

CHAPTER 4

ANALYSIS AND DESIGN

4.1 Analysis

4.1.1. Installing Gammu

If you don't have Gammu, please install Gammu first. To avoid corrupted files, it is better to turn off the antivirus first.

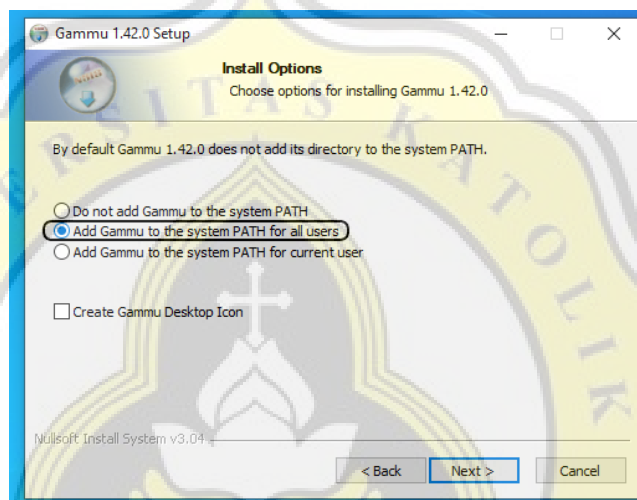


Image 1. Click add Gammu to the system PATH for all users

The function of “add Gammu to the system PATH for all users” is add the Gammu directory path to the Windows Environment Variable, so that it can start Gammu via CMD including install service sms daemon.

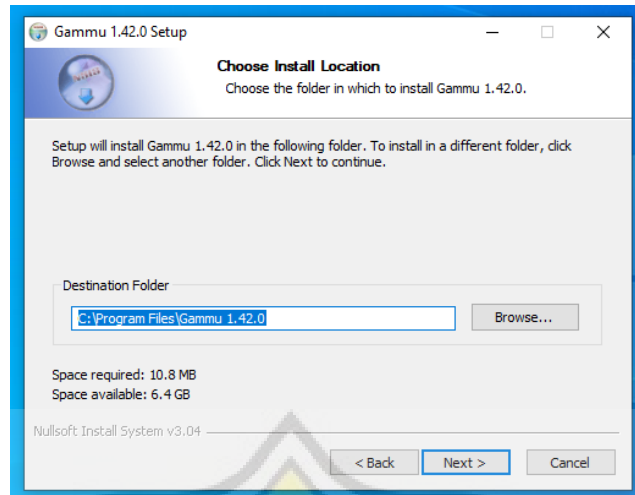


Image 2. You can choose Gammu to be installed in any directory or default

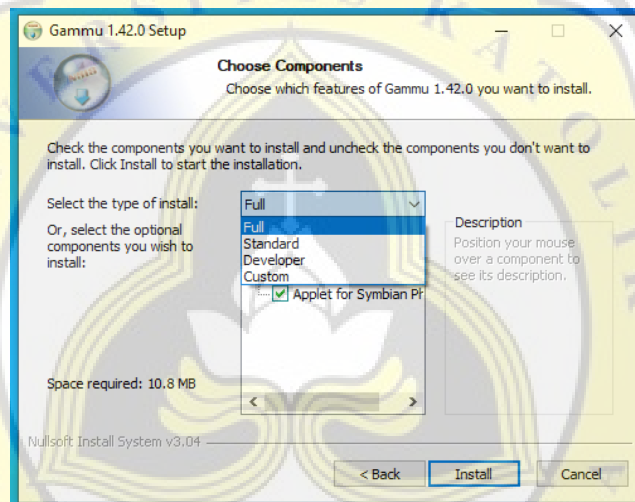


Image 3. Choose Full

4.1.2. Configuration

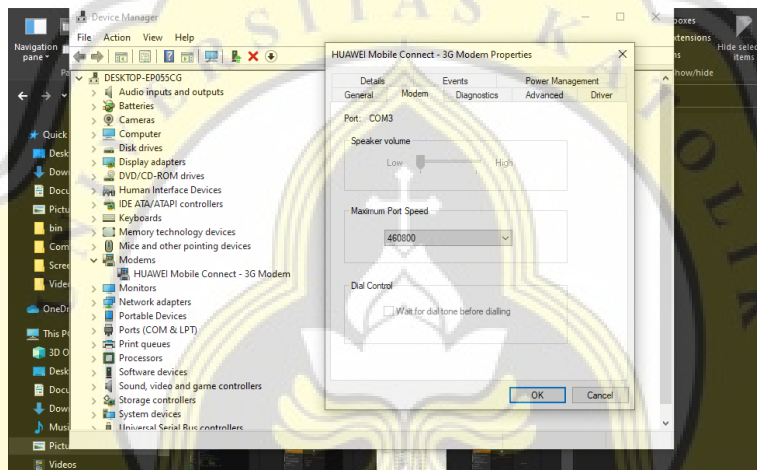
Create a file, name it gammurc and put it in the bin folder.

```
[gammu]
device = com5:
connection = at460800
```

