CHAPTER 5
IMPLEMENTATION AND RESULT

5.1. Implementation

5.1.1. Menu Kode Perusahaan

In this study, the first test was carried out on the kode perusahaan menu program kodeperusahaan.py. Then click the "tambah kode perusahaan" button, in running the test kode perusahaan menu the author uses the python programming language and selenium tools to run the program. Before the authors can fill in the fields, the author must login to ArtemisDev test server account. Here is the code to login.

```
1.  driver.get("https://dev.artemis.local/globals/kodeperusa
    haan")
2.  time.sleep(3)
3.  driver.find_element_by_id("details-button").click()
4.  driver.find_element_by_id("proceed-link").click()
5.  time.sleep(3)
6.  driver.find_element_by_id("email").send_keys("edwin.18k1
    0005@artemis.dev")
7.  time.sleep(3)
8.  driver.find_element_by_id("password").send_keys("18k1000
    5")
9.  time.sleep(3)
10. driver.find_element_by_name("sign_in_btn").click()
11. time.sleep(5)
```

On lines 1-2 of the program code contains the command to enter the id address of the ArtemisDev test server in the "kode perusahaan" menu and then delay for 3 seconds. Lines 3-5 of the program code contain commands to click the "details" and "process" buttons to enter the ArtemisDev test server login menu and then delay for 3 seconds. Lines 6-11 of the program code contain the command to enter the registered email and password to login the ArtemisDev test server and enter the "kode perusahaan" menu. Then after entering the ArtemisDev test server, the test automatically clicks on the "tambah kode perusahaan" button. Next, enter data in the "kode perusahaan", "badan hukum", and "nama perusahaan" fields.

5.1.2. Menu Site

In this study, a second test was conducted on the site menu program site.py and clicking the "tambah site" button. Before entering the site menu, the author must login to enter the ArtemisDev test server. The test server site menu has the same login stage as the kode perusahaan menu described above. On the "tambah site" button there are many fields that can be filled in such as kode perusahaan, site, deskripsi site, negara, provinsi, kota, etc. The following is the code to fill in the fields contained in the "tambah site" button.

```
12.  driver.find_element_by_name("company_code").send_keys(ko
     deperusahaan)
13.  time.sleep(3)
14.  driver.find_element_by_name("site").send_keys(site)
15.  time.sleep(3)
16.  driver.find_element_by_name("site_description").send_key
     s(diskripsi)
17.  time.sleep(3)
18.  driver.find_element_by_name("country").send_keys(country
     )
19.  time.sleep(3)
20.  driver.find_element_by_id("province").send_keys(province
     )
21.  time.sleep(3)
22.  driver.find_element_by_id("city").send_keys(city)
23.  time.sleep(3)
24.  driver.find_element_by_xpath('//*[@id="address"]').send_
     keys(address)
25.  time.sleep(3)
26.  driver.find_element_by_id("telephone_number").send_keys(
     telp)
27.  time.sleep(3)
28.  driver.find_element_by_id("postal_code").send_keys(kodep
     os)
29.  time.sleep(3)
30.  driver.find_element_by_id("site_parent").send_keys(sitep
     arent)
31.  time.sleep(3)
32.  driver.find_element_by_name("domain").send_keys(domain)
33.  time.sleep(3)
```

In lines 12-33 of the program code contain similar commands, type the words in id, name, xpath which the author knows are empty fields, then delay for 3 seconds for each command. The command written by the author on lines 12-33 is a command to fill in the text in the blank column imported from the data in excel.

5.1.3. Menu Lokasi

In this study, a third test was conducted on the lokasi menu program site.py and clicking the "tambah lokasi" button. Before entering the lokasi menu, the author must login to enter the ArtemisDev test server. The test server lokasi menu has the same login stage as the kode perusahaan menu and site menu described above. On the "tambah lokasi" button there are many fields that can be filled in such as kode perusahaan, site, lokasi, tipe lokasi, deskripsi lokasi, akun gl, kode, etc. After inputting the data then click the save button, on the save button there is a pop up to confirm again. Here is the code to click the confirmation pop up again.

```
34. Try:
35. WebDriverWait(driver,10).until(EC.element_to_be_clickabl
    e((By.XPATH, '//*[@id="divArtConfirmation"]')))
36. print("ada pop up")
37. driver.find_element_by_id("artConfirmationBtnOk").click(
    )
38. print("klik simpan")
39.
40. except TimeoutException:
41. print("pop up tidak muncul")
42. Pass
43. time.sleep(5)
```

On lines 34-38 the program code contains the command to enter a confirmation pop up, after entering the confirmation pop up then click the "ok" button. After that a notification appears in the terminal "ada pop up" then a notification "klik simpan" appears. Lines 40-43 of the program code contain the command if the pop up doesn't appear, a message "pop up tidak muncul" will appear and skip the process then delay for 5 seconds.

