
3057.         declare curr1 cursor for
3058.           select TemperaturMinimum,kelas from tblIterasiK4;
3059.
3060.         declare curr2 cursor for
3061.           select TemperaturMaksimum,kelas from tblIterasiK4;
3062.
3063.         declare curr3 cursor for
3064.           select TemperaturRataRata,kelas from tblIterasiK4;
3065.
3066.         declare curr4 cursor for
3067.           select KelembapanRatarata,kelas from tblIterasiK4;
3068.
3069.         declare curr5 cursor for
3070.           select CurahHujan,kelas from tblIterasiK4;
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3071.
3072.          declare curr6 cursor for
3073.            select PenyinaranMatahari,kelas from tblIterasiK4;
3074.
3075.          declare curr7 cursor for
3076.            select KecepatanAnginMaksimum,kelas from tblIterasiK4;
3077.
3078.          declare curr9 cursor for
3079.            select KecepatanAnginRataRata,kelas from tblIterasiK4;
3080.
3081.
3082.          select count(*) into varTotal from tblIterasiK4;
3083.          select count(*) into vJumlahC2 from tblIterasiK4 where kelas
   = 'C3';
3084.
3085.          if (parameter = 'TemperaturMinimum') THEN
3086.            open curr1;
3087.              while i<>varTotal do
3088.                fetch curr1 into varVariable,varKelas;
3089.                if(varKelas = 'C3') THEN
3090.                  set varSum = varSum+varVariable;
3091.                end if;
3092.                set i=i+1;
3093.              end while;
3094.            close curr1;
3095.
3096.          elseif (parameter = 'TemperaturMaksimum') THEN
3097.            open curr2;
3098.              while i<>varTotal do
3099.                fetch curr2 into varVariable,varKelas;
3100.                if(varKelas = 'C3') THEN
3101.                  set varSum = varSum+varVariable;
3102.                end if;
3103.                set i=i+1;
3104.              end while;
3105.            close curr2;
3106.
3107.          elseif (parameter = 'TemperaturRataRata') THEN
3108.            open curr3;
3109.              while i<>varTotal do
3110.                fetch curr3 into varVariable,varKelas;
3111.                if(varKelas = 'C3') THEN
3112.                  set varSum = varSum+varVariable;
3113.                end if;
3114.                set i=i+1;
3115.              end while;
3116.            close curr3;
3117.
3118.          elseif (parameter = 'KelembapanRatarata') THEN
3119.            open curr4;
3120.              while i<>varTotal do
3121.                fetch curr4 into varVariable,varKelas;
3122.                if(varKelas = 'C3') THEN
3123.                  set varSum = varSum+varVariable;
3124.                end if;
```

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3125.               set i=i+1;
3126.             end while;
3127.           close curr4;
3128.
3129.         elseif (parameter = 'CurahHujan') THEN
3130.           open curr5;
3131.             while i<>varTotal do
3132.               fetch curr5 into varVariable,varKelas;
3133.               if(varKelas = 'C3') THEN
3134.                 set varSum = varSum+varVariable;
3135.               end if;
3136.               set i=i+1;
3137.             end while;
3138.           close curr5;
3139.
3140.         elseif (parameter = 'PenyinaranMatahari') THEN
3141.           open curr6;
3142.             while i<>varTotal do
3143.               fetch curr6 into varVariable,varKelas;
3144.               if(varKelas = 'C3') THEN
3145.                 set varSum = varSum+varVariable;
3146.               end if;
3147.               set i=i+1;
3148.             end while;
3149.           close curr6;
3150.
3151.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
3152.           open curr7;
3153.             while i<>varTotal do
3154.               fetch curr7 into varVariable,varKelas;
3155.               if(varKelas = 'C3') THEN
3156.                 set varSum = varSum+varVariable;
3157.               end if;
3158.               set i=i+1;
3159.             end while;
3160.           close curr7;
3161.
3162.         elseif (parameter = 'KecepatanAnginRataRata') THEN
3163.           open curr9;
3164.             while i<>varTotal do
3165.               fetch curr9 into varVariable,varKelas;
3166.               if(varKelas = 'C3') THEN
3167.                 set varSum = varSum+varVariable;
3168.               end if;
3169.               set i=i+1;
3170.             end while;
3171.           close curr9;
3172.
3173.         end if;
3174.         set varSum = varSum/vJumlahC2;
3175.         return (varSum);
3176.       end //
3177.
3178.       delimiter ;
3179.
```

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```
3180.       delimiter //
3181.       create function hitungC4BaruK4(parameter varchar(50))
3182.       RETURNS double
3183.       BEGIN
3184.         declare i int default 0;
3185.         declare varTotal varchar(255);
3186.         declare varIterasiSebelum varchar(255);
3187.         declare varIterasiSesudah varchar(255);
3188.         declare varVariable double;
3189.         declare varKelas varchar(5);
3190.         declare vJumlahC2 int;
3191.         declare varSum double default 0;
3192.
3193.         declare curr1 cursor for
3194.           select TemperaturMinimum,kelas from tblIterasiK4;
3195.
3196.         declare curr2 cursor for
3197.           select TemperaturMaksimum,kelas from tblIterasiK4;
3198.
3199.         declare curr3 cursor for
3200.           select TemperaturRataRata,kelas from tblIterasiK4;
3201.
3202.         declare curr4 cursor for
3203.           select KelembapanRatarata,kelas from tblIterasiK4;
3204.
3205.         declare curr5 cursor for
3206.           select CurahHujan,kelas from tblIterasiK4;
3207.
3208.         declare curr6 cursor for
3209.           select PenyinaranMatahari,kelas from tblIterasiK4;
3210.
3211.         declare curr7 cursor for
3212.           select KecepatanAnginMaksimum,kelas from tblIterasiK4;
3213.
3214.
3215.         declare curr9 cursor for
3216.           select KecepatanAnginRataRata,kelas from tblIterasiK4;
3217.
3218.
3219.         select count(*) into varTotal from tblIterasiK4;
3220.         select count(*) into vJumlahC2 from tblIterasiK4 where kelas
   = 'C4';
3221.
3222.         if (parameter = 'TemperaturMinimum') THEN
3223.           open curr1;
3224.             while i<>varTotal do
3225.               fetch curr1 into varVariable,varKelas;
3226.               if(varKelas = 'C4') THEN
3227.                 set varSum = varSum+varVariable;
3228.               end if;
3229.               set i=i+1;
3230.             end while;
3231.           close curr1;
3232.
3233.         elseif (parameter = 'TemperaturMaksimum') THEN
```

```
3234.           open curr2;
3235.             while i<>varTotal do
3236.               fetch curr2 into varVariable,varKelas;
3237.               if(varKelas = 'C4') THEN
3238.                 set varSum = varSum+varVariable;
3239.               end if;
3240.               set i=i+1;
3241.             end while;
3242.           close curr2;
3243.
3244.         elseif (parameter = 'TemperaturRataRata') THEN
3245.           open curr3;
3246.             while i<>varTotal do
3247.               fetch curr3 into varVariable,varKelas;
3248.               if(varKelas = 'C4') THEN
3249.                 set varSum = varSum+varVariable;
3250.               end if;
3251.               set i=i+1;
3252.             end while;
3253.           close curr3;
3254.
3255.         elseif (parameter = 'KelembapanRatarata') THEN
3256.           open curr4;
3257.             while i<>varTotal do
3258.               fetch curr4 into varVariable,varKelas;
3259.               if(varKelas = 'C4') THEN
3260.                 set varSum = varSum+varVariable;
3261.               end if;
3262.               set i=i+1;
3263.             end while;
3264.           close curr4;
3265.
3266.         elseif (parameter = 'CurahHujan') THEN
3267.           open curr5;
3268.             while i<>varTotal do
3269.               fetch curr5 into varVariable,varKelas;
3270.               if(varKelas = 'C4') THEN
3271.                 set varSum = varSum+varVariable;
3272.               end if;
3273.               set i=i+1;
3274.             end while;
3275.           close curr5;
3276.
3277.         elseif (parameter = 'PenyinaranMatahari') THEN
3278.           open curr6;
3279.             while i<>varTotal do
3280.               fetch curr6 into varVariable,varKelas;
3281.               if(varKelas = 'C4') THEN
3282.                 set varSum = varSum+varVariable;
3283.               end if;
3284.               set i=i+1;
3285.             end while;
3286.           close curr6;
3287.
3288.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
```