Image 4. The contents of Gammurc like the picture

Explanation :

- **com5** is port number of the modem



- **at460800** is the speed of port

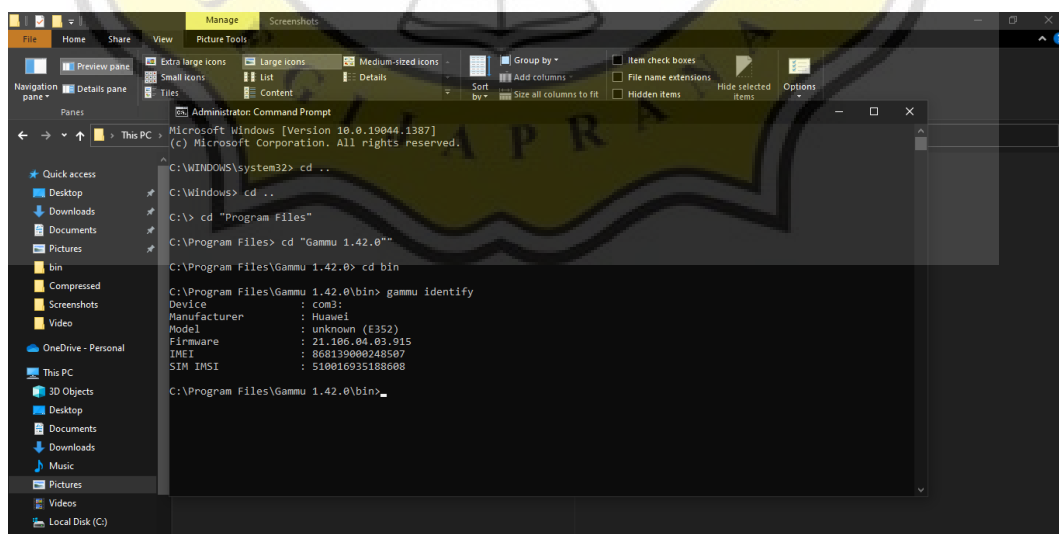


Image 5. Navigate to bin Gammu folder then Gammu identify

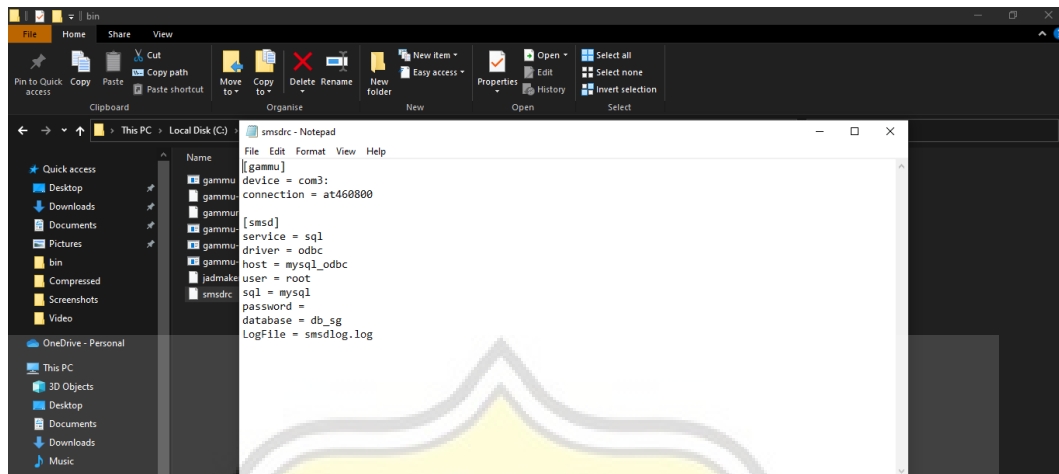


