

Chapter IV

Analysis and Design

4.1. Analysis

There are some problems in making this Customer Service Program. Building the network system using thread and socket especially on the client to client data transfer side make the server needs to build a lot of threads. A lot of threads will decrease the server performance and if the excessive number of clients are connected to the Server in the same time, the data transfer between client and server and the process of the Customer looking for the Customer Service will be slowed down.

There is some problem with the first loading data process that is reading the client data from the text file. The reading process from the text file will be longer if the large number of the client data written in the text file. It will slow down the initial process of running the server.

4.1.1. Use Case Diagram

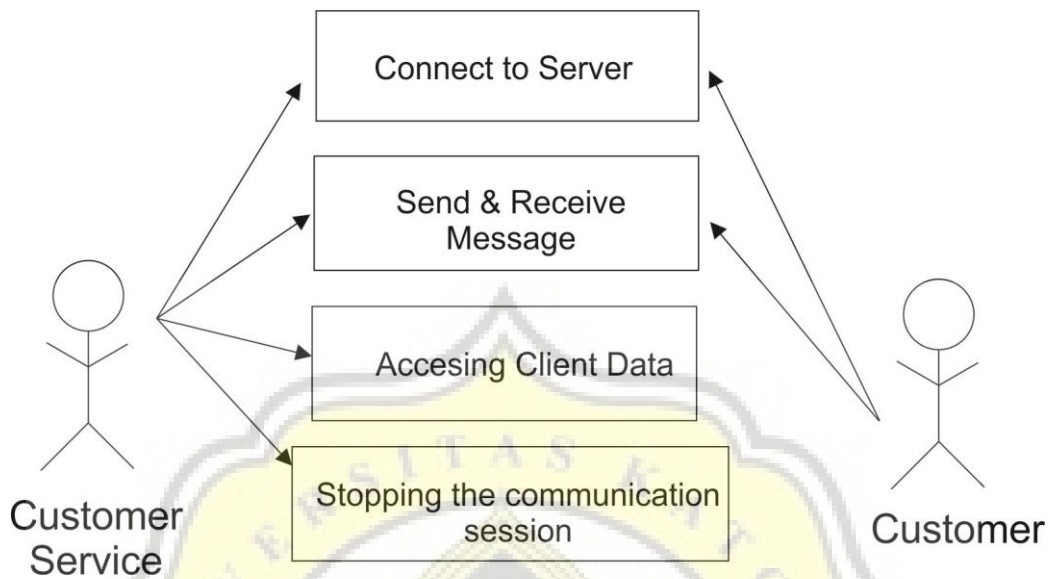


Figure 1 : Use Case Diagram

The first user connected to the server must be Customer Service. Customer Service able to accessing client data, chatting with customer, and stop the chatting session. While the customer only able to send and receive message from the customer service.