```
3289.           open curr7;
3290.             while i<>varTotal do
3291.               fetch curr7 into varVariable,varKelas;
3292.               if(varKelas = 'C4') THEN
3293.                 set varSum = varSum+varVariable;
3294.               end if;
3295.               set i=i+1;
3296.             end while;
3297.           close curr7;
3298.
3299.         elseif (parameter = 'KecepatanAnginRataRata') THEN
3300.           open curr9;
3301.             while i<>varTotal do
3302.               fetch curr9 into varVariable,varKelas;
3303.               if(varKelas = 'C4') THEN
3304.                 set varSum = varSum+varVariable;
3305.               end if;
3306.               set i=i+1;
3307.             end while;
3308.           close curr9;
3309.
3310.         end if;
3311.         set varSum = varSum/vJumlahC2;
3312.         return (varSum);
3313.       end //
3314.
3315.       delimiter ;
3316.
3317.       delimiter //
3318.       create procedure spWcss()
3319.       BEGIN
3320.         declare vSum double default 0;
3321.         declare vJarakC1S double;
3322.         declare vJarakC2S double;
3323.         declare vJarakC3S double;
3324.         declare vJarakC4S double;
3325.         declare varTotal double;
3326.         declare varSquare double;
3327.         declare varSumC1 double default 0;
3328.         declare varSumC2 double default 0;
3329.         declare varSumC3 double default 0;
3330.         declare varSumC4 double default 0;
3331.         declare varKelas1 varchar(5);
3332.         declare varKelas2 varchar(5);
3333.         declare varKelas3 varchar(5);
3334.         declare varKelas4 varchar(5);
3335.         declare varWcss double default 0;
3336.         declare i int default 0;
3337.
3338.         declare curr1 cursor for
3339.           select jarakC1,kelas from tblIterasiK4;
3340.
3341.         declare curr2 cursor for
3342.           select jarakC2,kelas from tblIterasiK4;
3343.
```

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3344.         declare curr3 cursor for
3345.           select jarakC3,kelas from tblIterasiK4;
3346.
3347.         declare curr4 cursor for
3348.           select jarakC4,kelas from tblIterasiK4;
3349.
3350.         select count(*) into varTotal from tblIterasiK4;
3351.
3352.         open curr1;
3353.         open curr2;
3354.         open curr3;
3355.         open curr4;
3356.         while (i <> varTotal) do
3357.           fetch curr1 into vJarakC1S,varKelas1;
3358.           fetch curr2 into vJarakC2S,varKelas2;
3359.           fetch curr3 into vJarakC3S,varKelas3;
3360.           fetch curr4 into vJarakC4S,varKelas4;
3361.           if (varKelas1='C1') THEN
3362.             set varSumC1 = varSumC1 + POWER(vJarakC1S,2);
3363.           end if;
3364.           if (varKelas2='C2') THEN
3365.             set varSumC2 = varSumC2 + POWER(vJarakC2S,2);
3366.           end if;
3367.           if (varKelas3='C3') THEN
3368.             set varSumC3 = varSumC3 + POWER(vJarakC3S,2);
3369.           end if;
3370.           if (varKelas4='C4') THEN
3371.             set varSumC4 = varSumC4 + POWER(vJarakC4S,2);
3372.           end if;
3373.           set i = i+1;
3374.         end while;
3375.         close curr1;
3376.         close curr2;
3377.         close curr3;
3378.         close curr4;
3379.         set varWcss = varSumC1 + varSumC2 + varSumC3 + varSumC4;
3380.         update tblWcss
3381.         set wcss = varwcss
3382.         where k = '4';
3383.       end //
3384.       delimiter ;
3385.
3386.       delimiter //
3387.       create procedure spSilhouetteK4()
3388.       BEGIN
3389.         declare i int default 0;
3390.         declare j int default 0;
3391.         declare k int default 0;
3392.         declare l int default 0;
3393.         declare varTotal int default 0;
3394.         declare varTanggal varchar(25);
3395.         declare varTempMin double;
3396.         declare varTempMaks double;
3397.         declare varTempRata double;
3398.         declare varCurahHujan double;
```

```
3399.         declare varKelembapanRata double;
3400.         declare varPenyinaranMatahari double;
3401.         declare varKecepatanAnginMaks double;
3402.         declare varArahangin double;
3403.         declare varKecepatanAnginRata double;
3404.         declare varTotaltblCentroid int default 0;
3405.         declare vJarakC1 double;
3406.         declare vJarakC2 double;
3407.         declare vJarakC3 double;
3408.         declare vJarakC4 double;
3409.         declare c11 double;
3410.         declare c12 double;
3411.         declare c13 double;
3412.         declare c14 double;
3413.         declare c15 double;
3414.         declare c16 double;
3415.         declare c17 double;
3416.         declare c18 double;
3417.         declare c19 double;
3418.         declare c21 double;
3419.         declare c22 double;
3420.         declare c23 double;
3421.         declare c24 double;
3422.         declare c25 double;
3423.         declare c26 double;
3424.         declare c27 double;
3425.         declare c28 double;
3426.         declare c29 double;
3427.         declare c31 double;
3428.         declare c32 double;
3429.         declare c33 double;
3430.         declare c34 double;
3431.         declare c35 double;
3432.         declare c36 double;
3433.         declare c37 double;
3434.         declare c38 double;
3435.         declare c39 double;
3436.         declare c41 double;
3437.         declare c42 double;
3438.         declare c43 double;
3439.         declare c44 double;
3440.         declare c45 double;
3441.         declare c46 double;
3442.         declare c47 double;
3443.         declare c48 double;
3444.         declare c49 double;
3445.
3446.         declare varTanggal2 varchar(25);
3447.         declare varTempMin2 double;
3448.         declare varTempMaks2 double;
3449.         declare varTempRata2 double;
3450.         declare varCurahHujan2 double;
3451.         declare varKelembapanRata2 double;
3452.         declare varPenyinaranMatahari2 double;
3453.         declare varKecepatanAnginMaks2 double;
```

```
3454.         declare varArahangin2 double;
3455.         declare varKecepatanAnginRata2 double;
3456.
3457.         declare varTanggal3 varchar(25);
3458.         declare varTempMin3 double;
3459.         declare varTempMaks3 double;
3460.         declare varTempRata3 double;
3461.         declare varCurahHujan3 double;
3462.         declare varKelembapanRata3 double;
3463.         declare varPenyinaranMatahari3 double;
3464.         declare varKecepatanAnginMaks3 double;
3465.         declare varArahangin3 double;
3466.         declare varKecepatanAnginRata3 double;
3467.
3468.         declare varKelas4 varchar(5);
3469.         declare varTanggal4 varchar(25);
3470.         declare varTempMin4 double;
3471.         declare varTempMaks4 double;
3472.         declare varTempRata4 double;
3473.         declare varCurahHujan4 double;
3474.         declare varKelembapanRata4 double;
3475.         declare varPenyinaranMatahari4 double;
3476.         declare varKecepatanAnginMaks4 double;
3477.         declare varArahangin4 double;
3478.         declare varKecepatanAnginRata4 double;
3479.
3480.         declare varTempMinC1 double;
3481.         declare varTempMaksC1 double;
3482.         declare varTempRataC1 double;
3483.         declare varCurahHujanC1 double;
3484.         declare varKelembapanRataC1 double;
3485.         declare varPenyinaranMatahariC1 double;
3486.         declare varKecepatanAnginMaksC1 double;
3487.         declare varArahanginC1 double;
3488.         declare varKecepatanAnginRataC1 double;
3489.
3490.         declare varTempMinC2 double;
3491.         declare varTempMaksC2 double;
3492.         declare varTempRataC2 double;
3493.         declare varCurahHujanC2 double;
3494.         declare varKelembapanRataC2 double;
3495.         declare varPenyinaranMatahariC2 double;
3496.         declare varKecepatanAnginMaksC2 double;
3497.         declare varArahanginC2 double;
3498.         declare varKecepatanAnginRataC2 double;
3499.
3500.         declare varTempMinC3 double;
3501.         declare varTempMaksC3 double;
3502.         declare varTempRataC3 double;
3503.         declare varCurahHujanC3 double;
3504.         declare varKelembapanRataC3 double;
3505.         declare varPenyinaranMatahariC3 double;
3506.         declare varKecepatanAnginMaksC3 double;
3507.         declare varArahanginC3 double;
3508.         declare varKecepatanAnginRataC3 double;
```

```
3509.
3510.         declare varTempMinC4 double;
3511.         declare varTempMaksC4 double;
3512.         declare varTempRataC4 double;
3513.         declare varCurahHujanC4 double;
3514.         declare varKelembapanRataC4 double;
3515.         declare varPenyinaranMatahariC4 double;
3516.         declare varKecepatanAnginMaksC4 double;
3517.         declare varArahanginC4 double;
3518.         declare varKecepatanAnginRataC4 double;
3519.
3520.         declare varKelas varchar(25);
3521.         declare varKelas2 varchar(25);
3522.         declare varKelas3 varchar(25);
3523.         declare varCsama varchar(5);
3524.         declare varTotalSesamaCluster int default 0;
3525.         declare varTotalClusterTerdekat int default 0;
3526.         declare varSumai double default 0;
3527.         declare varSumbi double default 0;
3528.         declare varCterdekat varchar(5);
3529.         declare varSilhouetteCoefficient double default 0;
3530.         declare varSilhouetteScore double default 0;
3531.
3532.         declare vJarakC1danC2 double;
3533.         declare vJarakC1danC3 double;
3534.         declare vJarakC1danC4 double;
3535.         declare vJarakC2danC1 double;
3536.         declare vJarakC2danC3 double;
3537.         declare vJarakC2danC4 double;
3538.         declare vJarakC3danC1 double;
3539.         declare vJarakC3danC2 double;
3540.         declare vJarakC3danC4 double;
3541.         declare vJarakC4danC1 double;
3542.         declare vJarakC4danC2 double;
3543.         declare vJarakC4danC3 double;
3544.
3545.         declare vJarakTerdekatC1 varchar(5);
3546.         declare vJarakTerdekatC2 varchar(5);
3547.         declare vJarakTerdekatC3 varchar(5);
3548.         declare vJarakTerdekatC4 varchar(5);
3549.
3550.         declare cHitung cursor for
3551.               select     kelas,TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK4;
3552.
3553.         declare curr1 cursor for
3554.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK4;
3555.
3556.         declare curr2 cursor for
3557.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
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   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK4
   where kelas = 'C1';
3558.
3559.          declare curr3 cursor for
3560.                select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK4
   where kelas = 'C2';
3561.
3562.          declare curr10 cursor for
3563.                select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK4
   where kelas = 'C3';
3564.
3565.          declare curr13 cursor for
3566.                select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK4
   where kelas = 'C4';
3567.
3568.          declare curr4 cursor for
3569.                select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK4;
3570.
3571.          declare curr5 cursor for
3572.                select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK4;
3573.
3574.          declare curr6 cursor for
3575.                select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK4;
3576.
3577.          declare curr7 cursor for
3578.                select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK4;
3579.
3580.          declare curr8 cursor for
3581.                select  jarakTerdekat  from  tblSimpanCentroidK4  where
   kelas = 'C1';
3582.
3583.          declare curr9 cursor for
3584.                select  jarakTerdekat  from  tblSimpanCentroidK4  where
   kelas = 'C2';
3585.
3586.          declare curr11 cursor for
3587.                select  jarakTerdekat  from  tblSimpanCentroidK4  where
   kelas = 'C3';
3588.
3589.          declare curr12 cursor for
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3590.               select  jarakTerdekat  from  tblSimpanCentroidK4  where
   kelas = 'C4';
3591.
3592.
3593.          open curr2;
3594.            fetch    curr2    into    varTempMinC1,    varTempMaksC1,
   varTempRataC1,           varKelembapanRataC1,           varCurahHujanC1,
   varPenyinaranMatahariC1,                          varKecepatanAnginMaksC1,
   varKecepatanAnginRataC1;
3595.          close curr2;
3596.
3597.          open curr3;
3598.            fetch    curr3    into    varTempMinC2,    varTempMaksC2,
   varTempRataC2,           varKelembapanRataC2,           varCurahHujanC2,
   varPenyinaranMatahariC2,                          varKecepatanAnginMaksC2,
   varKecepatanAnginRataC2;
3599.          close curr3;
3600.
3601.          open curr10;
3602.            fetch    curr10    into    varTempMinC3,    varTempMaksC3,
   varTempRataC3,           varKelembapanRataC3,           varCurahHujanC3,
   varPenyinaranMatahariC3,                          varKecepatanAnginMaksC3,
   varKecepatanAnginRataC3;
3603.          close curr10;
3604.
3605.          open curr13;
3606.            fetch    curr13    into    varTempMinC4,    varTempMaksC4,
   varTempRataC4,           varKelembapanRataC4,           varCurahHujanC4,
   varPenyinaranMatahariC4,                          varKecepatanAnginMaksC4,
   varKecepatanAnginRataC4;
3607.          close curr13;
3608.
3609.
3610.          select    count(*)    into    varTotaltblCentroid    from
   tblSimpanCentroidK4;
3611.
3612.          open cHitung;
3613.          while (1 <> varTotaltblCentroid) do
3614.            fetch  cHitung  into  varKelas4,varTempMin4,  varTempMaks4,
   varTempRata4,            varKelembapanRata4,            varCurahHujan4,
   varPenyinaranMatahari4, varKecepatanAnginMaks4, varKecepatanAnginRata4;
3615.            set vJarakC1 = jarakEuclidian(
3616.                    varTempMinC1,
3617.                    varTempMaksC1,
3618.                    varTempRataC1,
3619.                    varKelembapanRataC1,
3620.                    varCurahHujanC1,
3621.                    varPenyinaranMatahariC1,
3622.                    varKecepatanAnginMaksC1,
3623.                    varKecepatanAnginRataC1,
3624.                    varTempMin4,
3625.                    varTempMaks4,
3626.                    varTempRata4,
3627.                    varKelembapanRata4,
3628.                    varCurahHujan4,
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                varPenyinaranMatahari4,
                varKecepatanAnginMaks4,
                varKecepatanAnginRata4
            );
        set vJarakC2 = jarakEuclidian(
                varTempMinC2,
                varTempMaksC2,
                varTempRataC2,
                varKelembapanRataC2,
                varCurahHujanC2,
                varPenyinaranMatahariC2,
                varKecepatanAnginMaksC2,
                varKecepatanAnginRataC2,
                varTempMin4,
                varTempMaks4,
                varTempRata4,
                varKelembapanRata4,
                varCurahHujan4,
                varPenyinaranMatahari4,
                varKecepatanAnginMaks4,
                varKecepatanAnginRata4
            );
        set vJarakC3 = jarakEuclidian(
                varTempMinC3,
                varTempMaksC3,
                varTempRataC3,
                varKelembapanRataC3,
                varCurahHujanC3,
                varPenyinaranMatahariC3,
                varKecepatanAnginMaksC3,
                varKecepatanAnginRataC3,
                varTempMin4,
                varTempMaks4,
                varTempRata4,
                varKelembapanRata4,
                varCurahHujan4,
                varPenyinaranMatahari4,
                varKecepatanAnginMaks4,
                varKecepatanAnginRata4
            );
        set vJarakC4 = jarakEuclidian(
                varTempMinC4,
                varTempMaksC4,
                varTempRataC4,
                varKelembapanRataC4,
                varCurahHujanC4,
                varPenyinaranMatahariC4,
                varKecepatanAnginMaksC4,
                varKecepatanAnginRataC4,
                varTempMin4,
                varTempMaks4,
                varTempRata4,
                varKelembapanRata4,
                varCurahHujan4,
                varPenyinaranMatahari4,
```

