

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation

First implement it by analyzing with statistics

1. to find the mean.

```
1. $count = count($array);
2. $sum = array_sum($array);
3. $total = $sum / $count;
```

2. to find the median value.

```
4. rsort($array);
5. $middle = round(count($array) / 2);
6. $total = $array[$middle-1];
```

3. to find the mode value.

```
7. $v = array_count_values($array);
8. arsort($v);
9. foreach($v as $k => $v){$total = $k; break;}
```

4. to find a standard deviation.

```
10. $num_of_elements = count($array);
11. $variance = 0.0;
12. $average = array_sum($array)/$num_of_elements;
13. foreach ($array as $i) {
14. $variance += pow($i - $average,2);
15. }
16. return (float)sqrt($variance/$num_of_elements);
```

5. to calculate sub totals per item that matches the input.

```
17. if (($handle = fopen("Penjualan_Export_Jan-Des_2017.csv",
    "r")) !== FALSE) {
18.     while (($data = fgetcsv($handle, 1000, ",",)) !==
    FALSE) {
19.         $b1n = date('m',strtotime($data[0]));
20.         $b1n1 = date('M',strtotime($data[0]));
21.         if ($b1n >= $dr && $b1n <= $smpi && $data[2] ==
    $nmItm ) {
22.             $total[$b1n1] = $total[$b1n1] + $data[3];
23.         }
24.     }
}
```

6. Enter the value value in the graph.

```
25. data: {
```

```

26.         labels: [<?php foreach ($dt as $bln)
    { echo "'$bln'".".";" } ?> ],
27.         datasets: [{
28.                                     label: [<?php
    echo("' $dta[0]'"."."."");?> ],
29.         data: [<?php foreach ($data
    as $value) { echo $value.".";" } ?> ],

```

7. process of input value.

```

30.         if (($handle = fopen("Penjualan_Export_Jan-
    Des_2017.csv", "r")) !== FALSE) {
31.         while (($data = fgetcsv($handle, 1000, ",") !==
    FALSE) {
32.             $bln = date('m',strtotime($data[0]));
33.             $bln1 = date('m',strtotime($data[0]));
34.             if ($bln >= $dr && $bln <= $smpi && $data[2] ==
    $nmItm ) {
35.                 $total[$bln1] = $total[$bln1] + $data[3];
36.             }
37.         }
38.         if (($handle = fopen("Penjualan_Export_Jan-Des_2017.csv",
    "r")) !== FALSE) {
39.         while (($data = fgetcsv($handle, 1000, ",") !==
    FALSE) {
40.             $bln = date('m',strtotime($data[0]));
41.             $bln1 = date('m',strtotime($data[0]));
42.             if ($bln >= $dr && $bln <= $smpi+1 && $data[2] ==
    $nmItm ) {
43.                 $total1[$bln1] = $total1[$bln1] + $data[3];
44.             }
45.         }
46.     }

```

8. process data into regression formulas.

```

47.     Class RegresiLinier{
48.
49.         public $x,
50.             $y,
51.             $n,
52.             $xy,
53.             $a,
54.             $b,
55.
56.             $all; //forecast y value based on linear
    regression
57.
58.
59.         public function __construct($x=null, $y=null){
    //kelas yg digunkn utk mmbt objt
60.         if(!is_null($x) && !is_null($y)){ //jika tdk ksg
61.             $this->x = $x; //membuat object
62.             $this->y = $y;
63.             $this->compute();

```

```

64.         }
65.     }
66.
67.     public function compute(){
68.         if(is_array($this->x) && is_array($this->y)){
69.             if(count($this->x) == count($this->y)){
//menghtng jmlh data
70.                 $this->n = count($this->x);
71.
72.                 $this->calculation();
73.                 $this->konstanta();
74.                 $this->linear_regression();
75.             }
76.             else{
77.                 throw new Exception('Jumlah data variabel
X dan Y harus sama');
78.             }
79.
80.         }
81.         else{
82.             throw new Exception('Variabel X atau Y belum
didefinisikan');
83.         }
84.     }
85.
86.     public function calculation(){
87.         //persiapan menghitung x2, y2, dan xy;
88.         $this->x2 = array_map(function($n){
89.             return $n * $n;
90.         }, $this->x);
91.         $this->y2 = array_map(function($n){
92.             return $n * $n;
93.         }, $this->y);
94.
95.         for($i=0; $i<$this->n; $i++){
96.             $this->xy[$i] = $this->x[$i] * $this->y[$i];
97.         }
98.     }
99.
100.    }
101.
102.    public function konstanta(){
103.        //mendapat nilai konstanta A dan B
104.        $a = ((array_sum($this->y) * array_sum($this-
>x2)) - (array_sum($this->x) * array_sum($this->xy))) /
((($this->n * array_sum($this->x2)) - (array_sum($this->x) *
array_sum($this->x))));
105.        $this->a = $a;
106.
107.        $b = ((($this->n * array_sum($this->xy)) -
(array_sum($this->x) * array_sum($this->y))) / ((($this->n *
array_sum($this->x2)) - (array_sum($this->x) * array_sum($this-
>x))));
108.        $this->b = $b;