4.1.2. Flow Chart

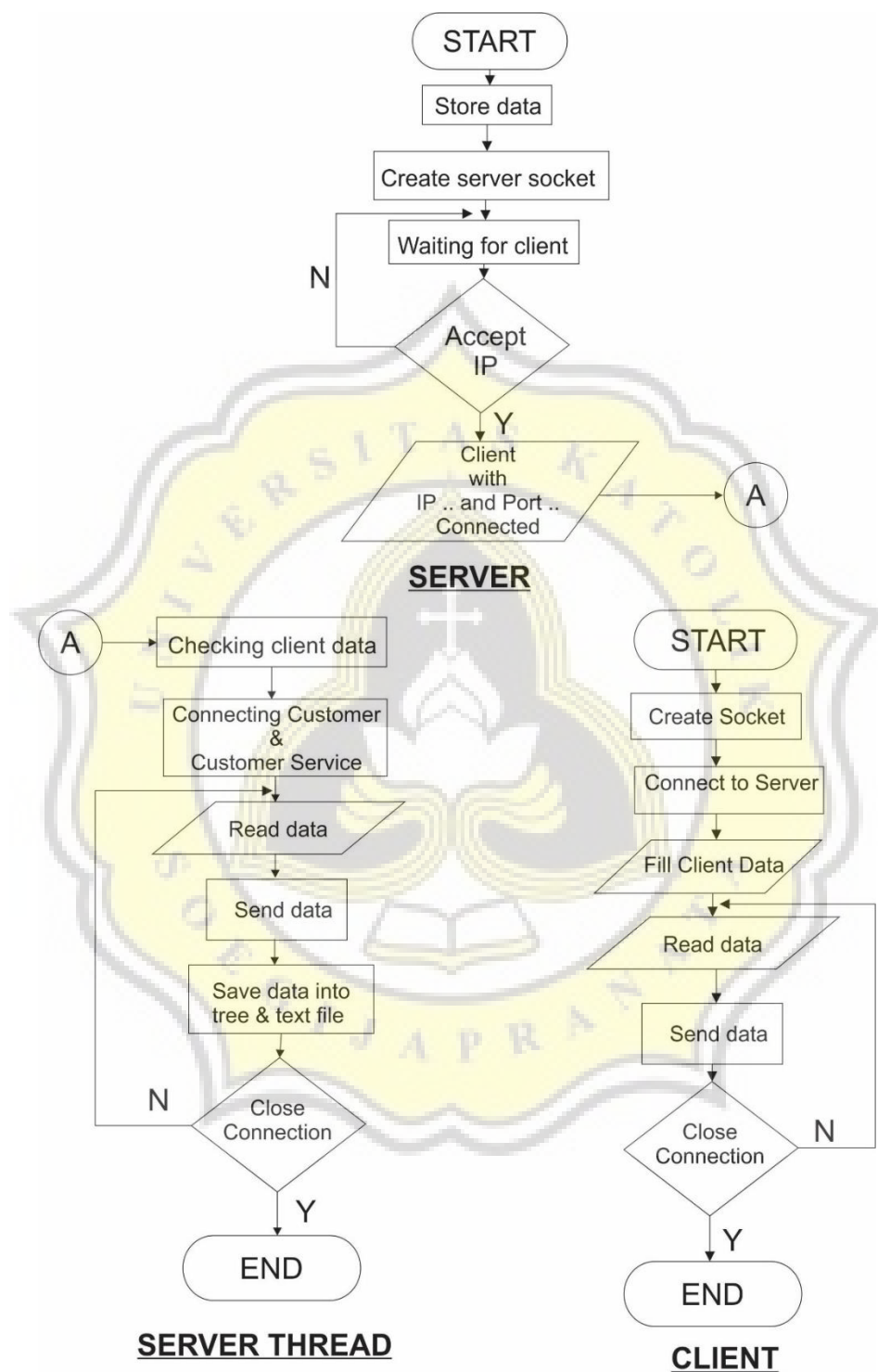


Figure 2 : FlowChart Server, Server Thread, & Client

This program starts with the server read the client data from the text file and load it into the Tree as the data structure. It runs the ServerSocket and a thread that is able to accept a lot of clients. When a client is connected, Server will build a new thread to communicate with each other and analyze if the client is the customer or the customer service. After a customer connected, server will search and connect it into the available Customer Service. After the customer connects into the customer service, the customer data will be sent to the customer service from the server. If the customer have ever contacted to this system before the server will send the previous reports automatically to the Customer Service. After the session between the customer and the customer service end, the customer service status will changed into available again in order to able to connect to the new Customer.



