

## Assignment - 2

### Problem Statement:

Enhance the system with the help of socket programming using client-server architecture.

Objective: To understand & implement sockets.

### Outcome:

- 1) Implement socket programming in JAVA
- 2) Implement TCP client server sockets.

### Software & Hardware Requirements:

Eclipse IDE, Fedora, Windows OS, inter i5

### Theory:

Applications use sockets to connect client & server & server in JAVA programs running on client machine makes a request to a program running on server involves networking server provided by transport layer. Transport layer has 2 protocols (TCP, UDP). These use port to map a particular process on computer, multiple services can run at the same time.

A Socket is a software end-point that establishes a bi-directional communication between a server program one/more client programs. The socket associates the



server program with a specific hardware part on the machine

- UDP Socket Programming:

TCP guarantee delivery of sockets & preserves the order of destination.

Sometimes these features are not required & since they do not care come without performance case, it would be better to use higher transport protocol.

- Serializable interface:

Serialization is mechanism of converting the states of object into a byte stream.

# 1. Steps to create a Server:

- Open the server socket:

```
ServerSocket server = new ServerSocket (Port)
```

- Wait for client request

```
Socket socket = server.accept()
```



- Create IO Streams:

DataInput Stream is = new DataInput  
stream (socket.getInputStream())

Data Output Stream os = new DataOutput  
Stream (socket.getOutputStream())

- Transfer data
- Close the socket  
Socket.close()

## 2. Steps for creating the client:

- Create a Socket Object

Socket socket = new Socket (serverid .port)

- Create I/O streams

- Transfer data

- Close the socket  
socket.close()

- Java . net . \* (Package)

This package contains classes & interfaces with simplified client server connection.



1) Classes

Socket, Server Socket, URL,  
URL connection.

2) Interfaces:

Content Handler, Factory.

• TCP / IP Socket

1. Transmission control Protocol is  
one of the main protocols of  
Internet protocols.

2. It is connection oriented.

• TEST CASES:

Input	Output	Status
1. (Contact info)	<shows contact info>	Success
2. (About)	<paragraph About details>	Success
3. (FAQs)	<Shows list of FAQs>	Success

• Conclusion: We understood the use  
of sockets in client-server programming  
& implemented it.

# Assignment 2 :

## INPUT

```
import java.io.*;
import java.net.*;

public class Client {
    void call_client() {
        try{
            Socket s=new Socket("localhost",6666);
            DataInputStream din=new DataInputStream(s.getInputStream());
            DataOutputStream dout=new DataOutputStream(s.getOutputStream());
            BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

            String msgin="",msgout="";

            while(!msgin.equals("stop")){
                System.out.println("---- HELP ----");
                System.out.println("1. Contact Info");
                System.out.println("2. About");
                System.out.println("3. FAQs");
                System.out.println("4. go back to Main menu");
                msgout = br.readLine();
                dout.writeUTF(msgout);
                msgin = din.readUTF();
                System.out.println(msgin);
            }

            dout.flush();
            dout.close();
            s.close();
        }catch(Exception e){System.out.println("--quitting server");}
```

```
}  
}
```

```
import java.io.*;  
import java.net.*;
```

```
public class Client {  
    void call_client() {  
        try{  
            Socket s=new Socket("localhost",6666);  
            DataInputStream din=new DataInputStream(s.getInputStream());  
            DataOutputStream dout=new DataOutputStream(s.getOutputStream());  
            BufferedReader br=new BufferedReader(new InputStreamReader(System.in));  
  
            String msgin="",msgout="";  
  
            while(!msgin.equals("stop")){  
                System.out.println("---- HELP ----");  
                System.out.println("1. Contact Info");  
                System.out.println("2. About");  
                System.out.println("3. FAQs");  
                System.out.println("4. go back to Main menu");  
                msgout = br.readLine();  
                dout.writeUTF(msgout);  
                msgin = din.readUTF();  
                System.out.println(msgin);  
            }  
  
            dout.flush();  
            dout.close();  
            s.close();  
        }catch(Exception e){System.out.println("--quitting server");}  
    }  
}
```