Image 6. Create smsdrc

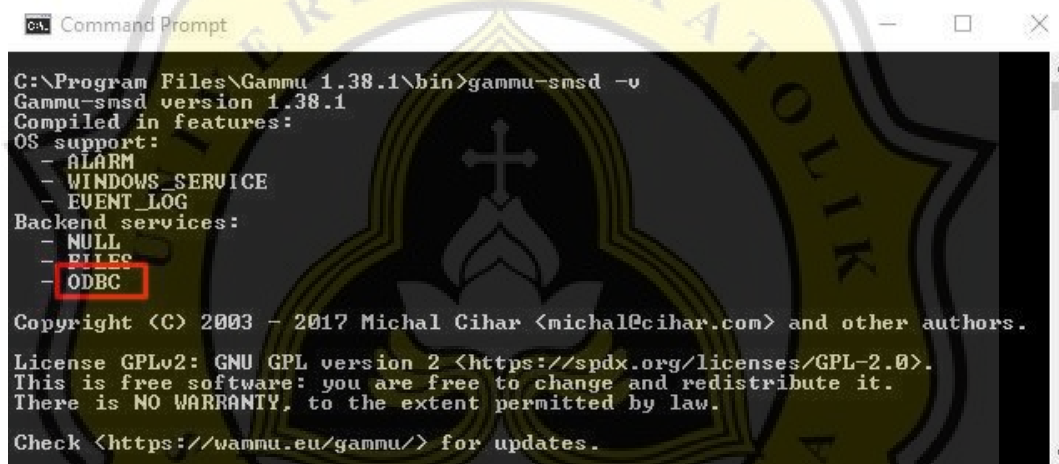


Image 7. ODBC

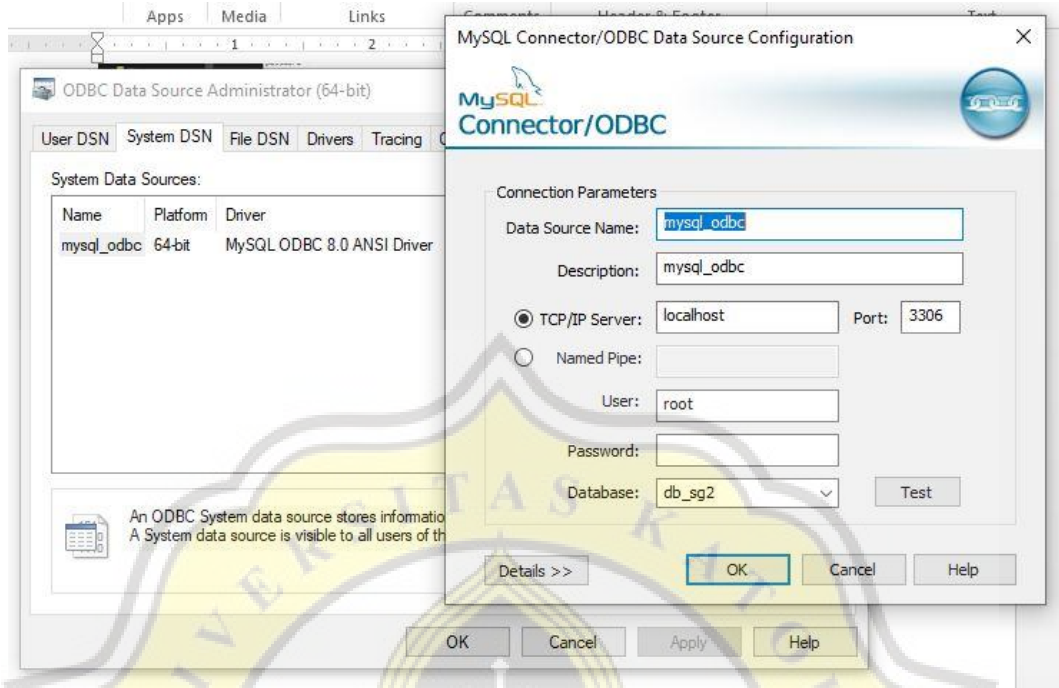


Image 8. Adjust the source name, user and database that has been created

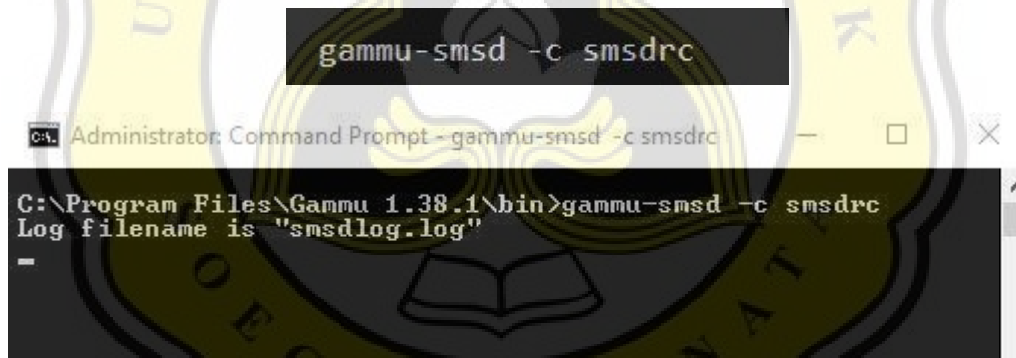