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3684.                   varKecepatanAnginMaks4,
3685.                   varKecepatanAnginRata4
3686.                 );
3687.                 update tblSimpanCentroidK4 set jarakC1 = vJarakC1,
   jarakC2 = vJarakC2, jarakC3 = vJarakC3, jarakC4 = vJarakC4 where kelas =
   varKelas4;
3688.           set l=l+1;
3689.         end while;
3690.         close cHitung;
3691.
3692.         select              jarakC2,jarakC3,jarakC4              into
   vJarakC1danC2,vJarakC1danC3,vJarakC1danC4 from tblSimpanCentroidK4 where
   kelas = 'C1';
3693.         select              jarakC1,jarakC3,jarakC4              into
   vJarakC2danC1,vJarakC2danC3,vJarakC2danC4 from tblSimpanCentroidK4 where
   kelas = 'C2';
3694.         select              jarakC1,jarakC2,jarakC4              into
   vJarakC3danC1,vJarakC3danC2,vJarakC3danC4 from tblSimpanCentroidK4 where
   kelas = 'C3';
3695.         select              jarakC1,jarakC2,jarakC3              into
   vJarakC4danC1,vJarakC4danC2,vJarakC4danC3 from tblSimpanCentroidK4 where
   kelas = 'C4';
3696.
3697.         if                (vJarakC1danC2<vJarakC1danC3               &&
   vJarakC1danC2<vJarakC1danC4) then
3698.           update tblSimpanCentroidK4
3699.           set jarakTerdekat='C2'
3700.           where kelas = 'C1';
3701.         elseif  (vJarakC1danC3  <  vJarakC1danC2  &&  vJarakC1danC3  <
   vJarakC1danC4) then
3702.           update tblSimpanCentroidK4
3703.           set jarakTerdekat='C3'
3704.           where kelas = 'C1';
3705.         elseif  (vJarakC1danC4  <  vJarakC1danC2  &&  vJarakC1danC4  <
   vJarakC1danC3) then
3706.           update tblSimpanCentroidK4
3707.           set jarakTerdekat='C4'
3708.           where kelas = 'C1';
3709.         end if;
3710.
3711.         if                (vJarakC2danC1<vJarakC2danC3               &&
   vJarakC2danC1<vJarakC2danC4) then
3712.           update tblSimpanCentroidK4
3713.           set jarakTerdekat='C1'
3714.           where kelas = 'C2';
3715.         elseif  (vJarakC2danC3  <  vJarakC2danC1  &&  vJarakC2danC3  <
   vJarakC2danC4) then
3716.           update tblSimpanCentroidK4
3717.           set jarakTerdekat='C3'
3718.           where kelas = 'C2';
3719.         elseif  (vJarakC2danC4  <  vJarakC2danC1  &&  vJarakC2danC4  <
   vJarakC2danC3) then
3720.           update tblSimpanCentroidK4
3721.           set jarakTerdekat='C4'
3722.           where kelas = 'C2';
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3723.          end if;
3724.
3725.          if               (vJarakC3danC1<vJarakC3danC2               &&
   vJarakC3danC1<vJarakC3danC4) then
3726.            update tblSimpanCentroidK4
3727.            set jarakTerdekat='C1'
3728.            where kelas = 'C3';
3729.          elseif  (vJarakC3danC2  <  vJarakC3danC1  &&  vJarakC3danC2  <
   vJarakC3danC4) then
3730.            update tblSimpanCentroidK4
3731.            set jarakTerdekat='C2'
3732.            where kelas = 'C3';
3733.          elseif  (vJarakC3danC4  <  vJarakC3danC1  &&  vJarakC3danC4  <
   vJarakC3danC2) then
3734.            update tblSimpanCentroidK4
3735.            set jarakTerdekat='C4'
3736.            where kelas = 'C3';
3737.          end if;
3738.
3739.          if               (vJarakC4danC1<vJarakC4danC2               &&
   vJarakC4danC1<vJarakC4danC3) then
3740.            update tblSimpanCentroidK4
3741.            set jarakTerdekat='C1'
3742.            where kelas = 'C4';
3743.          elseif  (vJarakC4danC2  <  vJarakC4danC1  &&  vJarakC4danC2  <
   vJarakC4danC3) then
3744.            update tblSimpanCentroidK4
3745.            set jarakTerdekat='C2'
3746.            where kelas = 'C4';
3747.          elseif  (vJarakC4danC3  <  vJarakC4danC1  &&  vJarakC4danC3  <
   vJarakC4danC2) then
3748.            update tblSimpanCentroidK4
3749.            set jarakTerdekat='C3'
3750.            where kelas = 'C4';
3751.          end if;
3752.
3753.
3754.          open curr8;
3755.            fetch curr8 into vJarakTerdekatC1;
3756.          close curr8;
3757.
3758.          open curr9;
3759.            fetch curr9 into vJarakTerdekatC2;
3760.          close curr9;
3761.
3762.          open curr11;
3763.            fetch curr11 into vJarakTerdekatC3;
3764.          close curr11;
3765.
3766.          open curr12;
3767.            fetch curr12 into vJarakTerdekatC4;
3768.          close curr12;
3769.
3770.          select count(*) into varTotal from tblIterasiK4;
3771.
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3772.          open curr1;
3773.          -- looping data point
3774.          while (i<>varTotal) do
3775.            fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, varKelas;
3776.            set j=0;
3777.            set k=0;
3778.            set varSumai = 0;
3779.            set varSumbi = 0;
3780.            set varTotalSesamaCluster = 0;
3781.            set varTotalClusterTerdekat = 0;
3782.            if (varKelas = 'C1') then
3783.              set varCterdekat = vJarakTerdekatC1;
3784.            elseif (varKelas = 'C2') then
3785.              set varCterdekat = vJarakTerdekatC2;
3786.            elseif (varKelas = 'C3') then
3787.              set varCterdekat = vJarakTerdekatC3;
3788.            elseif (varKelas = 'C4') then
3789.              set varCterdekat = vJarakTerdekatC4;
3790.            end if;
3791.            open curr5;
3792.            open curr6;
3793.            -- looping menghitung data a(i) dan b(i) pada tiap data
   point
3794.              while (j<>varTotal) do
3795.                -- menghitung a(i)
3796.                fetch curr5 into varTanggal2, varTempMin2,
   varTempMaks2, varTempRata2, varKelembapanRata2, varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2,
   varKelas2;
3797.
3798.                if (varTanggal <> varTanggal2) then
3799.                  if(varKelas = varKelas2) then
3800.                    set varSumai = varSumai + jarakEuclidian(
3801.                              varTempMin, varTempMaks, varTempRata,
   varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
3802.                              varTempMin2, varTempMaks2, varTempRata2,
   varKelembapanRata2, varCurahHujan2, varPenyinaranMatahari2,
   varKecepatanAnginMaks2, varKecepatanAnginRata2
3803.                             );
3804.                    set varTotalSesamaCluster = varTotalSesamaCluster +
   1;
3805.                  -- menghitung b(i)
3806.                  elseif(varKelas <> varKelas2 && varKelas2 =
   varCterdekat ) then
3807.                    while ( k <> varTotal) do
3808.                      fetch curr6 into varTanggal3, varTempMin3,
   varTempMaks3, varTempRata3, varKelembapanRata3, varCurahHujan3,
   varPenyinaranMatahari3, varKecepatanAnginMaks3, varKecepatanAnginRata3,
   varKelas3;
3809.                        if (varKelas3 = varCterdekat ) then
3810.                          set varTotalClusterTerdekat =
   varTotalClusterTerdekat + 1;
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3811.                       end if;
3812.                     set k = k+1;
3813.                   end while;
3814.                   set varSumbi = varSumbi + jarakEuclidian(
3815.                                           varTempMin,       varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
3816.                                           varTempMin2,     varTempMaks2,
   varTempRata2,           varKelembapanRata2,           varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2
3817.                                         );
3818.                 end if;
3819.
3820.               end if;
3821.               -- menghitung b(i)
3822.
3823.               set j=j+1;
3824.             end while;
3825.             close curr5;
3826.             close curr6;
3827.             set varSumai = varSumai / varTotalSesamaCluster;
3828.             set varSumbi = varSumbi / varTotalClusterTerdekat;
3829.             if (varSumai is NULL or '') then
3830.               set varSumai = 0;
3831.               set varTotalSesamaCluster = 0;
3832.             end if;
3833.             if (varSumbi is NULL or '') then
3834.               set varSumbi = 0;
3835.               set varTotalClusterTerdekat = 0;
3836.             end if;
3837.             set    varSilhouetteCoefficient    =    (varSumbi    -
   varSumai)/greatest(varSumbi,varSumai);
3838.             set   varSilhouetteScore   =   varSilhouetteScore   +
   varSilhouetteCoefficient;
3839.             set i=i+1;
3840.         end while;
3841.         close curr1;
3842.         set varSilhouetteScore = varSilhouetteScore / varTotal;
3843.         update tblSilhouette
3844.         set silhouetteScore = varSilhouetteScore
3845.         where kluster = 4;
3846.       end//
3847.
3848.       delimiter ;
3849.
3850.       -- Kluster 5
3851.
3852.       delimiter //
3853.       create procedure spIterasiK5(
3854.           c11 double,
3855.           c12 double,
3856.           c13 double,
3857.           c14 double,
3858.           c15 double,
3859.           c16 double,
```