5.2. Testing

The test conducted by the author was carried out with five times (5x) different experiments and four scenarios, namely the number of characters less, the number of characters more, the number of characters according to the provisions, and empty. This test program is run for ± 40 seconds, before running the program the computer must be connected to a VPN connected to the server PT. Hartono Istana Teknologi. The data entered on the test server PT. Hartono Istana Teknologi is dummy data used for testing.

5.2.1. Button Functionality Testing Tambah Kode Perusahaan

The program that author will use is the finance program, and which is located on the trial server at the PT. Hartono Istana Teknologi. Next will test the functionality on the kode perusahaan menu, "tambah kode perusahaan" button.

Table 5. 1. Function Test Results Of The "Tambah Kode Perusahaan" Button

No	Function	Expected results	Results	Successful Rate
1	Tambah button	Can add tambah kode perusahaan	Success	100%
2	Add kode perusahaan	Can enter kode perusahaan	Success	100%
3	Add nama perusahaan	Can enter nama perusahaan	Success	100%

The results of the functionality test in the "tambah kode perusahaan" button, kode perusahaan field, nama perusahaan field are successful. Next will be testing on the fields used on the "tambah kode perusahaan" button.

Field testing kode perusahaan
The data type used is varchar but which will include a 6 letter character set.

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Table 5. 2. *Kode Perusahaan Field Test Results*

No	Scenario	Result	Successful Rate
1	Number of characters more than 6	Can be input	0%
2	Number of characters less than 6	Can be input	100%
3	The number of characters according to the provisions is 6	Can be input	0%
4	Empty	Error message	100%

Test results in the kode perusahaan field by specifying the lower and upper limits, in the scenario of the number of characters more than 6, the number of characters according to the provisions is 6 with failed results and the number of characters is less than 6, empty with successful results.

Field testing nama perusahaan
The data type used is varchar, but will enter a 50 character string including alphabet, numbers and spaces.

Table 5. 3. Nama Perusahaan Field Test Results

No	Scenario	Result	Successful Rate
1	Number of characters more than 50	Can be input	0%
2	Number of characters less than 50	Can be input	100%
3	The number of characters according to the provisions is 50	Can be input	100%
4	Empty	Error message	100%

Test results in the nama perusahaan field by specifying the lower and upper limits, in the scenario of the number of characters more than 50 with failed results and the number of characters less than 50, the number of characters according to the provisions is 50 and emptied with a successful result.

5.2.2. Button Functionality Testing Tambah Site

The program that author will use is the finance program, and which is located on the trial server at the PT. Hartono Istana Teknologi. Next will test the functionality on the site menu and "tambah site" button.

Table 5.4. Function Test Results Of The "Tambah Site" Button

No	Function	Expected results	Result	Successful Rate
1	Tambah button	Can add tambah site	Success	100%
2	Site	Can enter new site	Success	100%
3	Kode Pos	Can enter new kode pos	Success	100%

The results of the functionality test on the "tambah site" button, site field, and kode pos field were successful. Next will be testing on the fields used on the button "tambah site".

Field testing site
The data type used is varchar but which will include a 15 letter character set.

Table 5.5. Site Field Test Results

No	Scenario	Result	Successful Rate
1	Number of characters more than 15	Can be input	0%
2	Number of characters less than 15	Can be input	100%
3	The number of characters according to the provisions is 15	Can be input	0%
4	Empty	Error message	100%

Test results in the site field by specifying the lower and upper limits, in the scenario of the number of characters more than 15, the number of characters according to the provisions is 15 with failed results and the number of characters is less than 15, empty with successful results.

Field testing kode pos
The data type used is varchar, but will enter a 10 character string namely numbers.

