TEMPLATE FOR BROADCAST CHAT SERVER PROGRAM

```
import java.io.*;
import java.net.*;
import java.util.HashSet;
import java.util.Hashtable;
import java.util.Set;

public class BroadcastChatServer {

        //Hash table for Client Names and corresponding PrintWriter objects
        //Hash table for Client IDs and corresponding message received
        private static Hashtable<String, PrintWriter> writers = new Hashtable<>();
        private static Hashtable<Integer, String> clientNames = new Hashtable<>();

        //TO-DO: Declare other static variables here (ServerSocket and PORT)
        //as in the basic multi-client/server program

        //main method
        public static void main(String[] args) throws IOException {

        //TO-DO: code similar to basic multi-client/server program

    }

        //Make the ClientHandler a class inside the main class as below
        private static class ClientHandler extends Thread {
        private Socket client;
        private BufferedReader in;
        private PrintWriter out;

        public ClientHandler(Socket socket) {
        //TO-DO: code similar to basic multi-client/server program

        }

        public void run() {
            try {
                String received;
                int message = 1;
                do {
                    int index = 0;
                    received = in.readLine();
                    if (message == 1) {
                        String clientName = getName().substring(getName().length() - 1);
                        int clientNum = Integer.parseInt(clientName);
                            //add client ID and message received to the clientnames hash table
                        clientNames.put(clientNum, received);

                            System.out.println(clientNames.get(clientNum) + " has joined");

                           //add client name and corresponding PrintWriter to the writers hash table
                            writers.put(clientNames.get(clientNum),out);

                            //loop through the writers hash table and broadcast to all clients
                            //that a new client has joined
                        for (PrintWriter writer : writers.values()) {
                            writer.println( clientNames.get(clientNum) + " has joined");
                        }
                        message++;
                    } else {

                          //TO-DO: Get the clientName and clientNum as before
                          //Loop through the writers keySet, that is, (for String client:writers.keySet())
                          //broadcast to all clients except this one
                          System.out.println("Message from " + clientNames.get(clientNum) + ": " + received);
                    }
                } while (!received.equals("BYE"));
            } catch (IOException e) {
//TO-DO: Rest of the code similar to the basic multi-client/server program
```