```
3860.           c17 double,
3861.           c18 double,
3862.           c21 double,
3863.           c22 double,
3864.           c23 double,
3865.           c24 double,
3866.           c25 double,
3867.           c26 double,
3868.           c27 double,
3869.           c28 double,
3870.           c31 double,
3871.           c32 double,
3872.           c33 double,
3873.           c34 double,
3874.           c35 double,
3875.           c36 double,
3876.           c37 double,
3877.           c38 double,
3878.           c41 double,
3879.           c42 double,
3880.           c43 double,
3881.           c44 double,
3882.           c45 double,
3883.           c46 double,
3884.           c47 double,
3885.           c48 double,
3886.           c51 double,
3887.           c52 double,
3888.           c53 double,
3889.           c54 double,
3890.           c55 double,
3891.           c56 double,
3892.           c57 double,
3893.           c58 double
3894.         )
3895.           begin
3896.             declare i int default 0;
3897.             declare varTotal int default 0;
3898.             -- declare vC1 decimal(8,2);
3899.             -- declare vC2 decimal(8,2);
3900.             -- declare vbarang varchar(5);
3901.             declare varTempMin double;
3902.             declare varTempMaks double;
3903.             declare varTempRata double;
3904.             declare varCurahHujan double;
3905.             declare varKelembapanRata double;
3906.             declare varPenyinaranMatahari double;
3907.             declare varKecepatanAnginMaks double;
3908.             declare varArahangin double;
3909.             declare varKecepatanAnginRata double;
3910.             declare vJarakC1 double;
3911.             declare vJarakC2 double;
3912.             declare vJarakC3 double;
3913.             declare vJarakC4 double;
3914.             declare vJarakC5 double;
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3915.             declare varTanggal varchar(255);
3916.             declare varCektanggal double;
3917.
3918.
3919.             declare cHitung cursor for
3920.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblIterasiK5;
3921.
3922.
3923.             select count(*) into varTotal from tblIterasiK5;
3924.             open cHitung;
3925.             while i<>varTotal do
3926.                 fetch    cHitung    into    varTanggal,    varTempMin,
   varTempMaks,     varTempRata,     varKelembapanRata,     varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata;
3927.                 set vJarakC1 = jarakEuclidian(
3928.                   c11,
3929.                   c12,
3930.                   c13,
3931.                   c14,
3932.                   c15,
3933.                   c16,
3934.                   c17,
3935.                   c18,
3936.                   varTempMin,
3937.                   varTempMaks,
3938.                   varTempRata,
3939.                   varKelembapanRata,
3940.                   varCurahHujan,
3941.                   varPenyinaranMatahari,
3942.                   varKecepatanAnginMaks,
3943.                   varKecepatanAnginRata
3944.                 );
3945.                 -- select vJarakC1;
3946.                 set vJarakC2 = jarakEuclidian(
3947.                   c21,
3948.                   c22,
3949.                   c23,
3950.                   c24,
3951.                   c25,
3952.                   c26,
3953.                   c27,
3954.                   c28,
3955.                   varTempMin,
3956.                   varTempMaks,
3957.                   varTempRata,
3958.                   varKelembapanRata,
3959.                   varCurahHujan,
3960.                   varPenyinaranMatahari,
3961.                   varKecepatanAnginMaks,
3962.                   varKecepatanAnginRata
3963.                 );
3964.                 set vJarakC3 = jarakEuclidian(
3965.                   c31,
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3966.                   c32,
3967.                   c33,
3968.                   c34,
3969.                   c35,
3970.                   c36,
3971.                   c37,
3972.                   c38,
3973.                   varTempMin,
3974.                   varTempMaks,
3975.                   varTempRata,
3976.                   varKelembapanRata,
3977.                   varCurahHujan,
3978.                   varPenyinaranMatahari,
3979.                   varKecepatanAnginMaks,
3980.                   varKecepatanAnginRata
3981.                 );
3982.                 set vJarakC4 = jarakEuclidian(
3983.                   c41,
3984.                   c42,
3985.                   c43,
3986.                   c44,
3987.                   c45,
3988.                   c46,
3989.                   c47,
3990.                   c48,
3991.                   varTempMin,
3992.                   varTempMaks,
3993.                   varTempRata,
3994.                   varKelembapanRata,
3995.                   varCurahHujan,
3996.                   varPenyinaranMatahari,
3997.                   varKecepatanAnginMaks,
3998.                   varKecepatanAnginRata
3999.                 );
4000.                 set vJarakC5 = jarakEuclidian(
4001.                   c51,
4002.                   c52,
4003.                   c53,
4004.                   c54,
4005.                   c55,
4006.                   c56,
4007.                   c57,
4008.                   c58,
4009.                   varTempMin,
4010.                   varTempMaks,
4011.                   varTempRata,
4012.                   varKelembapanRata,
4013.                   varCurahHujan,
4014.                   varPenyinaranMatahari,
4015.                   varKecepatanAnginMaks,
4016.                   varKecepatanAnginRata
4017.                 );
4018.
4019.
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4020.                 update tblIterasiK5 set jarakC1 = vJarakC1 where
   tanggal=varTanggal;
4021.                 update tblIterasiK5 set jarakC2 = vJarakC2 where
   tanggal=varTanggal;
4022.                 update tblIterasiK5 set jarakC3 = vJarakC3 where
   tanggal=varTanggal;
4023.                 update tblIterasiK5 set jarakC4 = vJarakC4 where
   tanggal=varTanggal;
4024.                 update tblIterasiK5 set jarakC5 = vJarakC5 where
   tanggal=varTanggal;
4025.
4026.                   if(vJarakC1<vJarakC2   &&   vJarakC1<vJarakC3   &&
   vJarakC1<vJarakC4 && vJarakC1<vJarakC5) then
4027.                     update tblIterasiK5 set kelas = 'C1' where
   tanggal=varTanggal;
4028.                   elseif (vJarakC2<vJarakC1 && vJarakC2<vJarakC3 &&
   vJarakC2<vJarakC4 && vJarakC2<vJarakC5) then
4029.                     update tblIterasiK5 set kelas = 'C2' where
   tanggal=varTanggal;
4030.                   elseif (vJarakC3<vJarakC1 && vJarakC3<vJarakC2 &&
   vJarakC3<vJarakC4 && vJarakC3<vJarakC5) then
4031.                     update tblIterasiK5 set kelas = 'C3' where
   tanggal=varTanggal;
4032.                   elseif (vJarakC4<vJarakC1 && vJarakC4<vJarakC2 &&
   vJarakC4<vJarakC3 && vJarakC4<vJarakC5) then
4033.                     update tblIterasiK5 set kelas = 'C4' where
   tanggal=varTanggal;
4034.                   elseif (vJarakC5<vJarakC1 && vJarakC5<vJarakC2 &&
   vJarakC5<vJarakC3 && vJarakC5<vJarakC4) then
4035.                     update tblIterasiK5 set kelas = 'C5' where
   tanggal=varTanggal;
4036.                   end if;
4037.                 set i=i+1;
4038.               end while;
4039.               close cHitung;
4040.             end //
4041.
4042.       delimiter ;
4043.
4044.       delimiter //
4045.       create procedure cekIterasiK5()
4046.         begin
4047.           declare countIterasi int default 0;
4048.           declare varCtbl1 varchar(5);
4049.           declare varCtbl2 varchar(5);
4050.           declare i int default 0;
4051.           declare counterCount int default 0;
4052.           declare varTotal varchar(255);
4053.           declare varIterasiSebelum varchar(255);
4054.           declare varIterasiSesudah varchar(255);
4055.           declare varTempMin double;
4056.           declare varTempMaks double;
4057.           declare varTempRata double;
4058.           declare varCurahHujan double;
4059.           declare varKelembapanRata double;
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4060.           declare varPenyinaranMatahari double;
4061.           declare varKecepatanAnginMaks double;
4062.           declare varArahangin double;
4063.           declare varKecepatanAnginRata double;
4064.           declare vJarakC1 double;
4065.           declare vJarakC2 double;
4066.           declare vJarakC3 double;
4067.           declare vJarakC4 double;
4068.           declare varKelas varchar(5);
4069.           declare varTanggal varchar(255);
4070.
4071.           declare curr1 cursor for
4072.             select tanggal, TemperaturMinimum, TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, jarakC1, jarakC2,
   jarakC3, jarakC4, kelas from tblIterasiK5;
4073.
4074.           select count(*) into varTotal from tblIterasiK5;
4075.
4076.           loopIterasi: WHILE (counterCount <> 1) do
4077.             open curr1;
4078.             while i<>varTotal do
4079.               fetch curr1 into varTanggal, varTempMin, varTempMaks,
   varTempRata, varKelembapanRata, varCurahHujan, varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, vJarakC1, vJarakC2,
   vJarakC3, vJarakC4, varKelas;
4080.               insert into tblsimpanTemporaryK5 values (varTanggal,
   varTempMin, varTempMaks, varTempRata, varKelembapanRata, varCurahHujan,
   varPenyinaranMatahari, varKecepatanAnginMaks, varKecepatanAnginRata,
   vJarakC1, vJarakC2, vJarakC3, vJarakC4, varKelas);
4081.               set i=i+1;
4082.             end while;
4083.             close curr1;
4084.             set i=0;
4085.
4086.             select hitungC1BaruK5('TemperaturMinimum') into @c1k5a;
4087.             select hitungC1BaruK5('TemperaturMaksimum') into @c1k5b;
4088.             select hitungC1BaruK5('TemperaturRataRata') into @c1k5c;
4089.             select hitungC1BaruK5('KelembapanRatarata') into @c1k5d;
4090.             select hitungC1BaruK5('CurahHujan') into @c1k5e;
4091.             select hitungC1BaruK5('PenyinaranMatahari') into @c1k5f;
4092.             select   hitungC1BaruK5('KecepatanAnginMaksimum')   into
   @c1k5g;
4093.             select   hitungC1BaruK5('KecepatanAnginRataRata')   into
   @c1k5i;
4094.
4095.             select hitungC2BaruK5('TemperaturMinimum') into @c2k5a;
4096.             select hitungC2BaruK5('TemperaturMaksimum') into @c2k5b;
4097.             select hitungC2BaruK5('TemperaturRataRata') into @c2k5c;
4098.             select hitungC2BaruK5('KelembapanRatarata') into @c2k5d;
4099.             select hitungC2BaruK5('CurahHujan') into @c2k5e;
4100.             select hitungC2BaruK5('PenyinaranMatahari') into @c2k5f;
4101.             select   hitungC2BaruK5('KecepatanAnginMaksimum')   into
   @c2k5g;
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4102.              select   hitungC2BaruK5('KecepatanAnginRataRata')   into
   @c2k5i;
4103.
4104.              select hitungC3BaruK5('TemperaturMinimum') into @c3k5a;
4105.              select hitungC3BaruK5('TemperaturMaksimum') into @c3k5b;
4106.              select hitungC3BaruK5('TemperaturRataRata') into @c3k5c;
4107.              select hitungC3BaruK5('KelembapanRatarata') into @c3k5d;
4108.              select hitungC3BaruK5('CurahHujan') into @c3k5e;
4109.              select hitungC3BaruK5('PenyinaranMatahari') into @c3k5f;
4110.              select   hitungC3BaruK5('KecepatanAnginMaksimum')   into
   @c3k5g;
4111.              select   hitungC3BaruK5('KecepatanAnginRataRata')   into
   @c3k5i;
4112.
4113.              select hitungC4BaruK5('TemperaturMinimum') into @c4k5a;
4114.              select hitungC4BaruK5('TemperaturMaksimum') into @c4k5b;
4115.              select hitungC4BaruK5('TemperaturRataRata') into @c4k5c;
4116.              select hitungC4BaruK5('KelembapanRatarata') into @c4k5d;
4117.              select hitungC4BaruK5('CurahHujan') into @c4k5e;
4118.              select hitungC4BaruK5('PenyinaranMatahari') into @c4k5f;
4119.              select   hitungC4BaruK5('KecepatanAnginMaksimum')   into
   @c4k5g;
4120.              select   hitungC4BaruK5('KecepatanAnginRataRata')   into
   @c4k5i;
4121.
4122.              select hitungC4BaruK5('TemperaturMinimum') into @c5k5a;
4123.              select hitungC4BaruK5('TemperaturMaksimum') into @c5k5b;
4124.              select hitungC4BaruK5('TemperaturRataRata') into @c5k5c;
4125.              select hitungC4BaruK5('KelembapanRatarata') into @c5k5d;
4126.              select hitungC4BaruK5('CurahHujan') into @c5k5e;
4127.              select hitungC4BaruK5('PenyinaranMatahari') into @c5k5f;
4128.              select   hitungC4BaruK5('KecepatanAnginMaksimum')   into
   @c5k5g;
4129.              select   hitungC4BaruK5('KecepatanAnginRataRata')   into
   @c5k5i;
4130.
4131.              call spIterasiK5(@c1k5a, @c1k5b, @c1k5c, @c1k5d, @c1k5e,
   @c1k5f, @c1k5g, @c1k5i,@c2k5a, @c2k5b, @c2k5c, @c2k5d, @c2k5e, @c2k5f,
   @c2k5g, @c2k5i, @c3k5a, @c3k5b, @c3k5c, @c3k5d, @c3k5e, @c3k5f, @c3k5g,
   @c3k5i, @c4k5a, @c4k5b, @c4k5c, @c4k5d, @c4k5e, @c4k5f, @c4k5g, @c4k5i,
   @c5k5a, @c5k5b, @c5k5c, @c5k5d, @c5k5e, @c5k5f, @c5k5g, @c5k5i);
4132.
4133.              select  group_concat(kelas)  into  varIterasiSesudah  from
   tblIterasiK5;
4134.              select  group_concat(kelas)  into  varIterasiSebelum  from
   tblsimpanTemporaryK5;
4135.
4136.              set countIterasi = countIterasi + 1;
4137.              if (varIterasiSebelum = varIterasiSesudah) then
4138.                LEAVE loopIterasi;
4139.              end if;
4140.              delete from tblsimpanTemporaryK5;
4141.
4142.            end while loopIterasi;
4143.
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4144.           update tblCountIterasi
4145.             set jumlahIterasi = countIterasi
4146.           where kluster = 5;
4147.
4148.           -- select @c1k4a, @c1k4b, @c1k4c, @c1k4d, @c1k4e, @c1k4f,
   @c1k4g, @c1k4h, @c1k4i,@c2k4a, @c2k4b, @c2k4c, @c2k4d, @c2k4e, @c2k4f,
   @c2k4g, @c2k4h, @c2k4i, @c3k4a, @c3k4b, @c3k4c, @c3k4d, @c3k4e, @c3k4f,
   @c3k4g, @c3k4h, @c3k4i, @c4k4a, @c4k4b, @c4k4c, @c4k4d, @c4k4e, @c4k4f,
   @c4k4g, @c4k4h, @c4k4i;
4149.           insert       into       tblSimpanCentroidK5       (kelas,
   TemperaturMinimum,TemperaturMaksimum,               TemperaturRataRata,
   KelembapanRatarata,           CurahHujan,           PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata) values
4150.           ('C1',@c1k5a,  @c1k5b,  @c1k5c,  @c1k5d,  @c1k5e,  @c1k5f,
   @c1k5g, @c1k5i),
4151.           ('C2',@c2k5a,  @c2k5b,  @c2k5c,  @c2k5d,  @c2k5e,  @c2k5f,
   @c2k5g, @c2k5i),
4152.           ('C3',@c3k5a,  @c3k5b,  @c3k5c,  @c3k5d,  @c3k5e,  @c3k5f,
   @c3k5g, @c3k5i),
4153.           ('C4',@c4k5a,  @c4k5b,  @c4k5c,  @c4k5d,  @c4k5e,  @c4k5f,
   @c4k5g, @c4k5i),
4154.           ('C5',@c5k5a,  @c5k5b,  @c5k5c,  @c5k5d,  @c5k5e,  @c5k5f,
   @c5k5g, @c5k5i);
4155.         end //
4156.
4157.       delimiter ;
4158.
4159.       delimiter //
4160.       create function hitungC1BaruK5(parameter varchar(50))
4161.       RETURNS double
4162.       BEGIN
4163.         declare i int default 0;
4164.         declare varTotal varchar(255);
4165.         declare varIterasiSebelum varchar(255);
4166.         declare varIterasiSesudah varchar(255);
4167.         declare varVariable double;
4168.         declare varKelas varchar(5);
4169.         declare vJumlahC1 int;
4170.         declare varSum double default 0;
4171.
4172.         declare curr1 cursor for
4173.           select TemperaturMinimum,kelas from tblIterasiK5;
4174.
4175.         declare curr2 cursor for
4176.           select TemperaturMaksimum,kelas from tblIterasiK5;
4177.
4178.         declare curr3 cursor for
4179.           select TemperaturRataRata,kelas from tblIterasiK5;
4180.
4181.         declare curr4 cursor for
4182.           select KelembapanRatarata,kelas from tblIterasiK5;
4183.
4184.         declare curr5 cursor for
4185.           select CurahHujan,kelas from tblIterasiK5;
4186.
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4187.          declare curr6 cursor for
4188.            select PenyinaranMatahari,kelas from tblIterasiK5;
4189.
4190.          declare curr7 cursor for
4191.            select KecepatanAnginMaksimum,kelas from tblIterasiK5;
4192.
4193.          declare curr9 cursor for
4194.            select KecepatanAnginRataRata,kelas from tblIterasiK5;
4195.
4196.
4197.          select count(*) into varTotal from tblIterasiK5;
4198.          select count(*) into vJumlahC1 from tblIterasiK5 where kelas
   = 'C1';
4199.
4200.          if (parameter = 'TemperaturMinimum') THEN
4201.            open curr1;
4202.              while i<>varTotal do
4203.                fetch curr1 into varVariable,varKelas;
4204.                if(varKelas = 'C1') THEN
4205.                  set varSum = varSum+varVariable;
4206.                end if;
4207.                set i=i+1;
4208.              end while;
4209.            close curr1;
4210.
4211.          elseif (parameter = 'TemperaturMaksimum') THEN
4212.            open curr2;
4213.              while i<>varTotal do
4214.                fetch curr2 into varVariable,varKelas;
4215.                if(varKelas = 'C1') THEN
4216.                  set varSum = varSum+varVariable;
4217.                end if;
4218.                set i=i+1;
4219.              end while;
4220.            close curr2;
4221.
4222.          elseif (parameter = 'TemperaturRataRata') THEN
4223.            open curr3;
4224.              while i<>varTotal do
4225.                fetch curr3 into varVariable,varKelas;
4226.                if(varKelas = 'C1') THEN
4227.                  set varSum = varSum+varVariable;
4228.                end if;
4229.                set i=i+1;
4230.              end while;
4231.            close curr3;
4232.
4233.          elseif (parameter = 'KelembapanRatarata') THEN
4234.            open curr4;
4235.              while i<>varTotal do
4236.                fetch curr4 into varVariable,varKelas;
4237.                if(varKelas = 'C1') THEN
4238.                  set varSum = varSum+varVariable;
4239.                end if;
4240.                set i=i+1;
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4241.             end while;
4242.           close curr4;
4243.
4244.         elseif (parameter = 'CurahHujan') THEN
4245.           open curr5;
4246.             while i<>varTotal do
4247.               fetch curr5 into varVariable,varKelas;
4248.               if(varKelas = 'C1') THEN
4249.                 set varSum = varSum+varVariable;
4250.               end if;
4251.               set i=i+1;
4252.             end while;
4253.           close curr5;
4254.
4255.         elseif (parameter = 'PenyinaranMatahari') THEN
4256.           open curr6;
4257.             while i<>varTotal do
4258.               fetch curr6 into varVariable,varKelas;
4259.               if(varKelas = 'C1') THEN
4260.                 set varSum = varSum+varVariable;
4261.               end if;
4262.               set i=i+1;
4263.             end while;
4264.           close curr6;
4265.
4266.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
4267.           open curr7;
4268.             while i<>varTotal do
4269.               fetch curr7 into varVariable,varKelas;
4270.               if(varKelas = 'C1') THEN
4271.                 set varSum = varSum+varVariable;
4272.               end if;
4273.               set i=i+1;
4274.             end while;
4275.           close curr7;
4276.
4277.         elseif (parameter = 'KecepatanAnginRataRata') THEN
4278.           open curr9;
4279.             while i<>varTotal do
4280.               fetch curr9 into varVariable,varKelas;
4281.               if(varKelas = 'C1') THEN
4282.                 set varSum = varSum+varVariable;
4283.               end if;
4284.               set i=i+1;
4285.             end while;
4286.           close curr9;
4287.
4288.         end if;
4289.         set varSum = varSum/vJumlahC1;
4290.         return (varSum);
4291.       end //
4292.
4293.       delimiter ;
4294.
4295.       delimiter //
```

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4296.       create function hitungC2BaruK5(parameter varchar(50))
4297.       RETURNS double
4298.       BEGIN
4299.         declare i int default 0;
4300.         declare varTotal varchar(255);
4301.         declare varIterasiSebelum varchar(255);
4302.         declare varIterasiSesudah varchar(255);
4303.         declare varVariable double;
4304.         declare varKelas varchar(5);
4305.         declare vJumlahC2 int;
4306.         declare varSum double default 0;
4307.
4308.         declare curr1 cursor for
4309.           select TemperaturMinimum,kelas from tblIterasiK5;
4310.
4311.         declare curr2 cursor for
4312.           select TemperaturMaksimum,kelas from tblIterasiK5;
4313.
4314.       declare curr3 cursor for
4315.           select TemperaturRataRata,kelas from tblIterasiK5;
4316.
4317.         declare curr4 cursor for
4318.           select KelembapanRatarata,kelas from tblIterasiK5;
4319.
4320.         declare curr5 cursor for
4321.           select CurahHujan,kelas from tblIterasiK5;
4322.
4323.         declare curr6 cursor for
4324.           select PenyinaranMatahari,kelas from tblIterasiK5;
4325.
4326.         declare curr7 cursor for
4327.           select KecepatanAnginMaksimum,kelas from tblIterasiK5;
4328.
4329.         declare curr9 cursor for
4330.           select KecepatanAnginRataRata,kelas from tblIterasiK5;
4331.
4332.
4333.         select count(*) into varTotal from tblIterasiK5;
4334.         select count(*) into vJumlahC2 from tblIterasiK5 where kelas
   = 'C2';
4335.
4336.         if (parameter = 'TemperaturMinimum') THEN
4337.           open curr1;
4338.             while i<>varTotal do
4339.               fetch curr1 into varVariable,varKelas;
4340.               if(varKelas = 'C2') THEN
4341.                 set varSum = varSum+varVariable;
4342.               end if;
4343.               set i=i+1;
4344.             end while;
4345.           close curr1;
4346.
4347.         elseif (parameter = 'TemperaturMaksimum') THEN
4348.           open curr2;
4349.             while i<>varTotal do
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4350.               fetch curr2 into varVariable,varKelas;
4351.               if(varKelas = 'C2') THEN
4352.                 set varSum = varSum+varVariable;
4353.               end if;
4354.               set i=i+1;
4355.             end while;
4356.           close curr2;
4357.
4358.         elseif (parameter = 'TemperaturRataRata') THEN
4359.           open curr3;
4360.             while i<>varTotal do
4361.               fetch curr3 into varVariable,varKelas;
4362.               if(varKelas = 'C2') THEN
4363.                 set varSum = varSum+varVariable;
4364.               end if;
4365.               set i=i+1;
4366.             end while;
4367.           close curr3;
4368.
4369.         elseif (parameter = 'KelembapanRatarata') THEN
4370.           open curr4;
4371.             while i<>varTotal do
4372.               fetch curr4 into varVariable,varKelas;
4373.               if(varKelas = 'C2') THEN
4374.                 set varSum = varSum+varVariable;
4375.               end if;
4376.               set i=i+1;
4377.             end while;
4378.           close curr4;
4379.
4380.         elseif (parameter = 'CurahHujan') THEN
4381.           open curr5;
4382.             while i<>varTotal do
4383.               fetch curr5 into varVariable,varKelas;
4384.               if(varKelas = 'C2') THEN
4385.                 set varSum = varSum+varVariable;
4386.               end if;
4387.               set i=i+1;
4388.             end while;
4389.           close curr5;
4390.
4391.         elseif (parameter = 'PenyinaranMatahari') THEN
4392.           open curr6;
4393.             while i<>varTotal do
4394.               fetch curr6 into varVariable,varKelas;
4395.               if(varKelas = 'C2') THEN
4396.                 set varSum = varSum+varVariable;
4397.               end if;
4398.               set i=i+1;
4399.             end while;
4400.           close curr6;
4401.
4402.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
4403.           open curr7;
4404.             while i<>varTotal do
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4405.               fetch curr7 into varVariable,varKelas;
4406.               if(varKelas = 'C2') THEN
4407.                 set varSum = varSum+varVariable;
4408.               end if;
4409.               set i=i+1;
4410.             end while;
4411.           close curr7;
4412.
4413.         elseif (parameter = 'KecepatanAnginRataRata') THEN
4414.           open curr9;
4415.             while i<>varTotal do
4416.               fetch curr9 into varVariable,varKelas;
4417.               if(varKelas = 'C2') THEN
4418.                 set varSum = varSum+varVariable;
4419.               end if;
4420.               set i=i+1;
4421.             end while;
4422.           close curr9;
4423.
4424.         end if;
4425.         set varSum = varSum/vJumlahC2;
4426.         return (varSum);
4427.       end //
4428.
4429.       delimiter ;
4430.
4431.       delimiter //
4432.       create function hitungC3BaruK5(parameter varchar(50))
4433.       RETURNS double
4434.       BEGIN
4435.         declare i int default 0;
4436.         declare varTotal varchar(255);
4437.         declare varIterasiSebelum varchar(255);
4438.         declare varIterasiSesudah varchar(255);
4439.         declare varVariable double;
4440.         declare varKelas varchar(5);
4441.         declare vJumlahC2 int;
4442.         declare varSum double default 0;
4443.
4444.         declare curr1 cursor for
4445.           select TemperaturMinimum,kelas from tblIterasiK5;
4446.
4447.         declare curr2 cursor for
4448.           select TemperaturMaksimum,kelas from tblIterasiK5;
4449.
4450.         declare curr3 cursor for
4451.           select TemperaturRataRata,kelas from tblIterasiK5;
4452.
4453.         declare curr4 cursor for
4454.           select KelembapanRatarata,kelas from tblIterasiK5;
4455.
4456.         declare curr5 cursor for
4457.           select CurahHujan,kelas from tblIterasiK5;
4458.
4459.         declare curr6 cursor for
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4460.           select PenyinaranMatahari,kelas from tblIterasiK5;
4461.
4462.         declare curr7 cursor for
4463.           select KecepatanAnginMaksimum,kelas from tblIterasiK5;
4464.
4465.         declare curr9 cursor for
4466.           select KecepatanAnginRataRata,kelas from tblIterasiK5;
4467.
4468.
4469.         select count(*) into varTotal from tblIterasiK5;
4470.         select count(*) into vJumlahC2 from tblIterasiK5 where kelas
   = 'C3';
4471.
4472.         if (parameter = 'TemperaturMinimum') THEN
4473.           open curr1;
4474.             while i<>varTotal do
4475.               fetch curr1 into varVariable,varKelas;
4476.               if(varKelas = 'C3') THEN
4477.                 set varSum = varSum+varVariable;
4478.               end if;
4479.               set i=i+1;
4480.             end while;
4481.           close curr1;
4482.
4483.         elseif (parameter = 'TemperaturMaksimum') THEN
4484.           open curr2;
4485.             while i<>varTotal do
4486.               fetch curr2 into varVariable,varKelas;
4487.               if(varKelas = 'C3') THEN
4488.                 set varSum = varSum+varVariable;
4489.               end if;
4490.               set i=i+1;
4491.             end while;
4492.           close curr2;
4493.
4494.         elseif (parameter = 'TemperaturRataRata') THEN
4495.           open curr3;
4496.             while i<>varTotal do
4497.               fetch curr3 into varVariable,varKelas;
4498.               if(varKelas = 'C3') THEN
4499.                 set varSum = varSum+varVariable;
4500.               end if;
4501.               set i=i+1;
4502.             end while;
4503.           close curr3;
4504.
4505.         elseif (parameter = 'KelembapanRatarata') THEN
4506.           open curr4;
4507.             while i<>varTotal do
4508.               fetch curr4 into varVariable,varKelas;
4509.               if(varKelas = 'C3') THEN
4510.                 set varSum = varSum+varVariable;
4511.               end if;
4512.               set i=i+1;
4513.             end while;
```