```

```

109.     }
110.
111.     public function perkiraan($xfore){ // Y
112.         $yy = $this->a + ($this->b * $xfore);
113.         return $yy;
114.     }
115.
116.     public function linear_regression(){ //pengitungan
    data bln  perkiraan
117.         $n = 0;
118.         foreach($this->x as $xnew){
119.             $this->all[$n] = $this->perkiraan($xnew);
120.             $n++;
121.         }
122.         $bb = end($this->x); // mengambil bulan terakhir
123.         $bulanPerkiraan = $bb+1;
124.         $this->all[$n] = $this->
    >perkiraan($bulanPerkiraan);
125.     }
126.
127. }
128. ?>

```

the value in the input period will be entered into \$ x and the input value will enter into \$ y. After that the compute function to process the data will be processed values of \$ x and \$ y. And then going to send values to all functions each function has its own process. The calculation function is useful for calculating X2, Y2, and XY. For constant functions, it is useful to find the results of calculations from data input, and the linear_regression function which is useful for processing data from calculating constant functions and producing predictive data that is in accordance with input data.

9. look for error rates with RMSE.

```

129.     $Hasil[] = $totalRegresi[$i] - $totalY[$i];
130.     $hasil2 [] = pow($Hasil[$i],2);
131.     $rmse = (array_sum($hasil2) / $cd);

```

from the script above to find error rates from real data and predictive data that will be used to measure the accuracy of forecasting.

5.2 Testing

The program trial process by conducting two experiments analyzed the sub total sales of exported goods.

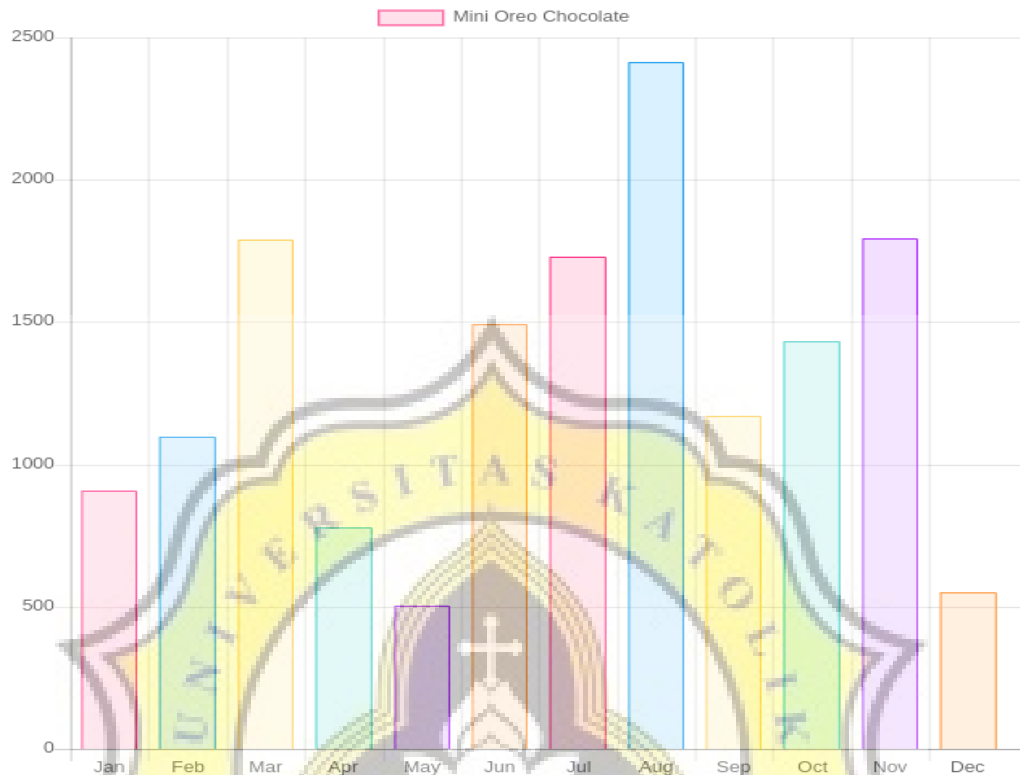


Illustration 5.1: Analysis of Sales of Chocolate Mini Oreo

In figure 5.1, the first trial uses mini oreo chocolate items and makes a sub total of the items, which corresponds to the program data input. From the graph can analyze the sale of mini oreo chocolate items that are most often purchased on the month. March, July, August, November.