# output

oryManagement/src\$ java Main

\*\*\*\* WELCOME TO BIG-BASKET \*\*\*\*

Market Status :

ID.	Item Name	QTY	Expires in
-----	-----------	-----	------------

1.	Spinach	4	2 days
2.	Cauli-flower	5	5 days
3.	Mushrooms	20	7 days
4.	Beet	5	3 days
5.	Broccoli	0	1 days
6.	Cabbage	3	7 days
7.	Apple	10	5 days
8.	Orange	7	2 days
9.	Bananas	20	7 days
10.	Cherries	20	11 days
11.	Chicken	1	6 days
12.	Fish	5	5 days
13.	Crabs	10	3 days

1. Login

2. Signup

3. Help

Choice : 3

----- HELP -----

1. Contact Info

2. About

3. FAQs

4. go back to Main menu

1

-----CONTACT DETAILS-----

Help Desk : 9899998230

Complaints : 9899998231

Complaints : 9899998231

Email : bgbskt@gmail.bgbskt.com

Donate : <DONATION LINK>

---- HELP ----

1. Contact Info

2. About

3. FAQs

4. go back to Main menu

2

----- ABOUT -----

Bigbasket company was founded by V S Sudhakar, Hari Menon, Vipul Parekh, Abhinay Choudhari and V S Ramesh in 2011. Initially, in 1999, they started India's first e-commerce site FabMart and then went on to establish Fabmall-Trinethra chain of more than 200 grocery supermarket stores in southern India, the business was later sold to Aditya Birla Group. It is popularly known as 'More' retail chain.[6] In 2011 they launched bigbasket online grocery delivery service. On August 9, 2019, bigbasket partnered with a non-profit organisation Goonj and through their Rahat flood programme provided relief materials to people who were affected during the Kerala Flood

---- HELP ----

1. Contact Info

2. About

3. FAQs

4. go back to Main menu



3

----- FAQs -----

1. when was bigbasket founded?

2007

2. who founded big basket?

someone did

---- HELP ----

1. Contact Info

2. About

3. FAQs

4. go back to Main menu

4

--quitting server

1. Login

2. Signup

3. Help

```
import java.sql.*;
```

```
import java.util.*;
```

```
public class account_handling {
```

```
    Scanner in = new Scanner(System.in);
```

```
    boolean username_already_exists(String user_name){
```

```
        String query = "select user_name from users where  
user_name='"+user_name+"'";
```

```
        try{
```

```
            Class.forName("com.mysql.cj.jdbc.Driver");
```

```

        Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/bb_acc
ounts","root","Hello@123");
        Statement stmt = con.createStatement();
        ResultSet rs = stmt.executeQuery(query);
        if (!rs.next()){
            con.close();
            return false;
        }
        else{
            System.out.println(" **username exists");
            con.close();
            return true;
        }
    }catch(Exception e){System.out.println(e);}

    return true;
}

void new_user_login(){
    String pass1, pass2,user_name;
    do{
        System.out.print("\nUsername : ");
        user_name = in.nextLine();
    }while(username_already_exists(user_name));
    username_already_exists(user_name);

    do{
        System.out.print("Password      : ");
        pass1 = in.nextLine();
        System.out.print("Re-enter Password : ");
        pass2 = in.nextLine();
    }while(!pass1.equals(pass2));

```

```

    try{
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/bb_acc
ounts","root","Hello@123");
        Statement stmt = con.createStatement();
        String updt = "insert into users values('"+user_name+ "', '"+
pass1 + "')";
        stmt.executeUpdate(updt);
        con.close();
        System.out.println("*** account created ***");
    }catch(Exception e){ System.out.println(e);}
}

```

```

int old_user_login(){

```

```

    String pass1, user_name;
    String retrieved="";
    do{
        System.out.print("\nUsername : ");
        user_name = in.nextLine();
    }while(!username_already_exists(user_name));

```

```

    try{
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/bb_acc
ounts","root","Hello@123");
        Statement stmt = con.createStatement();
        String query = "select password from users where
user_name='"+user_name+ "'";