Table 5.6. Kode Pos Field Test Results

No	Skenario	Hasil	Kesimpulan
1	Number of characters more than 10	Can be input	0%
2	Number of characters less than 10	Can be input	100%
3	The number of characters according to the provisions is 10	Can be input	100%
4	Empty	Error message	100%

Test results in the kode pos field by specifying the lower and upper limits, in the scenario of the number of characters more than 10 with failed results and the number of characters less than 10, the number of characters according to the provisions is 10 and emptied with a successful result.

5.2.3. Button Functionality Testing Tambah Lokasi

The program that author will use is the finance program, and which is located on the trial server at the PT. Hartono Istana Teknologi. Next will test the functionality on the lokasi menu and "tambah lokasi" button.

Table 5.7. Function Test Results Of The "Tambah Lokasi" Button

No	Function	Expected results	Result	Successful Rate
1	Tambah button	Can add tambah lokasi	Success	100%
2	Tipe Lokasi	Can enter new lokasi	Success	100%
3	Kode	Can enter new kode	Success	100%

The results of the functionality test on the "tambah site" button, tipe lokasi field, and kode field were successful. Next will be testing on the fields used on the button "tambah lokasi".

Field Testing Tipe Lokasi

The data type used is varchar but which will include a 25 letter character set.

Table 5.8. Tipe Lokasi Field Test Results

No	Skenario	Hasil	Kesimpulan
1	Number of characters more than 25	Can be input	0%
2	Number of characters less than 25	Can be input	100%
3	The number of characters according to the provisions is 25	Can be input	100%
4	Empty	Error message	100%

Test results in the site field by specifying the lower and upper limits, in the scenario of the number of characters more than 25, the number of characters according to the provisions is 25 with failed results and the number of characters is less than 25, empty with successful results.

Field Testing Kode

The data type used is varchar, but will enter a 15 character string including alphabet, numbers and spaces.

Table 5.9. Hasil uji coba kode

No	Skenario	Hasil	Kesimpulan
1	Number of characters more than 15	Can be input	0%
2	Number of characters less than 15	Can be input	100%
3	The number of characters according to the provisions is 15	Can be input	100%
4	Empty	Error message	100%

Test results in the kode field by specifying the lower and upper limits, in the scenario of the number of characters more than 15 with failed results and the number of characters less than 15, the number of characters according to the provisions is 15 and emptied with a successful result.

