CHAPTER 4
ANALYSIS AND DESIGN

4.1 Analysis

In this study the authors conducted an analysis based on testing a query with and without going through the Web Service using dummy data that was created. The results of the trial can be seen in the table below.

Table 4.1: Analysis Query

No	Number of Rows in The Database	Without Web Service (in Second)	With Web Service (in Second)
1	10	0.0028	0.1160
2	10	0.0028	0.0950
3	10	0.0027	0.1226
4	10	0.0028	0.1326
5	10	0.0027	0.1085
6	1000	0.0036	0.1147
7	1000	0.0036	0.1210
8	1000	0.0035	0.1399
9	1000	0.0037	0.1186
10	1000	0.0036	0.1217
11	2000	0.0045	0.1241
12	2000	0.0048	0.1323
13	2000	0.0045	0.1414
14	2000	0.0043	0.1244
15	2000	0.0045	0.1442
16	10000	0.0104	0.1693
17	10000	0.0101	0.1756
18	10000	0.0098	0.1761
19	10000	0.0100	0.1710
20	10000	0.0169	0.1886

Based on the above table, it can be concluded that without going through the Web Service, queries can be executed faster. But the more data increases, the time of execution begins to increase periodically. If through the Web Service the query execution time is still stable up to 2000 rows from the database. more than 2000 rows, the query execution time begins to increase.

4.2 Design

Broadly speaking, the system flow has 5 steps, namely:

1. The application sends a request to the Web Service in the form of a URL according to the process that is run.
2. Web service accepts requests and sends query commands to the database.
3. The database returns data according to the query command sent by the Web service.
4. Web service converts data into JSON (JavaScript Object Notation) format and returns the JSON data to the Application.
5. The application processes the data as needed.

The following is a picture of the system flow that has been made.

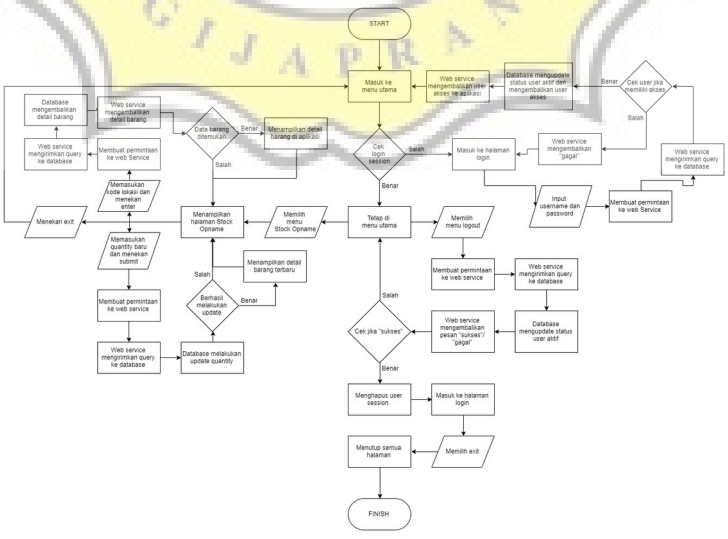

Figure 1: System Flow

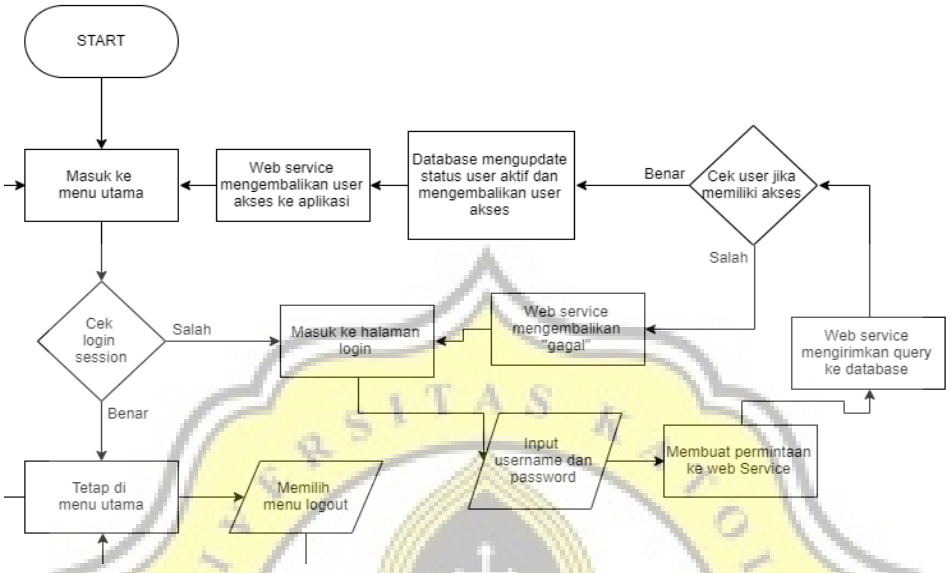

Figure 2: Login Process

Process steps in Figure 2:

1. Enter the Main Menu.
2. Check the login session (if true show the Main Menu, if false redirects to the Login Page).
3. In the Login Page enter your username and password.
4. Make a request to the Web Service.
5. Web Service sends a query to the Database.
6. Check user access (if the user has access then update the Database property user active and restore user access. If the user does not have access then the Web Service returns failed).
7. After successfully updating the user active Web Service restores user access to the application.