Image 9. Running service SMS Daemon

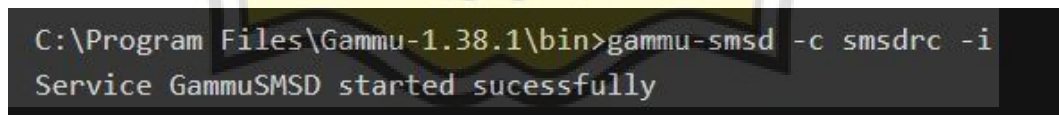


Image 10. Install service

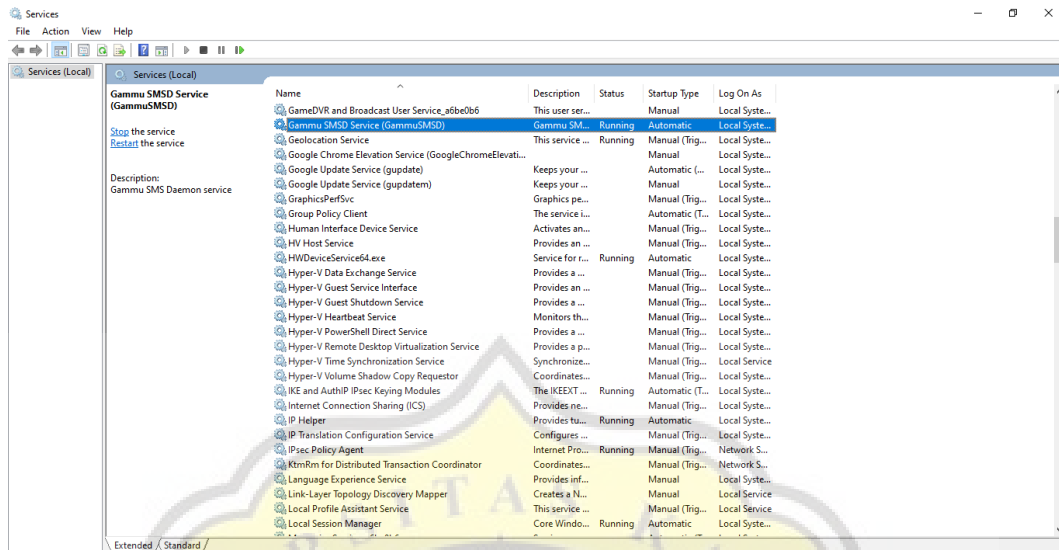


Image 11. Start Gammu SMSD Service

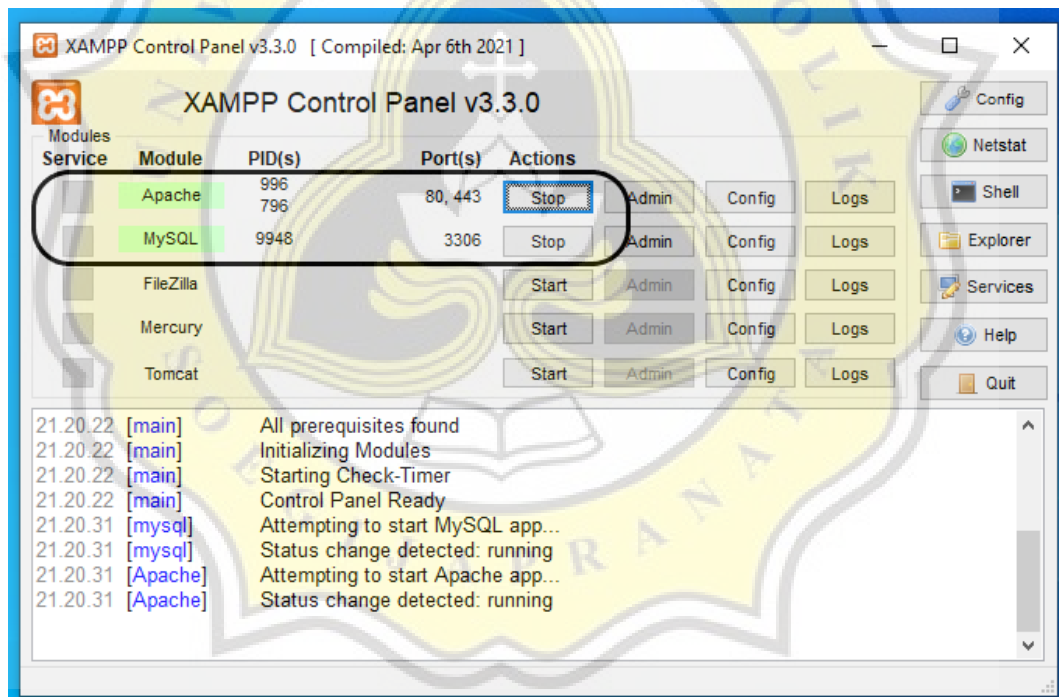


Image 12. Don't forget to start XAMPP (first)