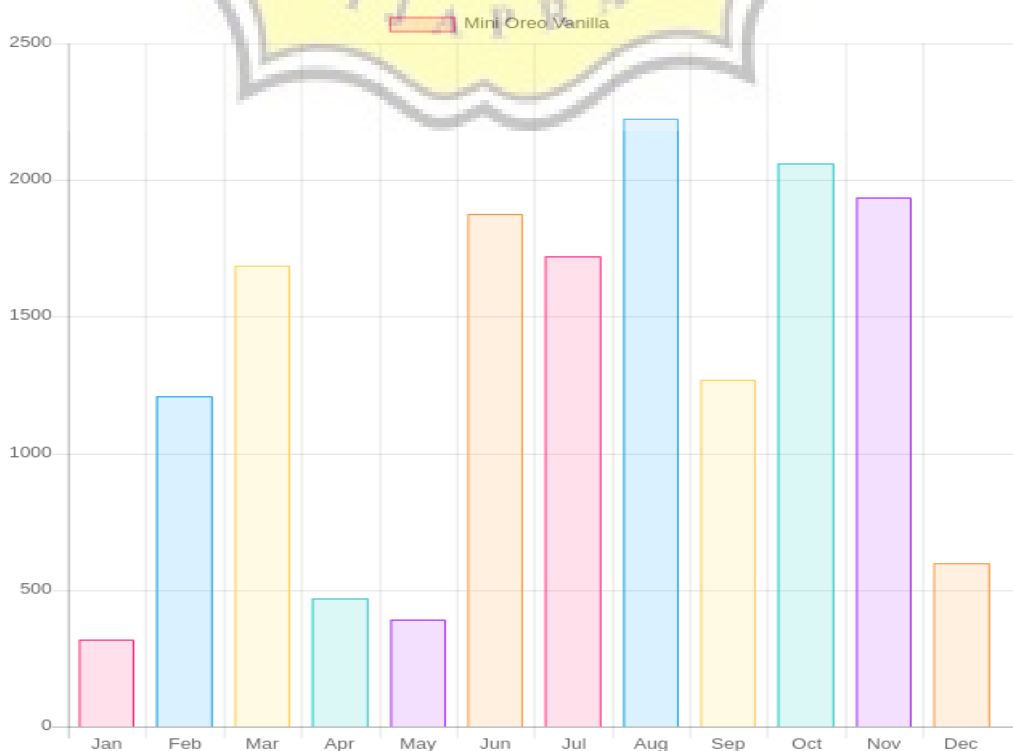


Illustration 5.2: Analysis of Vanilla Mini Oreo Sales

In figure 5.2, the second trial uses the vanilla oreo mini item and makes a sub total of the item, which corresponds to the program data input. From the graph can analyze the sale of mini vanilla mini items that are most often purchased on the month. June, August, October, November.

The process of testing the program by conducting two experiments using data from January to June and continued with June to December. The data used is data on export sales of PT. Asia Synergy Partner.