```



```

ResultSet rs = stmt.executeQuery(query);

rs.next();
retrieved = rs.getString(1);
//System.out.println("test : ");
//System.out.println(retrieved);
con.close();

} catch (Exception e) { System.out.println(e); }
String backup = retrieved;
do {
    retrieved = backup;
    pass1 = "";
    System.out.print("\nPassword : ");
    pass1 = in.nextLine();
    //in.nextLine();
    if (!pass1.equals(retrieved)) {
        System.out.println("wrong pass");
        System.out.println("Try again? (1/0) : ");
        int opt = Integer.parseInt(in.nextLine());

        if (opt == 0) {
            return 0;
        }
        //System.out.println("pass1 = " + pass1);
        //System.out.println("r = " + retrieved);
    }
} while (!pass1.equals(retrieved));

System.out.println("*** Successful login ***");
if (user_name.equals("admin")) {

```

```

        //System.out.println("admin 1");
        return 2;
    }
    return 1;
}
}

```

```
import java.util.*;
```

```
public class accounts {
```

```

    Scanner in = new Scanner(System.in);
    Set<String> hash_Set = new HashSet<String>();
    private HashMap<String,String> mp=new
    HashMap<String,String>();

```

```
    boolean username_already_exists(String user_name){
```

```

        if (! hash_Set.contains(user_name)){
            hash_Set.add(user_name);
            return false;
        }
        else{
            System.out.println(" **username exists");
            return true;
        }
    }

```

```
}
```

```

void new_user_login(){
    String pass1, pass2,user_name;
    do{
        System.out.print("\nUsername : ");
        user_name = in.nextLine();
    }while(username_already_exists(user_name));
    //username_already_exists(user_name);

    do{
        System.out.print("Password      : ");
        pass1 = in.nextLine();
        System.out.print("Re-enter Password : ");
        pass2 = in.nextLine();
    }while(!pass1.equals(pass2));

    hash_Set.add(user_name);
    mp.put(user_name, pass1);

    System.out.println("*** account created ***");

}

```

```

int old_user_login(){
    String pass1, user_name;
    String retrieved="";
    do{
        System.out.print("\nUsername : ");
        user_name = in.nextLine();
    }while(!username_already_exists(user_name));

    retrieved = mp.get(user_name);
}

```



```

String backup = retrieved;
do{
    retrieved=backup;
    pass1="";
    System.out.print("\nPassword : ");
    pass1 = in.nextLine();

    if( !pass1.equals(retrieved)){
        System.out.println("wrong pass");
        System.out.println("Try again? (1/0) : ");
        int opt = Integer.parseInt(in.nextLine());

        if(opt==0){
            return 0;
        }
    }
}while(!pass1.equals(retrieved));

System.out.println("*** Successful login ***");
if(user_name.equals("admin")){
    return 2;
}
return 1;

}

}

```

```

public class ARR_names {
    private Integer item_count = 13;