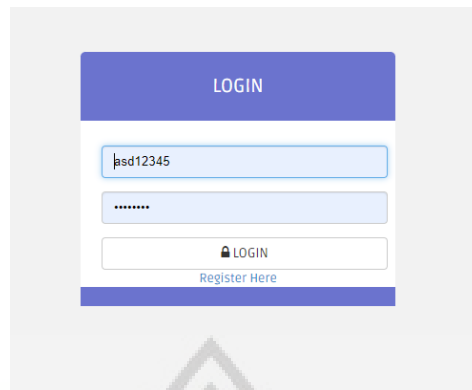


Image 13. Login SMS Announcement Web App

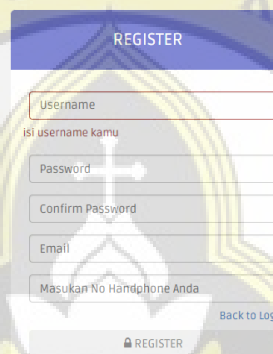


Image 14. Register Account

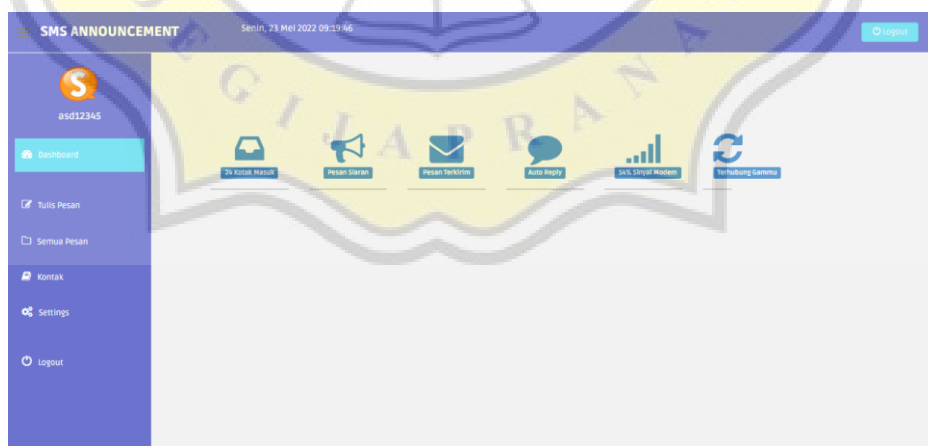


Image 15. Dashboard SMS Announcement

SMS ANNOUNCEMENT Senin, 23 Mei 2022 09:20:45 [Logout](#)

S
asd12345

Dashboard

Tulis Pesan

Semua Pesan

Kontak

Settings

Logout

>Kotak Masuk

Pencarian... Pesan Baru Hapus all Refresh

No	Tanggal	Pengirim	Isi Pesan	Action
1	2022-05-22 21:06:00	+6285886380225 <small>govt</small>	jam berapa kuliah telehealth	Action
2	2022-05-22 21:03:01	+6285886380225 <small>govt</small>	malam, kuliah untuk iot hari apa ya?	Action
3	2022-05-22 21:02:15	+6285886380225 <small>govt</small>	kuliah oop hari apa	Action
4	2022-02-12 13:25:36	+6285886380225 <small>govt</small>	Dosen Pak Aji IOT ruangan mana ya	Action
5	2022-02-12 12:28:53	+628134543650	Ruang RDBMS dimana y	Action

1 2 3 4 5

Image 16. Inbox SMS

SMS ANNOUNCEMENT Senin, 23 Mei 2022 09:22:17 [Logout](#)

S
asd12345

Dashboard

Tulis Pesan

Semua Pesan

Kontak

Settings

Logout

>Pesan Terkirim

Pencarian... Hapus all Refresh

No	Tanggal	Penerima	Pesan	Status	Action
1	2022-02-12 13:25:34	+6285886380225 <small>govt</small>	kamis	Berhasil Terkirim	Action
2	2022-02-12 13:04:51	+6285886380225 <small>govt</small>	Maaaf Peratanyaan Anda Ambigu -v	Berhasil Terkirim	Action
3	2022-02-12 13:04:49	+6285886380225 <small>govt</small>	Maaaf Peratanyaan Anda Ambigu -v	Berhasil Terkirim	Action
4	2022-02-12 13:04:46	+6285886380225 <small>govt</small>	Maaaf Peratanyaan Anda Ambigu -v	Berhasil Terkirim	Action
5	2022-02-12 13:04:44	+6285886380225 <small>govt</small>	Maaaf Peratanyaan Anda Ambigu -v	Berhasil Terkirim	Action