4.2. Design

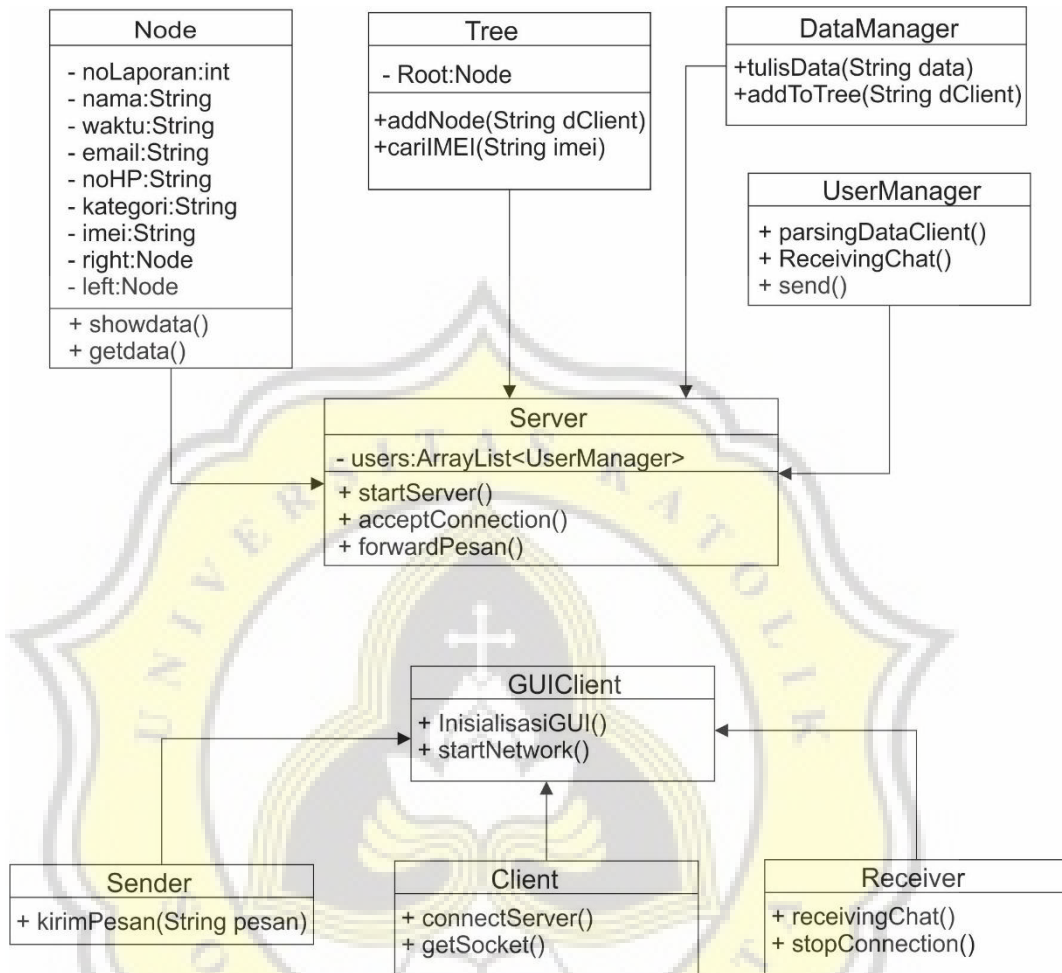


Figure 3 : Class Diagram

These are the explanations about the class used in this program :

1. Class : Server

This class should be run first before running the client or the client will get error. This server class contains arraylist to store the usermanager thread which is used to communicate with the client. The main function of this class is to handle the clients and controlling the data exchange between client.

2. Class : UserManager

This class contains functions to help server to communicate with specific client. In this class all of the specific clients informations such as name, status, phone number, email, product imei were stored temporarily. These informations will help the server in managing the clients.

3. Class : Tree

This class is used as the data structure that is binary tree. Its main function is to do data processing like adding, searching, and showing data.

Class : Node

This class which contains the main client data such as name, email, date and time report is made, report number, product imei number, and phone number.

4. Class : Data Manager

This class is responsible to read and write data from the text file.

5. Class : Client

This class is responsible to request connection to the server with a specified IP Address and port number using socket.

6. Class : Sender

This class is responsible in sending data to the server using the outputstream.

7. Class : Receiver

This class is responsible in receiving and read data from the server using thread and the inputstream.

8. Class : GUIClient

This class contains functions as the GUI for client. This class will responsible in receiving input from user and send it to the server with the sender class. It is responsible in showing the conversations with another client and the server.