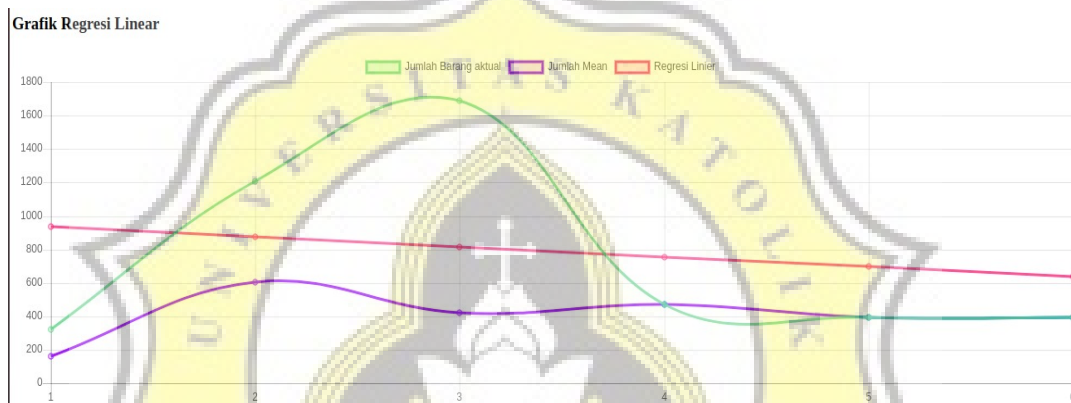


Illustration 5.3: Experiments for January to June

The first experiment using mini vanilla mini items and data from January to June. From the graph can be seen RMSE 497,188 data from January to June decreased. Because it is looking for new customers and an Eid holiday that requires heavy containers and cars not to operate on the main road and toll roads. Can be seen in Figure 5.3

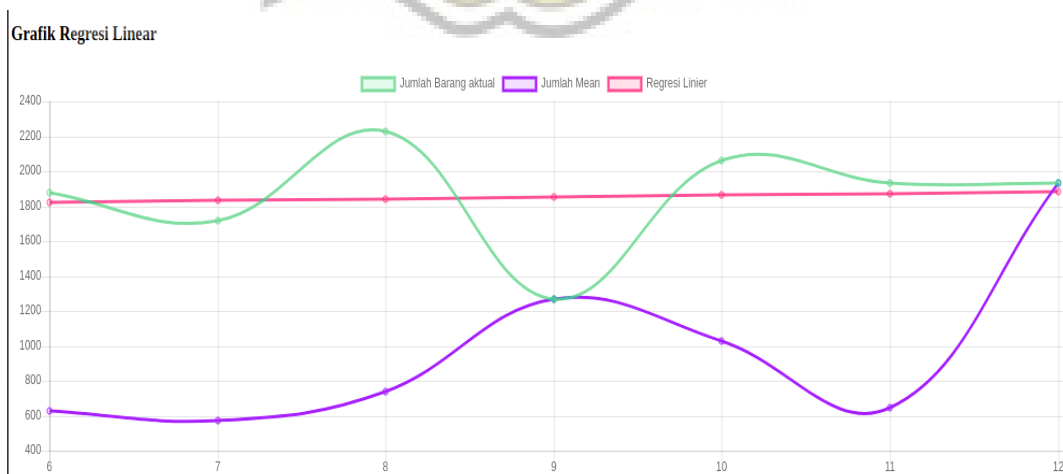


Illustration 5.4: Experiments for June to December

The second experiment was using mini vanilla mini items and data from June to December. From the graph, it can be seen that RMSE 213,418 data for June to December has increased. Because of the incoming orders from new customers and regular customers. Can be seen drawn 5.4

Grafik Regresi Linear

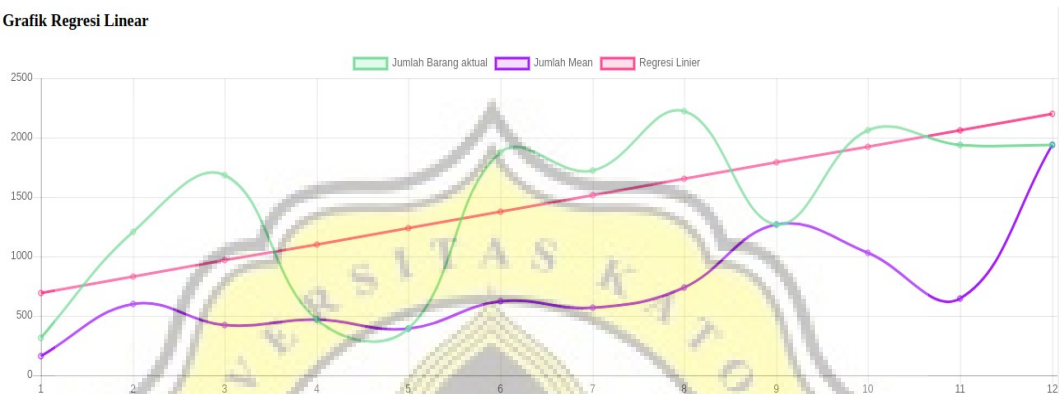


Illustration 5.5: Experiments for January to December

The third experiment using mini vanilla mini items and data from January to December. From the graph, RMSE 492.907 can be seen experiencing a very high increase. Can be seen in Figure 5.5