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4514.           close curr4;
4515.
4516.         elseif (parameter = 'CurahHujan') THEN
4517.           open curr5;
4518.             while i<>varTotal do
4519.               fetch curr5 into varVariable,varKelas;
4520.               if(varKelas = 'C3') THEN
4521.                 set varSum = varSum+varVariable;
4522.               end if;
4523.               set i=i+1;
4524.             end while;
4525.           close curr5;
4526.
4527.         elseif (parameter = 'PenyinaranMatahari') THEN
4528.           open curr6;
4529.             while i<>varTotal do
4530.               fetch curr6 into varVariable,varKelas;
4531.               if(varKelas = 'C3') THEN
4532.                 set varSum = varSum+varVariable;
4533.               end if;
4534.               set i=i+1;
4535.             end while;
4536.           close curr6;
4537.
4538.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
4539.           open curr7;
4540.             while i<>varTotal do
4541.               fetch curr7 into varVariable,varKelas;
4542.               if(varKelas = 'C3') THEN
4543.                 set varSum = varSum+varVariable;
4544.               end if;
4545.               set i=i+1;
4546.             end while;
4547.           close curr7;
4548.
4549.         elseif (parameter = 'KecepatanAnginRataRata') THEN
4550.           open curr9;
4551.             while i<>varTotal do
4552.               fetch curr9 into varVariable,varKelas;
4553.               if(varKelas = 'C3') THEN
4554.                 set varSum = varSum+varVariable;
4555.               end if;
4556.               set i=i+1;
4557.             end while;
4558.           close curr9;
4559.
4560.         end if;
4561.         set varSum = varSum/vJumlahC2;
4562.         return (varSum);
4563.       end //
4564.
4565.       delimiter ;
4566.
4567.       delimiter //
4568.       create function hitungC4BaruK5(parameter varchar(50))
```

```
4569.       RETURNS double
4570.       BEGIN
4571.         declare i int default 0;
4572.         declare varTotal varchar(255);
4573.         declare varIterasiSebelum varchar(255);
4574.         declare varIterasiSesudah varchar(255);
4575.         declare varVariable double;
4576.         declare varKelas varchar(5);
4577.         declare vJumlahC2 int;
4578.         declare varSum double default 0;
4579.
4580.         declare curr1 cursor for
4581.           select TemperaturMinimum,kelas from tblIterasiK5;
4582.
4583.         declare curr2 cursor for
4584.           select TemperaturMaksimum,kelas from tblIterasiK5;
4585.
4586.         declare curr3 cursor for
4587.           select TemperaturRataRata,kelas from tblIterasiK5;
4588.
4589.         declare curr4 cursor for
4590.           select KelembapanRatarata,kelas from tblIterasiK5;
4591.
4592.         declare curr5 cursor for
4593.           select CurahHujan,kelas from tblIterasiK5;
4594.
4595.         declare curr6 cursor for
4596.           select PenyinaranMatahari,kelas from tblIterasiK5;
4597.
4598.         declare curr7 cursor for
4599.           select KecepatanAnginMaksimum,kelas from tblIterasiK5;
4600.
4601.         declare curr9 cursor for
4602.           select KecepatanAnginRataRata,kelas from tblIterasiK5;
4603.
4604.
4605.         select count(*) into varTotal from tblIterasiK5;
4606.         select count(*) into vJumlahC2 from tblIterasiK5 where kelas
   = 'C4';
4607.
4608.         if (parameter = 'TemperaturMinimum') THEN
4609.           open curr1;
4610.             while i<>varTotal do
4611.               fetch curr1 into varVariable,varKelas;
4612.               if(varKelas = 'C4') THEN
4613.                 set varSum = varSum+varVariable;
4614.               end if;
4615.               set i=i+1;
4616.             end while;
4617.           close curr1;
4618.
4619.         elseif (parameter = 'TemperaturMaksimum') THEN
4620.           open curr2;
4621.             while i<>varTotal do
4622.               fetch curr2 into varVariable,varKelas;
```

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```
4623.               if(varKelas = 'C4') THEN
4624.                 set varSum = varSum+varVariable;
4625.               end if;
4626.               set i=i+1;
4627.             end while;
4628.           close curr2;
4629.
4630.         elseif (parameter = 'TemperaturRataRata') THEN
4631.           open curr3;
4632.             while i<>varTotal do
4633.               fetch curr3 into varVariable,varKelas;
4634.               if(varKelas = 'C4') THEN
4635.                 set varSum = varSum+varVariable;
4636.               end if;
4637.               set i=i+1;
4638.             end while;
4639.           close curr3;
4640.
4641.         elseif (parameter = 'KelembapanRatarata') THEN
4642.           open curr4;
4643.             while i<>varTotal do
4644.               fetch curr4 into varVariable,varKelas;
4645.               if(varKelas = 'C4') THEN
4646.                 set varSum = varSum+varVariable;
4647.               end if;
4648.               set i=i+1;
4649.             end while;
4650.           close curr4;
4651.
4652.         elseif (parameter = 'CurahHujan') THEN
4653.           open curr5;
4654.             while i<>varTotal do
4655.               fetch curr5 into varVariable,varKelas;
4656.               if(varKelas = 'C4') THEN
4657.                 set varSum = varSum+varVariable;
4658.               end if;
4659.               set i=i+1;
4660.             end while;
4661.           close curr5;
4662.
4663.         elseif (parameter = 'PenyinaranMatahari') THEN
4664.           open curr6;
4665.             while i<>varTotal do
4666.               fetch curr6 into varVariable,varKelas;
4667.               if(varKelas = 'C4') THEN
4668.                 set varSum = varSum+varVariable;
4669.               end if;
4670.               set i=i+1;
4671.             end while;
4672.           close curr6;
4673.
4674.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
4675.           open curr7;
4676.             while i<>varTotal do
4677.               fetch curr7 into varVariable,varKelas;
```

```
4678.               if(varKelas = 'C4') THEN
4679.                 set varSum = varSum+varVariable;
4680.               end if;
4681.               set i=i+1;
4682.             end while;
4683.           close curr7;
4684.
4685.         elseif (parameter = 'KecepatanAnginRataRata') THEN
4686.           open curr9;
4687.             while i<>varTotal do
4688.               fetch curr9 into varVariable,varKelas;
4689.               if(varKelas = 'C4') THEN
4690.                 set varSum = varSum+varVariable;
4691.               end if;
4692.               set i=i+1;
4693.             end while;
4694.           close curr9;
4695.
4696.         end if;
4697.         set varSum = varSum/vJumlahC2;
4698.         return (varSum);
4699.       end //
4700.
4701.       delimiter ;
4702.
4703.       delimiter //
4704.       create function hitungC5BaruK5(parameter varchar(50))
4705.       RETURNS double
4706.       BEGIN
4707.         declare i int default 0;
4708.         declare varTotal varchar(255);
4709.         declare varIterasiSebelum varchar(255);
4710.         declare varIterasiSesudah varchar(255);
4711.         declare varVariable double;
4712.         declare varKelas varchar(5);
4713.         declare vJumlahC2 int;
4714.         declare varSum double default 0;
4715.
4716.         declare curr1 cursor for
4717.           select TemperaturMinimum,kelas from tblIterasiK5;
4718.
4719.         declare curr2 cursor for
4720.           select TemperaturMaksimum,kelas from tblIterasiK5;
4721.
4722.         declare curr3 cursor for
4723.           select TemperaturRataRata,kelas from tblIterasiK5;
4724.
4725.         declare curr4 cursor for
4726.           select KelembapanRatarata,kelas from tblIterasiK5;
4727.
4728.         declare curr5 cursor for
4729.           select CurahHujan,kelas from tblIterasiK5;
4730.
4731.         declare curr6 cursor for
4732.           select PenyinaranMatahari,kelas from tblIterasiK5;
```

```
4733.
4734.          declare curr7 cursor for
4735.            select KecepatanAnginMaksimum,kelas from tblIterasiK5;
4736.
4737.          declare curr9 cursor for
4738.            select KecepatanAnginRataRata,kelas from tblIterasiK5;
4739.
4740.
4741.          select count(*) into varTotal from tblIterasiK5;
4742.          select count(*) into vJumlahC2 from tblIterasiK5 where kelas
   = 'C4';
4743.
4744.          if (parameter = 'TemperaturMinimum') THEN
4745.            open curr1;
4746.              while i<>varTotal do
4747.                fetch curr1 into varVariable,varKelas;
4748.                if(varKelas = 'C5') THEN
4749.                  set varSum = varSum+varVariable;
4750.                end if;
4751.                set i=i+1;
4752.              end while;
4753.            close curr1;
4754.
4755.          elseif (parameter = 'TemperaturMaksimum') THEN
4756.            open curr2;
4757.              while i<>varTotal do
4758.                fetch curr2 into varVariable,varKelas;
4759.                if(varKelas = 'C5') THEN
4760.                  set varSum = varSum+varVariable;
4761.                end if;
4762.                set i=i+1;
4763.              end while;
4764.            close curr2;
4765.
4766.          elseif (parameter = 'TemperaturRataRata') THEN
4767.            open curr3;
4768.              while i<>varTotal do
4769.                fetch curr3 into varVariable,varKelas;
4770.                if(varKelas = 'C5') THEN
4771.                  set varSum = varSum+varVariable;
4772.                end if;
4773.                set i=i+1;
4774.              end while;
4775.            close curr3;
4776.
4777.          elseif (parameter = 'KelembapanRatarata') THEN
4778.            open curr4;
4779.              while i<>varTotal do
4780.                fetch curr4 into varVariable,varKelas;
4781.                if(varKelas = 'C5') THEN
4782.                  set varSum = varSum+varVariable;
4783.                end if;
4784.                set i=i+1;
4785.              end while;
4786.            close curr4;
```

```
4787.
4788.         elseif (parameter = 'CurahHujan') THEN
4789.           open curr5;
4790.             while i<>varTotal do
4791.               fetch curr5 into varVariable,varKelas;
4792.               if(varKelas = 'C5') THEN
4793.                 set varSum = varSum+varVariable;
4794.               end if;
4795.               set i=i+1;
4796.             end while;
4797.           close curr5;
4798.
4799.         elseif (parameter = 'PenyinaranMatahari') THEN
4800.           open curr6;
4801.             while i<>varTotal do
4802.               fetch curr6 into varVariable,varKelas;
4803.               if(varKelas = 'C5') THEN
4804.                 set varSum = varSum+varVariable;
4805.               end if;
4806.               set i=i+1;
4807.             end while;
4808.           close curr6;
4809.
4810.         elseif (parameter = 'KecepatanAnginMaksimum') THEN
4811.           open curr7;
4812.             while i<>varTotal do
4813.               fetch curr7 into varVariable,varKelas;
4814.               if(varKelas = 'C5') THEN
4815.                 set varSum = varSum+varVariable;
4816.               end if;
4817.               set i=i+1;
4818.             end while;
4819.           close curr7;
4820.
4821.         elseif (parameter = 'KecepatanAnginRataRata') THEN
4822.           open curr9;
4823.             while i<>varTotal do
4824.               fetch curr9 into varVariable,varKelas;
4825.               if(varKelas = 'C5') THEN
4826.                 set varSum = varSum+varVariable;
4827.               end if;
4828.               set i=i+1;
4829.             end while;
4830.           close curr9;
4831.
4832.         end if;
4833.         set varSum = varSum/vJumlahC2;
4834.         return (varSum);
4835.       end //
4836.
4837.       delimiter ;
4838.
4839.       delimiter //
4840.       create procedure spWcssK5()
4841.       BEGIN
```