1 2 3 4 5

Image 17. Delivered SMS

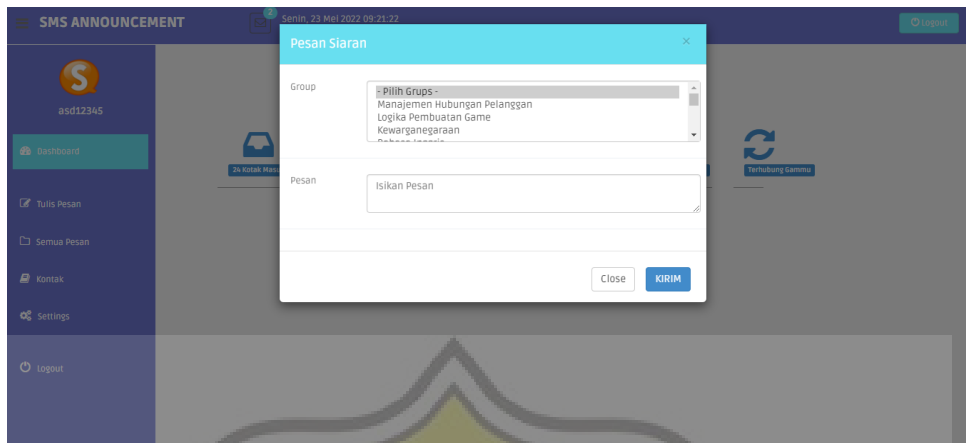


Image 18. Broadcast SMS

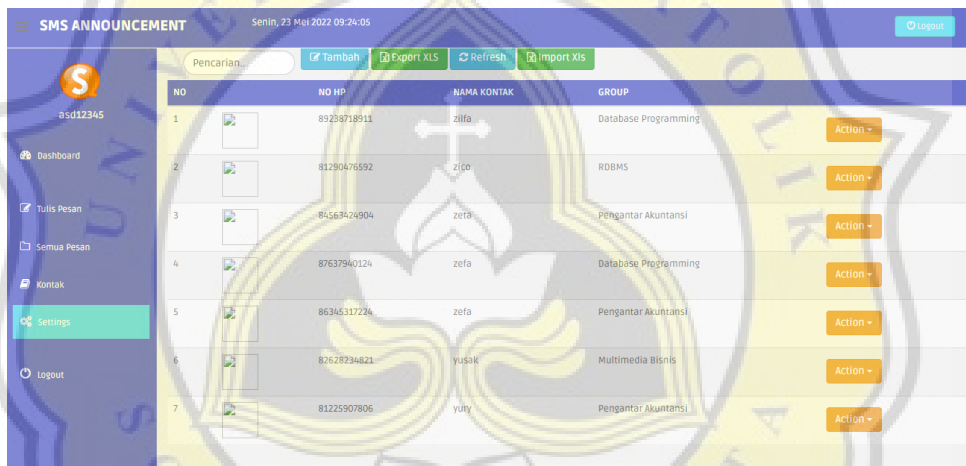


Image 19. Contacts

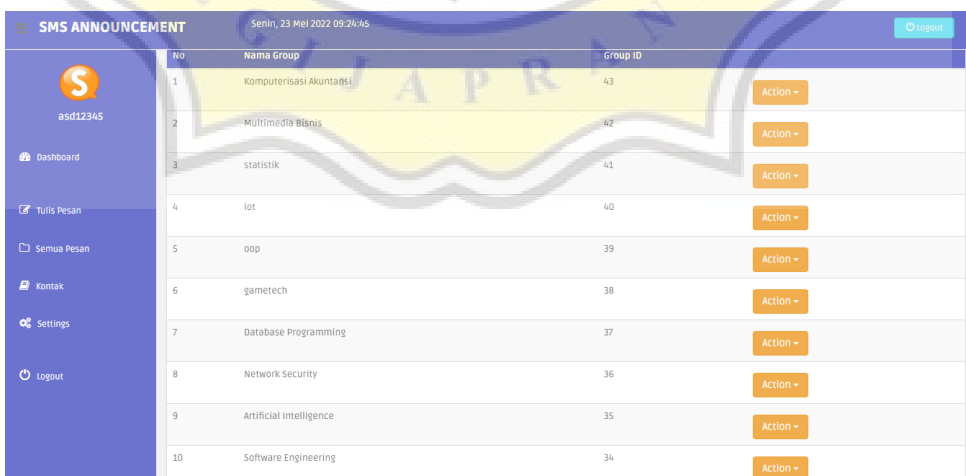


Image 20. Groups

4.1.3. Collecting data

The step to obtain data in this research is to distribute questionnaires in the form of questions, which later on these questions will be processed with the *pre-processing text* stage. The data obtained are 96 data. The data has been given a category label there is a value of 1 namely the room category, a value of 2 namely hour, and a value of 3 namely days.

Table 4.1 Questionnaire Dataset Record

Pertanyaan	Kategori
Ruangan matkul statistik memadai tidak ya?	1
Bisa duduk belakang ga ya?	1
Ac mati	1
Ruangan Makul pindah tempat atau enggak?	1
Jumlah kursinya berapa ya?	1
Ruang kuliah jam ini ada dimana	1
Ruangan matkul yustinus dimana ya?	1
matkul SDM diruang mana ya?	1
Ruangan kuliah udah dibuka belum apa masih dikunci?	1
Ruangan kelas fakultas kita dilantai brp ya.	1
di mana lokasinya	1
Berapa kapasitas mahasiswa di 1 ruang kelas?	1
Nomer ruangan dan letak lantai ruangan	1
Ada AC gak ya?	1
Lab jam praktik statistik di mana, terkadang di kelas atau lab komputer	1
Makul embeded di kelas atau di lab?	1
Di Lantai Berapa ya	1
Ruang telehealth di lantai berapa ya?	1
ac ruangan makul rdbms kapan dibenerin ya?	1
Ruangan makul rdbms apakah dingin?	1
Ruang perkuliahan kok panas yaa	1
Ruangan mata kuliah dmn	1
Gedung Antonius	1
Ruangan kelas ini acnya dingin ga?	1
Ruangan makul rdbms apakah dingin?	1
Ruang lab bahasa sudah buka atau belum ya?	1
Ruang 51A dimana ya	1
ruangan makul data structures apakah sudah tidak dipakai kelas lain?	1
Dimana ruangan mata kuliah telehealth?	1
Ruang praktikum di gedung mana ya?	1
ruang lab	1
Apakah ruang rdbms terdapat AC yang berkualitas?	1
jadwal kuliah game tech mulai jam berapa ya?	2
Kelasnya kosong kah?	2
Dosen nya ada atau tidak	2
ada kelas tambahan tidak ya , dosen datang atau tidak	2
Jadwal kuliah sysadmin ada brp kali ya?	2
Jadwal kuliah hari ini selesai jam berapa	2