5.3. Result

The results of research conducted by the author, the success rate for each field contained in the kode perusahaan, site, and lokasi menus is calculated manually. In the kode perusahaan menu and nama perusahaan fields, the success rate is 50% fail and 50% success is made from 4 predefined lower and upper bounds and five different attempts (20x), 40 total tests in 1 test case. Next, in the kode perusahaan menu and nama perusahaan fields, the success rate is 25% fail and 75% success from 4 predefined lower and upper limits and five different attempts (20x) attempts, 40 total tests in 1 test case. Then, in the site menu and site fields, the success rate is 50% fail and 50% success is made from 4 predefined lower and upper bounds and five different attempts (20x), 40 total tests in 1 test case. In the site menu and kode pos fields, the success rate is 25% fail and 75% success from 4 predefined lower and upper limits and five different attempts (20x) attempts, 40 total tests in 1 test case. In the lokasi menu and tipe lokasi fields, the success rate is 25% fail and 75% success from 4 predefined lower and upper limits and five different attempts (20x) attempts, 40 total tests in 1 test case. In the lokasi menu and kode fields, the success rate is 25% fail and 75% success from 4 predefined lower and upper limits and five different attempts (20x) attempts, 40 total tests in 1 test case. Total of (180x) tests carried out by the author. Next, a diagram will be presented to explain the results obtained from the research conducted by the author.
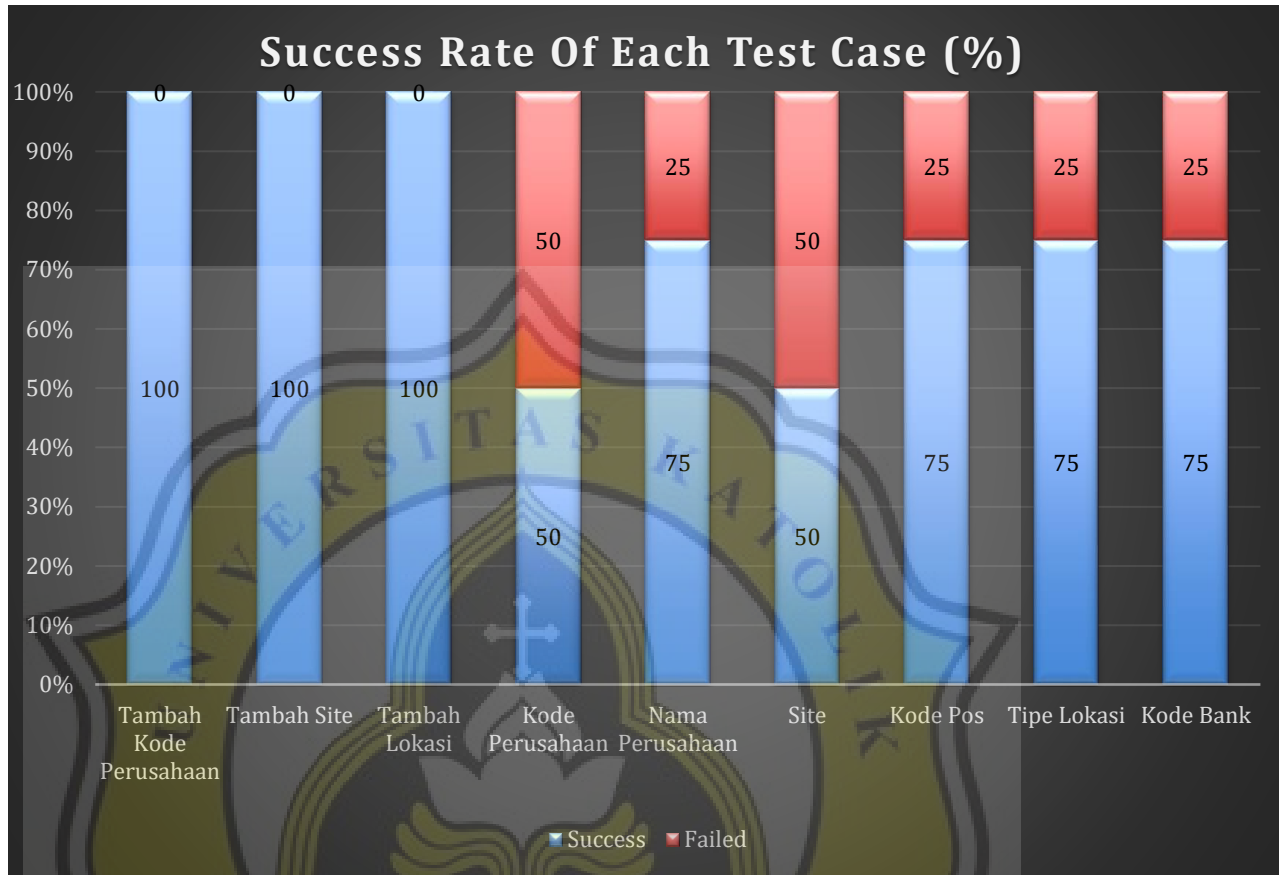
Figure 5. 1 Diagram Success Rate Of Each Test Case (%)

5.4. Binary classification metric

5.4.1. Button Functionality Testing Tambah Kode Perusahaan

a. Function Test

Table 5.10. Function test tambah kode perusahaan matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	0	0

$$\text{Recall} : \frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$$

$$\text{Precision} : \frac{TP}{TP+FP} = \frac{60}{60+0} = 1 = 100\%$$

$$\text{Accuracy} : \frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+0+0} = 100\%$$

$$\text{F1} = 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{1 \cdot 1}{1+1} = \frac{3}{3+\frac{1}{2}(0+0)}$$

$$1 = 1$$

b. Field Kode Perusahaan

Table 5.11. Field kode perusahaan matrix

		Predicted	
		Positive	Negative
Actual	Positif	40	0
	Negative	40	0

$$\text{Recall} : \frac{TP}{TP+FN} = \frac{40}{40+0} = 1 = 100\%$$

$$\text{Precision} : \frac{TP}{TP+FP} = \frac{40}{40+40} = 0,5 = 50\%$$

Accuracy : $\frac{TP+TN}{TP+TN+FP+FN} = \frac{40+0}{40+0+40+0} = 0,5 = 50\%$

F1 $= 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{0,5 \cdot 1}{0,5+1} = \frac{2}{2+\frac{1}{2}(0+2)}$

