**Program Documentation**

Server

**ClientHandler**

ClientHandler()

run()

gameBody()

validate()

**Server**

Server()

startGame()

joinQueue()

randomNumberGen()

addRank()

writeLog()

timeLog()

Client

**Client**

Client()

Reminder()

Above diagram shows the modules, classes and corresponding methods that are used in this program.

When the server starts, the main calls the Server() constructor to start with. It is a void method to start with, waiting for the connection from clients and open sockets to prepare for the communication with the client. It calls startGame() methods which will then lead to ClientHandler class. It is a thread class which will be generated to each client. It contains the body of the game where it enables server to communicate with client using DataInputStream and DataOutputStream. Validate() method will make sure the user input is valid to evaluate in server side.

There are some other methods in Server class;  
- joinQueue() gets ClientHandler as a variable to add each player into the queue to start when the server is ready.  
 - randomNumberGen() generates random number for the guessing game  
- addRank() is synchronized method to make sure it can be accessed from many ClientHandler threads. It puts player when they finish their game to track who finishes the first.  
- writeLog() and timeLog() is used to log all game and communication between server and client.

Client class is much simpler as it displays the direction from the server and answer to the questions. Like server, it uses DataInputStream and DataOutputStream to communicate with server until the game ends. Reminder() class will keep the user to response to the server every 5 seconds.