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```
4842.         declare vSum double default 0;
4843.         declare vJarakC1S double;
4844.         declare vJarakC2S double;
4845.         declare vJarakC3S double;
4846.         declare vJarakC4S double;
4847.         declare vJarakC5S double;
4848.         declare varTotal double;
4849.         declare varSquare double;
4850.         declare varSumC1 double default 0;
4851.         declare varSumC2 double default 0;
4852.         declare varSumC3 double default 0;
4853.         declare varSumC4 double default 0;
4854.         declare varSumC5 double default 0;
4855.         declare varKelas1 varchar(5);
4856.         declare varKelas2 varchar(5);
4857.         declare varKelas3 varchar(5);
4858.         declare varKelas4 varchar(5);
4859.         declare varKelas5 varchar(5);
4860.         declare varWcss double default 0;
4861.         declare i int default 0;
4862.
4863.         declare curr1 cursor for
4864.           select jarakC1,kelas from tblIterasiK5;
4865.
4866.         declare curr2 cursor for
4867.           select jarakC2,kelas from tblIterasiK5;
4868.
4869.         declare curr3 cursor for
4870.           select jarakC3,kelas from tblIterasiK5;
4871.
4872.         declare curr4 cursor for
4873.           select jarakC4,kelas from tblIterasiK5;
4874.
4875.         declare curr5 cursor for
4876.           select jarakC5,kelas from tblIterasiK5;
4877.
4878.         select count(*) into varTotal from tblIterasiK5;
4879.
4880.         open curr1;
4881.         open curr2;
4882.         open curr3;
4883.         open curr4;
4884.         open curr5;
4885.         while (i <> varTotal) do
4886.           fetch curr1 into vJarakC1S,varKelas1;
4887.           fetch curr2 into vJarakC2S,varKelas2;
4888.           fetch curr3 into vJarakC3S,varKelas3;
4889.           fetch curr4 into vJarakC4S,varKelas4;
4890.           fetch curr5 into vJarakC5S,varKelas5;
4891.           if (varKelas1='C1') THEN
4892.             set varSumC1 = varSumC1 + POWER(vJarakC1S,2);
4893.           end if;
4894.           if (varKelas2='C2') THEN
4895.             set varSumC2 = varSumC2 + POWER(vJarakC2S,2);
4896.           end if;
```

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4897.           if (varKelas3='C3') THEN
4898.             set varSumC3 = varSumC3 + POWER(vJarakC3S,2);
4899.           end if;
4900.           if (varKelas4='C4') THEN
4901.             set varSumC4 = varSumC4 + POWER(vJarakC4S,2);
4902.           end if;
4903.           if (varKelas5='C5') THEN
4904.             set varSumC5 = varSumC5 + POWER(vJarakC5S,2);
4905.           end if;
4906.           set i = i+1;
4907.         end while;
4908.         close curr1;
4909.         close curr2;
4910.         close curr3;
4911.         close curr4;
4912.         close curr5;
4913.         set varWcss = varSumC1 + varSumC2 + varSumC3 + varSumC4;
4914.         update tblWcss
4915.         set wcss = varwcss
4916.         where k = '5';
4917.       end //
4918.       delimiter ;
4919.
4920.       delimiter //
4921.       create procedure spSilhouetteK5()
4922.       BEGIN
4923.         declare i int default 0;
4924.         declare j int default 0;
4925.         declare k int default 0;
4926.         declare l int default 0;
4927.         declare varTotal int default 0;
4928.         declare varTanggal varchar(25);
4929.         declare varTempMin double;
4930.         declare varTempMaks double;
4931.         declare varTempRata double;
4932.         declare varCurahHujan double;
4933.         declare varKelembapanRata double;
4934.         declare varPenyinaranMatahari double;
4935.         declare varKecepatanAnginMaks double;
4936.         declare varArahangin double;
4937.         declare varKecepatanAnginRata double;
4938.         declare varTotaltblCentroid int default 0;
4939.         declare vJarakC1 double;
4940.         declare vJarakC2 double;
4941.         declare vJarakC3 double;
4942.         declare vJarakC4 double;
4943.         declare vJarakC5 double;
4944.         declare c11 double;
4945.         declare c12 double;
4946.         declare c13 double;
4947.         declare c14 double;
4948.         declare c15 double;
4949.         declare c16 double;
4950.         declare c17 double;
4951.         declare c18 double;
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4952.         declare c19 double;
4953.         declare c21 double;
4954.         declare c22 double;
4955.         declare c23 double;
4956.         declare c24 double;
4957.         declare c25 double;
4958.         declare c26 double;
4959.         declare c27 double;
4960.         declare c28 double;
4961.         declare c29 double;
4962.         declare c31 double;
4963.         declare c32 double;
4964.         declare c33 double;
4965.         declare c34 double;
4966.         declare c35 double;
4967.         declare c36 double;
4968.         declare c37 double;
4969.         declare c38 double;
4970.         declare c39 double;
4971.         declare c41 double;
4972.         declare c42 double;
4973.         declare c43 double;
4974.         declare c44 double;
4975.         declare c45 double;
4976.         declare c46 double;
4977.         declare c47 double;
4978.         declare c48 double;
4979.         declare c49 double;
4980.         declare c51 double;
4981.         declare c52 double;
4982.         declare c53 double;
4983.         declare c54 double;
4984.         declare c55 double;
4985.         declare c56 double;
4986.         declare c57 double;
4987.         declare c58 double;
4988.         declare c59 double;
4989.
4990.         declare varTanggal2 varchar(25);
4991.         declare varTempMin2 double;
4992.         declare varTempMaks2 double;
4993.         declare varTempRata2 double;
4994.         declare varCurahHujan2 double;
4995.         declare varKelembapanRata2 double;
4996.         declare varPenyinaranMatahari2 double;
4997.         declare varKecepatanAnginMaks2 double;
4998.         declare varArahangin2 double;
4999.         declare varKecepatanAnginRata2 double;
5000.
5001.         declare varTanggal3 varchar(25);
5002.         declare varTempMin3 double;
5003.         declare varTempMaks3 double;
5004.         declare varTempRata3 double;
5005.         declare varCurahHujan3 double;
5006.         declare varKelembapanRata3 double;
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5007.         declare varPenyinaranMatahari3 double;
5008.         declare varKecepatanAnginMaks3 double;
5009.         declare varArahangin3 double;
5010.         declare varKecepatanAnginRata3 double;
5011.
5012.         declare varKelas4 varchar(5);
5013.         declare varTanggal4 varchar(25);
5014.         declare varTempMin4 double;
5015.         declare varTempMaks4 double;
5016.         declare varTempRata4 double;
5017.         declare varCurahHujan4 double;
5018.         declare varKelembapanRata4 double;
5019.         declare varPenyinaranMatahari4 double;
5020.         declare varKecepatanAnginMaks4 double;
5021.         declare varArahangin4 double;
5022.         declare varKecepatanAnginRata4 double;
5023.
5024.         declare varTempMinC1 double;
5025.         declare varTempMaksC1 double;
5026.         declare varTempRataC1 double;
5027.         declare varCurahHujanC1 double;
5028.         declare varKelembapanRataC1 double;
5029.         declare varPenyinaranMatahariC1 double;
5030.         declare varKecepatanAnginMaksC1 double;
5031.         declare varArahanginC1 double;
5032.         declare varKecepatanAnginRataC1 double;
5033.
5034.         declare varTempMinC2 double;
5035.         declare varTempMaksC2 double;
5036.         declare varTempRataC2 double;
5037.         declare varCurahHujanC2 double;
5038.         declare varKelembapanRataC2 double;
5039.         declare varPenyinaranMatahariC2 double;
5040.         declare varKecepatanAnginMaksC2 double;
5041.         declare varArahanginC2 double;
5042.         declare varKecepatanAnginRataC2 double;
5043.
5044.         declare varTempMinC3 double;
5045.         declare varTempMaksC3 double;
5046.         declare varTempRataC3 double;
5047.         declare varCurahHujanC3 double;
5048.         declare varKelembapanRataC3 double;
5049.         declare varPenyinaranMatahariC3 double;
5050.         declare varKecepatanAnginMaksC3 double;
5051.         declare varArahanginC3 double;
5052.         declare varKecepatanAnginRataC3 double;
5053.
5054.         declare varTempMinC4 double;
5055.         declare varTempMaksC4 double;
5056.         declare varTempRataC4 double;
5057.         declare varCurahHujanC4 double;
5058.         declare varKelembapanRataC4 double;
5059.         declare varPenyinaranMatahariC4 double;
5060.         declare varKecepatanAnginMaksC4 double;
5061.         declare varArahanginC4 double;
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5062.         declare varKecepatanAnginRataC4 double;
5063.
5064.         declare varTempMinC5 double;
5065.         declare varTempMaksC5 double;
5066.         declare varTempRataC5 double;
5067.         declare varCurahHujanC5 double;
5068.         declare varKelembapanRataC5 double;
5069.         declare varPenyinaranMatahariC5 double;
5070.         declare varKecepatanAnginMaksC5 double;
5071.         declare varArahanginC5 double;
5072.         declare varKecepatanAnginRataC5 double;
5073.
5074.         declare varKelas varchar(25);
5075.         declare varKelas2 varchar(25);
5076.         declare varKelas3 varchar(25);
5077.         declare varCsama varchar(5);
5078.         declare varTotalSesamaCluster int default 0;
5079.         declare varTotalClusterTerdekat int default 0;
5080.         declare varSumai double default 0;
5081.         declare varSumbi double default 0;
5082.         declare varCterdekat varchar(5);
5083.         declare varSilhouetteCoefficient double default 0;
5084.         declare varSilhouetteScore double default 0;
5085.
5086.         declare vJarakC1danC2 double;
5087.         declare vJarakC1danC3 double;
5088.         declare vJarakC1danC4 double;
5089.         declare vJarakC1danC5 double;
5090.
5091.         declare vJarakC2danC1 double;
5092.         declare vJarakC2danC3 double;
5093.         declare vJarakC2danC4 double;
5094.         declare vJarakC2danC5 double;
5095.
5096.         declare vJarakC3danC1 double;
5097.         declare vJarakC3danC2 double;
5098.         declare vJarakC3danC4 double;
5099.         declare vJarakC3danC5 double;
5100.
5101.         declare vJarakC4danC1 double;
5102.         declare vJarakC4danC2 double;
5103.         declare vJarakC4danC3 double;
5104.         declare vJarakC4danC5 double;
5105.
5106.         declare vJarakC5danC1 double;
5107.         declare vJarakC5danC2 double;
5108.         declare vJarakC5danC3 double;
5109.         declare vJarakC5danC4 double;
5110.
5111.         declare vJarakTerdekatC1 varchar(5);
5112.         declare vJarakTerdekatC2 varchar(5);
5113.         declare vJarakTerdekatC3 varchar(5);
5114.         declare vJarakTerdekatC4 varchar(5);
5115.         declare vJarakTerdekatC5 varchar(5);
5116.
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```
5117.         declare cHitung cursor for
5118.               select     kelas,TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5;
5119.
5120.         declare curr1 cursor for
5121.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK5;
5122.
5123.         declare curr2 cursor for
5124.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5
   where kelas = 'C1';
5125.
5126.         declare curr3 cursor for
5127.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5
   where kelas = 'C2';
5128.
5129.         declare curr10 cursor for
5130.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5
   where kelas = 'C3';
5131.
5132.         declare curr13 cursor for
5133.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5
   where kelas = 'C4';
5134.
5135.         declare curr15 cursor for
5136.               select           TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata  from tblSimpanCentroidK5
   where kelas = 'C5';
5137.
5138.         declare curr4 cursor for
5139.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK5;
5140.
5141.         declare curr5 cursor for
5142.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK5;
5143.
5144.         declare curr6 cursor for
5145.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK5;
5146.
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5147.         declare curr7 cursor for
5148.               select  tanggal,  TemperaturMinimum,TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata, kelas  from tblIterasiK5;
5149.
5150.         declare curr8 cursor for
5151.               select  jarakTerdekat  from  tblSimpanCentroidK5  where
   kelas = 'C1';
5152.
5153.         declare curr9 cursor for
5154.               select  jarakTerdekat  from  tblSimpanCentroidK5  where
   kelas = 'C2';
5155.
5156.         declare curr11 cursor for
5157.               select  jarakTerdekat  from  tblSimpanCentroidK5  where
   kelas = 'C3';
5158.
5159.         declare curr12 cursor for
5160.               select  jarakTerdekat  from  tblSimpanCentroidK5  where
   kelas = 'C4';
5161.
5162.         declare curr14 cursor for
5163.               select  jarakTerdekat  from  tblSimpanCentroidK5  where
   kelas = 'C5';
5164.
5165.
5166.         open curr2;
5167.           fetch    curr2    into    varTempMinC1,    varTempMaksC1,
   varTempRataC1,          varKelembapanRataC1,          varCurahHujanC1,
   varPenyinaranMatahariC1,                varKecepatanAnginMaksC1,
   varKecepatanAnginRataC1;
5168.         close curr2;
5169.
5170.         open curr3;
5171.           fetch    curr3    into    varTempMinC2,    varTempMaksC2,
   varTempRataC2,          varKelembapanRataC2,          varCurahHujanC2,
   varPenyinaranMatahariC2,                varKecepatanAnginMaksC2,
   varKecepatanAnginRataC2;
5172.         close curr3;
5173.
5174.         open curr10;
5175.           fetch    curr10    into    varTempMinC3,    varTempMaksC3,
   varTempRataC3,          varKelembapanRataC3,          varCurahHujanC3,
   varPenyinaranMatahariC3,                varKecepatanAnginMaksC3,
   varKecepatanAnginRataC3;
5176.         close curr10;
5177.
5178.         open curr13;
5179.           fetch    curr13    into    varTempMinC4,    varTempMaksC4,
   varTempRataC4,          varKelembapanRataC4,          varCurahHujanC4,
   varPenyinaranMatahariC4,                varKecepatanAnginMaksC4,
   varKecepatanAnginRataC4;
5180.         close curr13;
5181.
5182.         open curr15;
```