$0,66 = 0,66$

c. Field Menu Perusahaan

Table 5.12. Field menu perusahaan matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	20	0

Recall : $\frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$

Precision : $\frac{TP}{TP+FP} = \frac{60}{60+20} = 0,75 = 75\%$

Accuracy : $\frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+20+0} = 0,75 = 75\%$

F1 $= 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{0,75 \cdot 1}{0,75+1} = \frac{3}{3+\frac{1}{2}(0+1)}$
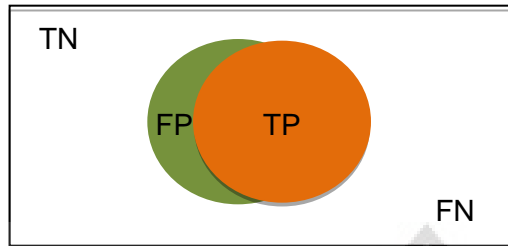
$0,857 = 0,857$

Figure 5. 2 Diagram venn high precision recall tambah kode perusahaan

In Testing Button Functionality Testing Tambah Kode Perusahaan, 4 types of tests were carried out by determining the upper and lower limits. Testing the function test obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive, obtained result 1. Field kode perusahaan obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive obtained result 0.5. Field menu perusahaan, true positive and false negative are obtained. To calculate recall, 1 result is obtained and to calculate precision, true positive and false positive are obtained, 0.75. The results of calculating the F score in each test case are 1, 0.66, 0.857. High-precision venn diagrams were obtained from 60 times of testing and 100% recall calculations, 75% precision. The results obtained are 160 True positives and 60 False positives, while for False negatives and True negatives the number is 0. This test is carried out on the tambah kode perusahaan button in the kode perusahaan field and menu perusahaan field.

5.4.2. Button Functionality Testing Tambah Site

a. Function Test

Table 5.13. Function test tambah site matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	0	0

Recall : $\frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$

Precision : $\frac{TP}{TP+FP} = \frac{60}{60+0} = 1 = 100\%$

Accuracy : $\frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+0+0} = 1 = 100\%$

F1 $= 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{1 \cdot 1}{1+1} = \frac{3}{3+\frac{1}{2}(0+0)}$

$1 = 1$

b. Field Site

Table 5.14. Field site matrix

		Predicted	
		Positive	Negative
Actual	Positif	40	0
	Negative	40	0

Recall : $\frac{TP}{TP+FN} = \frac{40}{40+0} = 1 = 100\%$

Precision : $\frac{TP}{TP+FP} = \frac{40}{40+40} = 0,5 = 50\%$

Accuracy : $\frac{TP+TN}{TP+TN+FP+FN} = \frac{40+0}{40+0+40+0} = 0,5 = 50\%$

F1 $= 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{0,5 \cdot 1}{0,5+1} = \frac{2}{2+\frac{1}{2}(0+2)}$

$0,66 = 0,66$

c. Field Kode Pos

Table 5.15. Field kode pos matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	20	0

$$\text{Recall}: \frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$$

$$\text{Precision}: \frac{TP}{TP+FP} = \frac{60}{60+20} = 0{,}75 = 75\%$$

$$\text{Accuracy}: \frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+20+0} = 0{,}75 = 75\%$$

$$\text{F1} = 2 \cdot \frac{Precision \cdot Recall}{Precision + Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{0{,}75 \cdot 1}{0{,}75+1} = \frac{3}{3+\frac{1}{2}(0+1)}$$
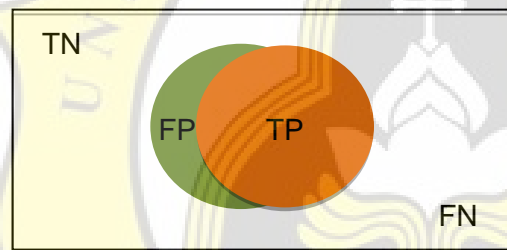
$$0{,}857 = 0{,}857$$

Figure 5. 3 Diagram venn high precission recall tambah site

In Testing Button Functionality Testing Tambah Site, 4 types of tests were carried out by determining the upper and lower limits. Testing the function test obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive, obtained result 1. Field site obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive obtained result 0.5. Field kode pos, true positive and false negative are obtained. To calculate recall, 1 result is obtained and to calculate precision, true positive and false positive are obtained, 0.75. The results of calculating the F score in each test case are 1, 0.66, 0.857. High-precision venn diagrams were obtained from 60 times of testing and 100% recall calculations, 75% precision. The results obtained are 160 True positives and 60 False positives, while for False negatives and True negatives the number is 0. This test is carried out on the tambah site button in the site field and kode pos field.