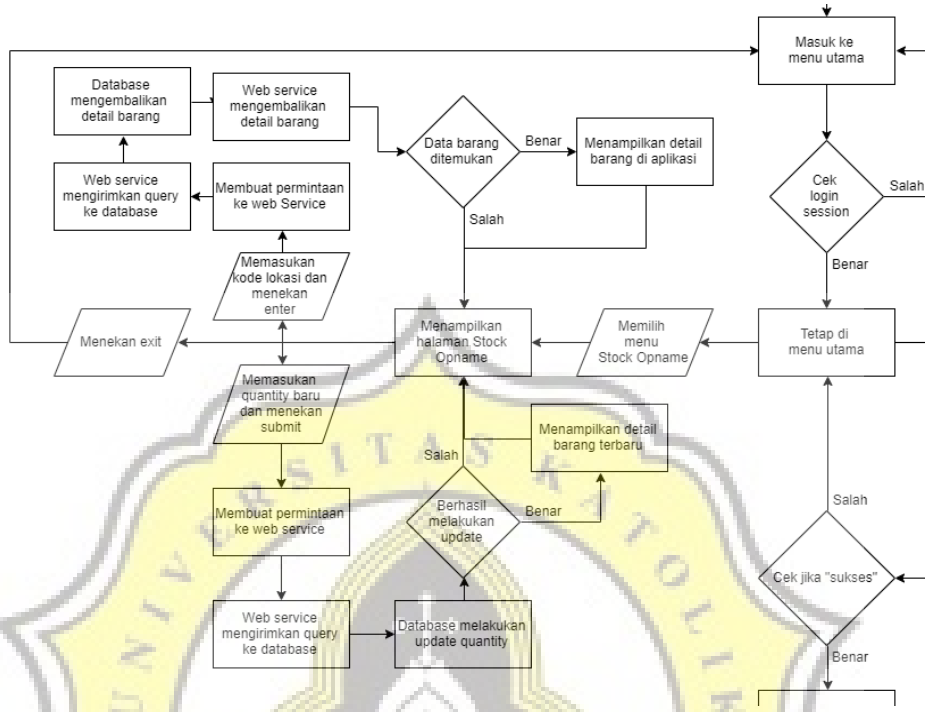

Figure 3: Stock Opname Process

Process steps in Figure 3:

1. Choose one from the existing stock Opname Menu.
2. Displays the stock taking page as selected.
3. There are 3 choices on each Stock Opname page.

4. Enter the location code and press enter.
    1. The application makes a request to the Web Service.
    2. Web Service sends a query to the Database.
    3. The database returns item data to the Web Service.
    4. Web Service returns item data to the Application.
    5. If item data is found The application automatically displays the data. If no application is found displaying Alert data not found.

5. Enter a new Quantity and press submit.
    1. The application makes a request to the Web Service.
    2. Web Service sends a query to the Database.
    3. The database updates according to item data.
    4. If the item data is successfully updated, Web Service returns successfully and displays the latest item data. If it fails the Web Service returns failed.

6. Press EXIT and return to the Main Menu.

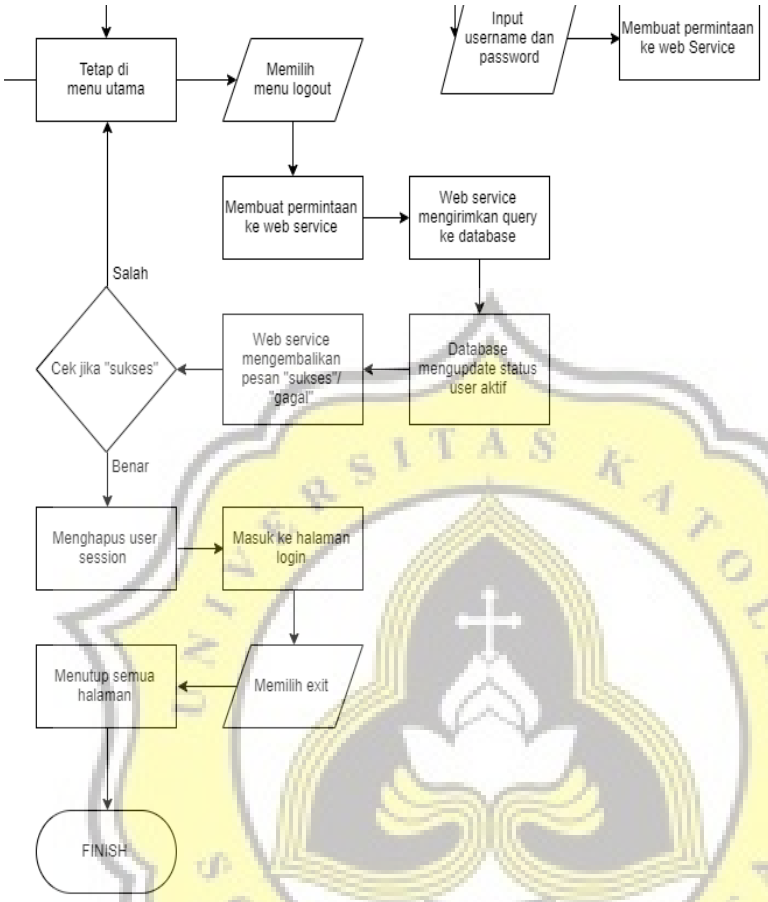

Figure 4: Logout Process

Process steps in Figure 4:

1. Select the logout menu.
2. Application make a request to the Web Service.
3. Web Service sends a query to the Database.
4. Database updating useraktif status.
5. If the useraktif is successfully updated, Web Service returns successfully. If it fails the Web Service returns failed.
6. If it succeed,
    1. The application removes User Session.
    2. Automatically redirect the Login Page.
7. If it fails, stay in the Main Menu.
8. If on the Login Page press CANCEL then the application closes all processes and exits the application.