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5183.           fetch    curr15    into    varTempMinC5,    varTempMaksC5,
   varTempRataC5,          varKelembapanRataC5,          varCurahHujanC5,
   varPenyinaranMatahariC5,                          varKecepatanAnginMaksC5,
   varKecepatanAnginRataC5;
5184.         close curr15;
5185.
5186.         select     count(*)     into     varTotaltblCentroid     from
   tblSimpanCentroidK5;
5187.
5188.         open cHitung;
5189.         while (1 <> varTotaltblCentroid) do
5190.           fetch  cHitung  into  varKelas4,varTempMin4,  varTempMaks4,
   varTempRata4,            varKelembapanRata4,            varCurahHujan4,
   varPenyinaranMatahari4, varKecepatanAnginMaks4, varKecepatanAnginRata4;
5191.           set vJarakC1 = jarakEuclidian(
5192.                   varTempMinC1,
5193.                   varTempMaksC1,
5194.                   varTempRataC1,
5195.                   varKelembapanRataC1,
5196.                   varCurahHujanC1,
5197.                   varPenyinaranMatahariC1,
5198.                   varKecepatanAnginMaksC1,
5199.                   varKecepatanAnginRataC1,
5200.                   varTempMin4,
5201.                   varTempMaks4,
5202.                   varTempRata4,
5203.                   varKelembapanRata4,
5204.                   varCurahHujan4,
5205.                   varPenyinaranMatahari4,
5206.                   varKecepatanAnginMaks4,
5207.                   varKecepatanAnginRata4
5208.                 );
5209.           set vJarakC2 = jarakEuclidian(
5210.                   varTempMinC2,
5211.                   varTempMaksC2,
5212.                   varTempRataC2,
5213.                   varKelembapanRataC2,
5214.                   varCurahHujanC2,
5215.                   varPenyinaranMatahariC2,
5216.                   varKecepatanAnginMaksC2,
5217.                   varKecepatanAnginRataC2,
5218.                   varTempMin4,
5219.                   varTempMaks4,
5220.                   varTempRata4,
5221.                   varKelembapanRata4,
5222.                   varCurahHujan4,
5223.                   varPenyinaranMatahari4,
5224.                   varKecepatanAnginMaks4,
5225.                   varKecepatanAnginRata4
5226.                 );
5227.           set vJarakC3 = jarakEuclidian(
5228.                   varTempMinC3,
5229.                   varTempMaksC3,
5230.                   varTempRataC3,
5231.                   varKelembapanRataC3,
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5232.                   varCurahHujanC3,
5233.                   varPenyinaranMatahariC3,
5234.                   varKecepatanAnginMaksC3,
5235.                   varKecepatanAnginRataC3,
5236.                   varTempMin4,
5237.                   varTempMaks4,
5238.                   varTempRata4,
5239.                   varKelembapanRata4,
5240.                   varCurahHujan4,
5241.                   varPenyinaranMatahari4,
5242.                   varKecepatanAnginMaks4,
5243.                   varKecepatanAnginRata4
5244.                 );
5245.           set vJarakC4 = jarakEuclidian(
5246.                   varTempMinC4,
5247.                   varTempMaksC4,
5248.                   varTempRataC4,
5249.                   varKelembapanRataC4,
5250.                   varCurahHujanC4,
5251.                   varPenyinaranMatahariC4,
5252.                   varKecepatanAnginMaksC4,
5253.                   varKecepatanAnginRataC4,
5254.                   varTempMin4,
5255.                   varTempMaks4,
5256.                   varTempRata4,
5257.                   varKelembapanRata4,
5258.                   varCurahHujan4,
5259.                   varPenyinaranMatahari4,
5260.                   varKecepatanAnginMaks4,
5261.                   varKecepatanAnginRata4
5262.                 );
5263.           set vJarakC5 = jarakEuclidian(
5264.                   varTempMinC5,
5265.                   varTempMaksC5,
5266.                   varTempRataC5,
5267.                   varKelembapanRataC5,
5268.                   varCurahHujanC5,
5269.                   varPenyinaranMatahariC5,
5270.                   varKecepatanAnginMaksC5,
5271.                   varKecepatanAnginRataC5,
5272.                   varTempMin4,
5273.                   varTempMaks4,
5274.                   varTempRata4,
5275.                   varKelembapanRata4,
5276.                   varCurahHujan4,
5277.                   varPenyinaranMatahari4,
5278.                   varKecepatanAnginMaks4,
5279.                   varKecepatanAnginRata4
5280.                 );
5281.                   update tblSimpanCentroidK5 set jarakC1 = vJarakC1,
   jarakC2 = vJarakC2, jarakC3 = vJarakC3, jarakC4 = vJarakC4, jarakC5 =
   vJarakC5 where kelas = varKelas4;
5282.           set l=l+1;
5283.         end while;
5284.         close cHitung;
```

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5285.
5286.          select          jarakC2,jarakC3,jarakC4,jarakC5          into
   vJarakC1danC2,vJarakC1danC3,vJarakC1danC4,vJarakC1danC5              from
   tblSimpanCentroidK5 where kelas = 'C1';
5287.          select          jarakC1,jarakC3,jarakC4,jarakC5          into
   vJarakC2danC1,vJarakC2danC3,vJarakC2danC4,vJarakC2danC5              from
   tblSimpanCentroidK5 where kelas = 'C2';
5288.          select          jarakC1,jarakC2,jarakC4,jarakC5          into
   vJarakC3danC1,vJarakC3danC2,vJarakC3danC4,vJarakC3danC5              from
   tblSimpanCentroidK5 where kelas = 'C3';
5289.          select          jarakC1,jarakC2,jarakC3,jarakC5          into
   vJarakC4danC1,vJarakC4danC2,vJarakC4danC3,vJarakC4danC5              from
   tblSimpanCentroidK5 where kelas = 'C4';
5290.          select          jarakC1,jarakC2,jarakC3,jarakC4          into
   vJarakC5danC1,vJarakC5danC2,vJarakC5danC3,vJarakC5danC4              from
   tblSimpanCentroidK5 where kelas = 'C5';
5291.        --   select vJarakC1danC2,vJarakC1danC3,vJarakC1danC4;
5292.        --   select vJarakC2danC1,vJarakC2danC3,vJarakC2danC4;
5293.        --   select vJarakC3danC1,vJarakC3danC2,vJarakC3danC4;
5294.        --   select vJarakC4danC1,vJarakC4danC2,vJarakC4danC3;
5295.
5296.
5297.
5298.          if              (vJarakC1danC2<vJarakC1danC3               &&
   vJarakC1danC2<vJarakC1danC4 && vJarakC1danC2<vJarakC1danC5) then
5299.            update tblSimpanCentroidK5
5300.            set jarakTerdekat='C2'
5301.            where kelas = 'C1';
5302.          elseif  (vJarakC1danC3  <  vJarakC1danC2  &&  vJarakC1danC3  <
   vJarakC1danC4 && vJarakC1danC3 < vJarakC1danC5) then
5303.            update tblSimpanCentroidK5
5304.            set jarakTerdekat='C3'
5305.            where kelas = 'C1';
5306.          elseif  (vJarakC1danC4  <  vJarakC1danC2  &&  vJarakC1danC4  <
   vJarakC1danC3 && vJarakC1danC4 < vJarakC1danC5) then
5307.            update tblSimpanCentroidK5
5308.            set jarakTerdekat='C4'
5309.            where kelas = 'C1';
5310.          elseif  (vJarakC1danC5  <  vJarakC1danC2  &&  vJarakC1danC5  <
   vJarakC1danC3 && vJarakC1danC5 < vJarakC1danC4) then
5311.            update tblSimpanCentroidK5
5312.            set jarakTerdekat='C5'
5313.            where kelas = 'C1';
5314.          end if;
5315.
5316.          if               (vJarakC2danC1<vJarakC2danC3               &&
   vJarakC2danC1<vJarakC2danC4 && vJarakC2danC1<vJarakC2danC5) then
5317.            update tblSimpanCentroidK5
5318.            set jarakTerdekat='C1'
5319.            where kelas = 'C2';
5320.          elseif  (vJarakC2danC3  <  vJarakC2danC1  &&  vJarakC2danC3  <
   vJarakC2danC4 && vJarakC2danC3 < vJarakC2danC5) then
5321.            update tblSimpanCentroidK5
5322.            set jarakTerdekat='C3'
5323.            where kelas = 'C2';
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5324.         elseif (vJarakC2danC4 < vJarakC2danC1 && vJarakC2danC4 <
   vJarakC2danC3 && vJarakC2danC4 < vJarakC2danC5) then
5325.           update tblSimpanCentroidK5
5326.           set jarakTerdekat='C4'
5327.           where kelas = 'C2';
5328.         elseif (vJarakC2danC5 < vJarakC2danC1 && vJarakC2danC5 <
   vJarakC2danC3 && vJarakC2danC5 < vJarakC2danC4) then
5329.           update tblSimpanCentroidK5
5330.           set jarakTerdekat='C5'
5331.           where kelas = 'C2';
5332.         end if;
5333.
5334.         if              (vJarakC3danC1<vJarakC3danC2              &&
   vJarakC3danC1<vJarakC3danC4 && vJarakC3danC1<vJarakC3danC5) then
5335.           update tblSimpanCentroidK5
5336.           set jarakTerdekat='C1'
5337.           where kelas = 'C3';
5338.         elseif (vJarakC3danC2 < vJarakC3danC1 && vJarakC3danC2 <
   vJarakC3danC4 && vJarakC3danC2 < vJarakC3danC5) then
5339.           update tblSimpanCentroidK5
5340.           set jarakTerdekat='C2'
5341.           where kelas = 'C3';
5342.         elseif (vJarakC3danC4 < vJarakC3danC1 && vJarakC3danC4 <
   vJarakC3danC2  && vJarakC3danC4 < vJarakC3danC5) then
5343.           update tblSimpanCentroidK5
5344.           set jarakTerdekat='C4'
5345.           where kelas = 'C3';
5346.         elseif (vJarakC3danC5 < vJarakC3danC1 && vJarakC3danC5 <
   vJarakC3danC2  && vJarakC3danC5 < vJarakC3danC4) then
5347.           update tblSimpanCentroidK5
5348.           set jarakTerdekat='C5'
5349.           where kelas = 'C3';
5350.         end if;
5351.
5352.         if              (vJarakC4danC1<vJarakC4danC2              &&
   vJarakC4danC1<vJarakC4danC3 && vJarakC4danC1<vJarakC4danC5) then
5353.           update tblSimpanCentroidK5
5354.           set jarakTerdekat='C1'
5355.           where kelas = 'C4';
5356.         elseif (vJarakC4danC2 < vJarakC4danC1 && vJarakC4danC2 <
   vJarakC4danC3 && vJarakC4danC2 < vJarakC4danC5) then
5357.           update tblSimpanCentroidK5
5358.           set jarakTerdekat='C2'
5359.           where kelas = 'C4';
5360.         elseif (vJarakC4danC3 < vJarakC4danC1 && vJarakC4danC3 <
   vJarakC4danC2 && vJarakC4danC3 < vJarakC4danC5) then
5361.           update tblSimpanCentroidK5
5362.           set jarakTerdekat='C3'
5363.           where kelas = 'C4';
5364.         elseif (vJarakC4danC5 < vJarakC4danC1 && vJarakC4danC5 <
   vJarakC4danC2 && vJarakC4danC5 < vJarakC4danC3) then
5365.           update tblSimpanCentroidK5
5366.           set jarakTerdekat='C5'
5367.           where kelas = 'C4';
5368.         end if;
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5369.
5370.         if               (vJarakC5danC1<vJarakC5danC2               &&
   vJarakC5danC1<vJarakC5danC3 && vJarakC5danC1<vJarakC5danC4) then
5371.           update tblSimpanCentroidK5
5372.           set jarakTerdekat='C1'
5373.           where kelas = 'C5';
5374.         elseif (vJarakC5danC2 < vJarakC5danC1 && vJarakC5danC2 <
   vJarakC5danC3 && vJarakC5danC2 < vJarakC5danC4) then
5375.           update tblSimpanCentroidK5
5376.           set jarakTerdekat='C2'
5377.           where kelas = 'C5';
5378.         elseif (vJarakC5danC3 < vJarakC5danC1 && vJarakC5danC3 <
   vJarakC5danC2 && vJarakC5danC3 < vJarakC5danC4) then
5379.           update tblSimpanCentroidK5
5380.           set jarakTerdekat='C3'
5381.           where kelas = 'C5';
5382.         elseif (vJarakC5danC4 < vJarakC5danC1 && vJarakC5danC4 <
   vJarakC5danC2 && vJarakC5danC4 < vJarakC5danC3) then
5383.           update tblSimpanCentroidK5
5384.           set jarakTerdekat='C4'
5385.           where kelas = 'C5';
5386.         end if;
5387.
5388.         open curr8;
5389.           fetch curr8 into vJarakTerdekatC1;
5390.         close curr8;
5391.
5392.         open curr9;
5393.           fetch curr9 into vJarakTerdekatC2;
5394.         close curr9;
5395.
5396.         open curr11;
5397.           fetch curr11 into vJarakTerdekatC3;
5398.         close curr11;
5399.
5400.         open curr12;
5401.           fetch curr12 into vJarakTerdekatC4;
5402.         close curr12;
5403.
5404.         open curr14;
5405.           fetch curr14 into vJarakTerdekatC5;
5406.         close curr14;
5407.
5408.         select count(*) into varTotal from tblIterasiK5;
5409.
5410.         open curr1;
5411.         -- looping data point
5412.         while (i<>varTotal) do
5413.           fetch  curr1  into  varTanggal,  varTempMin,  varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata, varKelas;
5414.           set j=0;
5415.           set k=0;
5416.           set varSumai = 0;
5417.           set varSumbi = 0;
```