Jadwal kuliah data manajemen minggu ini tetap sesuai jadwal kah?	2
jadwal praktikum alat alat kedokteran gigi bisa diajuin gak ya?	2
Besok ada kelas atau tidak?	2
Gimana cara baca jadwalnya ya?	2
jadwal kuliah dosen tetap atau berubah	2
Adakah jam kuliah dari makul dirapel di minggu ini?	2
Jadwal kuliah hari ini kosong atau tidak	2
Enaknya jadwal kuliah pagi, siang, atau malam ya?	2
Apakah jam statistik diganti dengan makul lain?	2
Makul OOP lab atau kelas dahulu?	2
Mulai jam berapa	2
Jadwal kuliah game tech mulai dibuka lagi kapan?	2
kenapa jadwal kuliah harus ada?	2
Jadwal kuliah data security seminggu berapa kali pertemuan?	2
Jadwal kuliah hari ini kok di ganti ya?	2
Apakah jadwal kuliah saya apa saja hari ini	2
Jadwalnya jam berapa ya	2
jadwal kuliahnya apakah selesainya sesuai jadwal??	2
Jadwal kuliah data security seminggu berapa kali pertemuan?	2
Jadwal kuliah matkul Ind-Eng Translation mulai jam berapa ya?	2
Jadwal kuliah bakery hari ini ada ngga ya	2
jadwal kuliah statistik jam berapa?	2
Mata kuliah game tech jam berapa ya?	2
Apakah jadwal kuliah praktikum pada minggu pertama diadakan?	2
jadwal kuliah approg	2
Berapa jam pada jadwal kuliah di data security dalam seminggu?	2
kelas pengganti data security diampu dosen siapa ya?	3
Kelas pengantinya kapan ya?	3
Apakah diadakan kelas pengganti	3
jadwal dan ruangan mana	3
Kelas pengganti oop diganti kapan?	3
Kelas pengganti hari ini di ganti hari dan jam berapa	3
Apakah kelas pengganti manajemen dilaksanakan setiap hari?	3
apakah jam kosong bisa diisi matkul microbiologi?	3
Kelas pengantinya kapan?	3
Kelas pengganti jam brp ya?	3
kelas pengganti di tambah jam atau ganti hari	3
Apa kelas pengganti minggu ini banyak?	3
Kenapa harus ada kelas pengganti di hari sabtu?	3
Kira kira bisa hadir tidak ya?	3
Apakah makul statistik diganti dengan makul lain?	3
Apakah kelas pengganti OOP dengan bu Rosita atau bu Shinta?	3
Betul	3
Apakah kelas pengganti statistik akan dilaksanakan Minggu depan?	3
kenapa harus ada kelas pengganti?	3
Apakah kelas pengganti IOT dilaksanakan hari rabu?	3
Kelas pengganti di ganti hari apa??	3
Adakah kelas pengganti hari ini	3

Hari apa, jam berapa, di kelas apa	3
ini kelas penggantinya atau hanya dapat tugas dosen aja ya?	3
Apakah kelas pengganti IOT dilaksanakan hari rabu?	3
Kelas pengganti dilaksanakan hari apa ya ?	3
Kelas pengganti biologi hari kamis kah?	3
apakah kelas pengganti OOP dilaksanakan hari sabtu?	3
Apakah IOT ada kelas pengganti?	3
Jadwal kuliah pengganti libur akan dilaksanakan tanggal berapa ya?	3
kelas pengganti oop jumat	3
Biasanya alasan mengapa ada kelas pengganti pada OOP?	3

4.1.4. Step Pre-processing

After the questionnaire is obtained, the questionnaire will be processed using the *text pre-processing* stage. The text pre-processing stage is a technique contained in data mining, which aims to remove *noise* in the sentence and form it into a standard form so that the sentence can obtain good predictive results. In the *text pre-processing* stage, there are several steps, namely the *folding*, *stemming* and *filtering* stages.

a. *Folding* stage is the stage of changing all letters to lowercase in each sentence.
Example sentence: The statistical matkul room is adequate, isn't it?