5.4.3. Button Functionality Testing Tambah Lokasi

a. Function Test

Table 5.16. Function test tambah lokasi matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	0	0

$$\text{Recall} : \frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$$

$$\text{Precision} : \frac{TP}{TP+FP} = \frac{60}{60+0} = 1 = 100\%$$

$$\text{Accuracy} : \frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+0+0} = 1 = 100\%$$

$$F1 = 2 \cdot \frac{Precision \cdot Recall}{Precision+Recall} = \frac{TP}{TP+\frac{1}{2}(FP+FN)} = 2 \cdot \frac{1 \cdot 1}{1+1} = \frac{3}{3+\frac{1}{2}(0+0)}$$

$$1 = 1$$

b. Field Lokasi

Table 5.17. Field lokasi matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	20	0

$$\text{Recall} : \frac{TP}{TP+FN} = \frac{60}{60+0} = 100\%$$

$$\text{Precision} : \frac{TP}{TP+FP} = \frac{60}{60+20} = 0{,}75 = 75\%$$

$$\text{Accuracy} : \frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+20+0} = 0{,}75 = 75\%$$

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$$F1 = 2 \cdot \frac{Precision \cdot Recall}{Precision + Recall} = \frac{TP}{TP + \frac{1}{2}(FP + FN)} = 2 \cdot \frac{0,75 \cdot 1}{0,75 + 1} = \frac{3}{3 + \frac{1}{2}(0+1)}$$

$$0,857 = 0,857$$

c. Field Kode

Table 5.18. Field kode matrix

		Predicted	
		Positive	Negative
Actual	Positif	60	0
	Negative	20	0

$$Recall : \frac{TP}{TP+FN} = \frac{60}{60+0} = 1 = 100\%$$

$$Precision : \frac{TP}{TP+FP} = \frac{60}{60+20} = 0,75 = 75\%$$

$$Accuracy : \frac{TP+TN}{TP+TN+FP+FN} = \frac{60+0}{60+0+20+0} = 0,75 = 75\%$$

$$F1 = 2 \cdot \frac{Precision \cdot Recall}{Precision + Recall} = \frac{TP}{TP + \frac{1}{2}(FP + FN)} = 2 \cdot \frac{0,75 \cdot 1}{0,75 + 1} = \frac{3}{3 + \frac{1}{2}(0+1)}$$
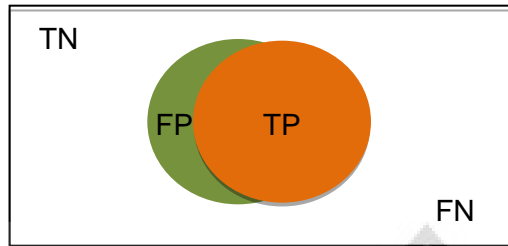
$$0,857 = 0,857$$

Figure 5. 4 Diagram venn high precission recall tambah lokasi

In Testing Button Functionality Testing Tambah Lokasi, 4 types of tests were carried out by determining the upper and lower limits. Testing the function test obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive, obtained result 1. Field lokasi obtained true positive and false negative to calculate recall, obtained result 1 and to calculate precision obtained true positive and false positive obtained result 0.75. Field kode, true positive and false negative are obtained. To calculate recall, 1 result is obtained and to calculate precision, true positive and false positive are obtained, 0.75. The results of calculating the F score in each test case are 1, 0.857, 0.857. High-precision venn diagrams were obtained from 60 times of testing and 100% recall calculations, 83,3% precision. The results obtained are 160 True positives and 60 False positives, while for False negatives and True negatives the number is 0. This test is carried out on the tambah lokasi button in the lokasi field and kode field.