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5418.           set varTotalSesamaCluster = 0;
5419.           set varTotalClusterTerdekat = 0;
5420.           if (varKelas = 'C1') then
5421.             set varCterdekat = vJarakTerdekatC1;
5422.           elseif (varKelas = 'C2') then
5423.             set varCterdekat = vJarakTerdekatC2;
5424.           elseif (varKelas = 'C3') then
5425.             set varCterdekat = vJarakTerdekatC3;
5426.           elseif (varKelas = 'C4') then
5427.             set varCterdekat = vJarakTerdekatC4;
5428.           elseif (varKelas = 'C5') then
5429.             set varCterdekat = vJarakTerdekatC5;
5430.           end if;
5431.           open curr5;
5432.           open curr6;
5433.           -- looping menghitung data a(i) dan b(i) pada tiap data
   point
5434.             while (j<>varTotal) do
5435.               -- menghitung a(i)
5436.               fetch    curr5    into    varTanggal2,    varTempMin2,
   varTempMaks2,    varTempRata2,    varKelembapanRata2,    varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2,
   varKelas2;
5437.
5438.               if (varTanggal <> varTanggal2) then
5439.                 if(varKelas = varKelas2) then
5440.                   set varSumai = varSumai + jarakEuclidian(
5441.                                 varTempMin,   varTempMaks,   varTempRata,
   varKelembapanRata,         varCurahHujan,         varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
5442.                                 varTempMin2, varTempMaks2, varTempRata2,
   varKelembapanRata2,       varCurahHujan2,       varPenyinaranMatahari2,
   varKecepatanAnginMaks2, varKecepatanAnginRata2
5443.                                 );
5444.                   set varTotalSesamaCluster = varTotalSesamaCluster +
   1;
5445.                 -- menghitung b(i)
5446.                 elseif(varKelas   <>   varKelas2   &&   varKelas2   =
   varCterdekat ) then
5447.                   while ( k <> varTotal) do
5448.                     fetch   curr6   into   varTanggal3,   varTempMin3,
   varTempMaks3,    varTempRata3,    varKelembapanRata3,    varCurahHujan3,
   varPenyinaranMatahari3, varKecepatanAnginMaks3, varKecepatanAnginRata3,
   varKelas3;
5449.                       if (varKelas3 = varCterdekat ) then
5450.                         set         varTotalClusterTerdekat         =
   varTotalClusterTerdekat + 1;
5451.                       end if;
5452.                     set k = k+1;
5453.                   end while;
5454.                   set varSumbi = varSumbi + jarakEuclidian(
5455.                                         varTempMin,        varTempMaks,
   varTempRata,  varKelembapanRata,  varCurahHujan,  varPenyinaranMatahari,
   varKecepatanAnginMaks, varKecepatanAnginRata,
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                                                varTempMin2,      varTempMaks2,
   varTempRata2,             varKelembapanRata2,             varCurahHujan2,
   varPenyinaranMatahari2, varKecepatanAnginMaks2, varKecepatanAnginRata2
                                              );
                  end if;

               end if;
               -- menghitung b(i)

               set j=j+1;
             end while;
             close curr5;
             close curr6;
             set varSumai = varSumai / varTotalSesamaCluster;
             set varSumbi = varSumbi / varTotalClusterTerdekat;
             if (varSumai is NULL or '') then
               set varSumai = 0;
               set varTotalSesamaCluster = 0;
             end if;
             if (varSumbi is NULL or '') then
               set varSumbi = 0;
               set varTotalClusterTerdekat = 0;
             end if;
             set    varSilhouetteCoefficient     =     (varSumbi     -
   varSumai)/greatest(varSumbi,varSumai);
             if (varSilhouetteCoefficient is NULL or '') then
               set varSilhouetteCoefficient = 0;
             end if;
             set    varSilhouetteScore    =    varSilhouetteScore    +
   varSilhouetteCoefficient;
             set i=i+1;
         end while;
         close curr1;
         set varSilhouetteScore = varSilhouetteScore / varTotal;
         update tblSilhouette
         set silhouetteScore = varSilhouetteScore
         where kluster = 5;
       end//

       delimiter ;

       delimiter //

       create procedure generateCentroid(varKota varchar(25) , tglAwal
   date, tglAkhir date)
       begin
           declare varC1aAwal double;
           declare varC1bAwal double;
           declare varC1cAwal double;
           declare varC1dAwal double;
           declare varC1eAwal double;
           declare varC1fAwal double;
           declare varC1gAwal double;
           declare varC1hAwal double;
           declare varC1iAwal double;
```

```
5506.
5507.           declare varC2aAwal double;
5508.           declare varC2bAwal double;
5509.           declare varC2cAwal double;
5510.           declare varC2dAwal double;
5511.           declare varC2eAwal double;
5512.           declare varC2fAwal double;
5513.           declare varC2gAwal double;
5514.           declare varC2hAwal double;
5515.           declare varC2iAwal double;
5516.
5517.           declare varC3aAwal double;
5518.           declare varC3bAwal double;
5519.           declare varC3cAwal double;
5520.           declare varC3dAwal double;
5521.           declare varC3eAwal double;
5522.           declare varC3fAwal double;
5523.           declare varC3gAwal double;
5524.           declare varC3hAwal double;
5525.           declare varC3iAwal double;
5526.
5527.           declare varC4aAwal double;
5528.           declare varC4bAwal double;
5529.           declare varC4cAwal double;
5530.           declare varC4dAwal double;
5531.           declare varC4eAwal double;
5532.           declare varC4fAwal double;
5533.           declare varC4gAwal double;
5534.           declare varC4hAwal double;
5535.           declare varC4iAwal double;
5536.
5537.           declare varC5aAwal double;
5538.           declare varC5bAwal double;
5539.           declare varC5cAwal double;
5540.           declare varC5dAwal double;
5541.           declare varC5eAwal double;
5542.           declare varC5fAwal double;
5543.           declare varC5gAwal double;
5544.           declare varC5hAwal double;
5545.           declare varC5iAwal double;
5546.
5547.           declare varC1Awal varchar(100);
5548.           declare varC2Awal varchar(100);
5549.           declare varC3Awal varchar(100);
5550.           declare varC4Awal varchar(100);
5551.           declare varC5Awal varchar(100);
5552.           declare counterCount int default 0;
5553.
5554.           declare i int default 0;
5555.
5556.           declare curr1 cursor for
5557.             select       TemperaturMinimum,       TemperaturMaksimum,
   TemperaturRataRata, KelembapanRatarata, CurahHujan, PenyinaranMatahari,
   KecepatanAnginMaksimum, KecepatanAnginRataRata from tblMasterDataMaster
```

```
   where tanggal between tglAwal and tglAkhir and kota = varKota order by
   RAND() limit 1;
5558.
5559.            loopCounter: WHILE (counterCount <> 1) do
5560.                open curr1;
5561.                  fetch curr1 into varC1aAwal, varC1bAwal, varC1cAwal,
   varC1dAwal, varC1eAwal, varC1fAwal, varC1gAwal, varC1hAwal;
5562.                close curr1;
5563.
5564.                open curr1;
5565.                  fetch curr1 into varC2aAwal, varC2bAwal, varC2cAwal,
   varC2dAwal, varC2eAwal, varC2fAwal, varC2gAwal, varC2hAwal;
5566.                close curr1;
5567.
5568.                open curr1;
5569.                  fetch curr1 into varC3aAwal, varC3bAwal, varC3cAwal,
   varC3dAwal, varC3eAwal, varC3fAwal, varC3gAwal, varC3hAwal;
5570.                close curr1;
5571.
5572.                open curr1;
5573.                  fetch curr1 into varC4aAwal, varC4bAwal, varC4cAwal,
   varC4dAwal, varC4eAwal, varC4fAwal, varC4gAwal, varC4hAwal;
5574.                close curr1;
5575.
5576.                open curr1;
5577.                  fetch curr1 into varC5aAwal, varC5bAwal, varC5cAwal,
   varC5dAwal, varC5eAwal, varC5fAwal, varC5gAwal, varC5hAwal;
5578.                close curr1;
5579.
5580.                select group_concat(varC1aAwal, varC1bAwal, varC1cAwal,
   varC1dAwal,  varC1eAwal,  varC1fAwal,  varC1gAwal,  varC1hAwal)  into
   varC1Awal;
5581.                select group_concat(varC2aAwal, varC2bAwal, varC2cAwal,
   varC2dAwal,  varC2eAwal,  varC2fAwal,  varC2gAwal,  varC2hAwal)  into
   varC2Awal;
5582.                select group_concat(varC3aAwal, varC3bAwal, varC3cAwal,
   varC3dAwal,  varC3eAwal,  varC3fAwal,  varC3gAwal,  varC3hAwal)  into
   varC3Awal;
5583.                select group_concat(varC4aAwal, varC4bAwal, varC4cAwal,
   varC4dAwal,  varC4eAwal,  varC4fAwal,  varC4gAwal,  varC4hAwal)  into
   varC4Awal;
5584.                select group_concat(varC5aAwal, varC5bAwal, varC5cAwal,
   varC5dAwal,  varC5eAwal,  varC5fAwal,  varC5gAwal,  varC5hAwal)  into
   varC5Awal;
5585.
5586.                if (varC1Awal <> varC2Awal and varC1Awal <> varC3Awal
   and varC1Awal <> varC4Awal and varC1Awal <> varC5Awal and varC2Awal <>
   varC1Awal and varC2Awal <> varC3Awal and varC2Awal <> varC4Awal and
   varC2Awal <> varC5Awal and varC3Awal <> varC1Awal and varC3Awal <>
   varC2Awal and varC3Awal <> varC4Awal and varC3Awal <> varC5Awal and
   varC4Awal <> varC1Awal and varC4Awal <> varC2Awal and varC4Awal <>
   varC3Awal and varC4Awal <> varC5Awal and varC5Awal <> varC1Awal and
   varC5Awal <> varC2Awal and varC5Awal <> varC3Awal and varC5Awal <>
   varC4Awal) then
5587.                  LEAVE loopCounter;
```

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5588.               end if;
5589.            end while loopCounter;
5590.
5591.            select varC1aAwal, varC1bAwal, varC1cAwal, varC1dAwal,
   varC1eAwal, varC1fAwal, varC1gAwal, varC1hAwal into @varC1aAwal,
   @varC1bAwal, @varC1cAwal, @varC1dAwal, @varC1eAwal, @varC1fAwal,
   @varC1gAwal, @varC1hAwal;
5592.            select varC2aAwal, varC2bAwal, varC2cAwal, varC2dAwal,
   varC2eAwal, varC2fAwal, varC2gAwal, varC2hAwal into @varC2aAwal,
   @varC2bAwal, @varC2cAwal, @varC2dAwal, @varC2eAwal, @varC2fAwal,
   @varC2gAwal, @varC2hAwal;
5593.            select varC3aAwal, varC3bAwal, varC3cAwal, varC3dAwal,
   varC3eAwal, varC3fAwal, varC3gAwal, varC3hAwal into @varC3aAwal,
   @varC3bAwal, @varC3cAwal, @varC3dAwal, @varC3eAwal, @varC3fAwal,
   @varC3gAwal, @varC3hAwal;
5594.            select varC4aAwal, varC4bAwal, varC4cAwal, varC4dAwal,
   varC4eAwal, varC4fAwal, varC4gAwal, varC4hAwal into @varC4aAwal,
   @varC4bAwal, @varC4cAwal, @varC4dAwal, @varC4eAwal, @varC4fAwal,
   @varC4gAwal, @varC4hAwal;
5595.            select varC5aAwal, varC5bAwal, varC5cAwal, varC5dAwal,
   varC5eAwal, varC5fAwal, varC5gAwal, varC5hAwal into @varC5aAwal,
   @varC5bAwal, @varC5cAwal, @varC5dAwal, @varC5eAwal, @varC5fAwal,
   @varC5gAwal, @varC5hAwal;
5596.
5597.            insert into tblCentroidAwal values (@varC1aAwal,
   @varC1bAwal, @varC1cAwal, @varC1dAwal, @varC1eAwal, @varC1fAwal,
   @varC1gAwal, @varC1hAwal, @varC2aAwal, @varC2bAwal, @varC2cAwal,
   @varC2dAwal, @varC2eAwal, @varC2fAwal, @varC2gAwal, @varC2hAwal,
   @varC3aAwal, @varC3bAwal, @varC3cAwal, @varC3dAwal, @varC3eAwal,
   @varC3fAwal, @varC3gAwal, @varC3hAwal, @varC4aAwal, @varC4bAwal,
   @varC4cAwal, @varC4dAwal, @varC4eAwal, @varC4fAwal, @varC4gAwal,
   @varC4hAwal, @varC5aAwal, @varC5bAwal, @varC5cAwal, @varC5dAwal,
   @varC5eAwal, @varC5fAwal, @varC5gAwal, @varC5hAwal);
5598.
5599.        end //
5600.        delimiter ;
```