The result of the sentence after through the *Folding* process:
The statistical matkul room is adequate or not, right?

b. *Stemming* stage is the stage of changing words into standard tenses. In this stage, you can remove quotes, commas, periods and others.

Example sentence: the statistical matkul room is adequate or not, right?

The results of the sentence after through the *Stemming* process:
statistical matkul space on no yes

c. *Filtering* stage is the stage of removing words that contain conjunctions and eliminating common words that often appear which are often called stop words.

Example sentence: statistical matkul space on no yes

The results of the sentence after going through the *Filtering* process:
statistical matkul room

4.1.5. Step TF-IDF

Data :

Document 1: Statistical matkul space

Document 2: Matkul HR space

Document 3: The matkul yustinus room

Testing Data : Statistical Matkul Room

4.1.5.1. Step of Term Frequency

The Term Frequency stage is the stage that calculates the number of terms in a document.

Table 4.2 Term Frequency

No	Term	Document	Count
1	ruang	Document 1	1
		Document 2	1
		Document 3	1
2	matkul	Document 1	1
		Document 2	1
		Document 3	1
3	statistik	Document 1	1
		Document 2	0
		Document 3	0

4.1.5.2 Inverse Document Frequency Step

The stages of reducing the weight of terms that often appear in a document.

Table 4.3 Stages of Inverse Document Frequency

No	Term	Idf
1	ruang	0
2	matkul	0
3	statistik	0.477

4.1.5.3 Term Frequency - Inverse Document Frequency

Table 4.4 Term Frequency - Inverse Document Frequency

No	Term	Document	Count
1	ruang	Document 1	0
		Document 2	0
		Document 3	0
2	matkul	Document 1	0
		Document 2	0
		Document 3	0
3	statistik	Document 1	0.477
		Document 2	0
		Document 3	0

4.1.6. Processing Data using Cosine Similarity

Testing data: statistical matkul room

Category : room, hour, day

Formula :

$$\text{similarity} = \cos(\theta) = \frac{\mathbf{A} \cdot \mathbf{B}}{\|\mathbf{A}\| \|\mathbf{B}\|} = \frac{\sum_{i=1}^n A_i B_i}{\sqrt{\sum_{i=1}^n A_i^2} \sqrt{\sum_{i=1}^n B_i^2}},$$

Image 21. Formula Cosine Similarity

Table 4.5 Result TF-IDF

Document	TF-IDF Document	Category	TF-IDF Term
ruang matkul statistic	0.477	ruang	1
		jam	0
		hari	0

Table 4.6 Result Cosine Similarity

Category	Document	TF-IDF Document	TF-IDF Term	Result Cosine Similarity
ruang	ruang matkul statistik	0.477	1	0.477
jam			-	-
hari			-	-

The results show that the space category has a value of 0.477 which is greater than other categories such as hours and days. So that the results of the questions on the document are categorized as "space".

4.2 Design

4.2.1. Tools Device be used

1. Modem USB



Image 22. Modem Huawei

Modem is a tool for accessing the internet, two-way communication. Can also receive and send messages, convert digital signal to analog.

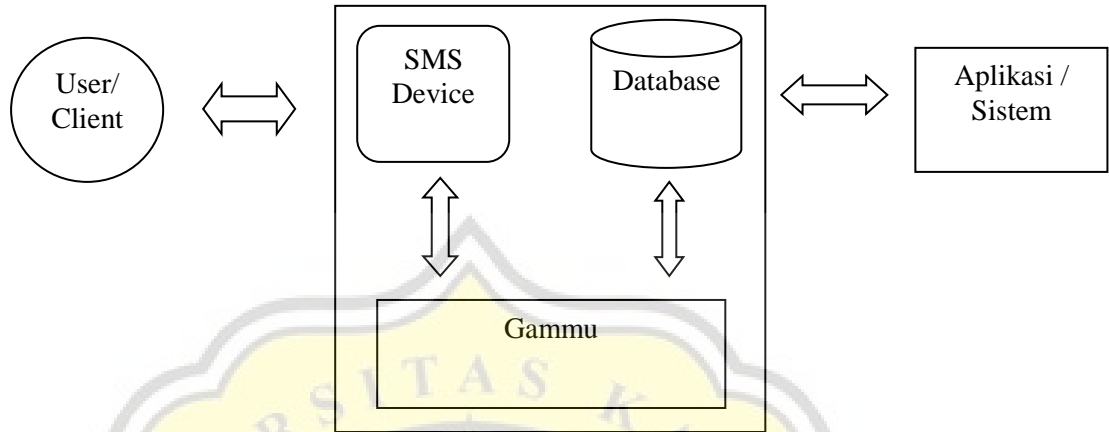
2. Mobile Number



Image 23. SIM Card

As a clue to the identity of the sender/receiver and to refill.

3. Flowchart



1.1 Diagram Flowchart

4. Process Gammu