```

```
private String items[] = new String[item_count];
```

```
ARR_names(){
```

```
    items = new String[]{  
        "Spinach",  
        "Cauli-flower",  
        "Mushrooms",  
        "Beet",  
        "Broccoli",  
        "Cabbage",  
        "Apple",  
        "Orange",  
        "Bananas",  
        "Cherries",  
        "Chicken",  
        "Fish",  
        "Crabs"
```

```
    };//order must be maintained according to
```

```
HM_count.java
```

```
}
```

```
public String get_item_name(Integer i){
```

```
    return items[i];
```

```
}
```

```
}
```

```
import java.util.*;
```

```
public class general {
```

```
static Scanner in = new Scanner(System.in);

    static accounts acch = new accounts();    //change to
account_handling for Database support
    static HM_count qty = new HM_count();
    static HM_expDate exp = new HM_expDate();
    static ARR_names itmn = new ARR_names();
    static Client cli = new Client();

    static int item_count=13;

    general(){
        System.out.println("\n\n**** WELCOME TO BIG-BASKET
****");
    }
    void market_status(){
        System.out.println("Market Status : ");
        System.out.printf( "\n| %2s.| %-15s| %5s   | %-10s |\n ", "ID",
"Item Name", "QTY", "Expires in" );
        System.out.println("-----");

        for(int ct=0; ct<item_count; ct++){
            System.out.printf( "| %2d.| %-15s| %5d   |%5d days |\n",
                ct + 1,
                itmn.get_item_name(ct),
                qty.get_count(ct+1),
                exp.get_expDate(ct+1)
            );
        }
    }

    void pass_day()
```



```
Boolean _status_ = exp.pass_day();
System.out.println("A DAY HAS PASSED");
if(_status_)
    System.out.println("*** please ask admin to restock\n");
System.out.println("-----");
```

```
for(Integer ct=0; ct<item_count; ct++){
    if(exp.get_expDate(ct+1)==0)
        qty.set_0(ct+1);
}
}
```

```
void _login_(){
    int fl=1;
    while(fl==1){
        System.out.println("1. Login");
        System.out.println("2. Signup");
        System.out.println("3. Help");
```

```
        System.out.print("\nChoice : ");
        int new_acc = Integer.parseInt(in.nextLine());
        if(new_acc == 2){
            acch.new_user_login();
            customer_menu();
            fl=0;
        }
        else if(new_acc == 1){
            int opt = acch.old_user_login();

            if(opt==0){ fl=1; }
```

```

        if(opt==1){ fl=0; customer_menu(); }
        if(opt==2){ fl=0; admin_menu(); }
    }
    else if(new_acc == 3){
        // add client server here
        cli.call_client();
    }
}
}

```

```

void admin_menu(){
    System.out.println("***Admin Mode");
    System.out.println("Re-stock per category :");
    Integer quan;
    quan = Integer.parseInt(in.nextLine());

    System.out.println("Restocking...");
    for(Integer ct=0; ct<item_count; ct++){
        qty._set_(ct+1, quan);
    }
    exp.set_exp_date();
}

```

```

void customer_menu(){
    Integer count;
    System.out.print("\nNo. of items you want to BUY : ");
    count = Integer.parseInt(in.nextLine());
    for(int ct=0; ct<count; ct++){
        Integer item_id, quan;
        System.out.print("\nItem_id : ");
        item_id = Integer.parseInt(in.nextLine());
        System.out.print("Quantity : ");
    }
}

```

```

quan = Integer.parseInt(in.nextLine());

if(qty.buy(item_id, quan) != true){
    System.out.println("** not in stock **");
    ct--;
}
}
System.out.println("-----");
System.out.println("\nThanks for supporting us!");
}

```

```

String contact(){
    // System.out.println("-----CONTACT DETAILS-----");
    // System.out.println("\nHelp Desk : 9899998230");
    // System.out.println("Complaints : 9899998231");
    // System.out.println("Email : bgbskt@gmail.bgbskt.com");
    // System.out.println("Donate : <DONATION LINK>");

```

```

    return("-----CONTACT DETAILS-----\nHelp Desk :
9899998230\nComplaints : 9899998231\nComplaints : 9899998231\
nEmail : bgbskt@gmail.bgbskt.com\nDonate : <DONATION
LINK>");
}

```

```

String about(){
    // System.out.println("----- ABOUT -----");
    // System.out.println("\nBigbasket company was founded by V
S Sudhakar, Hari Menon, Vipul Parekh, Abhinay Choudhari and V S
Ramesh in 2011. Initially, in 1999, they started India's first e-
commerce site FabMart and then went on to establish Fabmall-
Trinethra chain of more than 200 grocery supermarket stores in
southern India, the business was later sold to Aditya Birla Group. It

```

is popularly known as 'More' retail chain.[6] In 2011 they launched bigbasket online grocery delivery service. On August 9, 2019, bigbasket partnered with a non-profit organisation Goonj and through their Rahat flood programme provided relief materials to people who were affected during the Kerala Flood");

```
return("----- ABOUT -----\nBigbasket company was  
founded by V S Sudhakar, Hari Menon, Vipul Parekh, Abhinay  
Choudhari and V S Ramesh in 2011. Initially, in 1999, they started  
India's first e-commerce site FabMart and then went on to establish  
Fabmall-Trinethra chain of more than 200 grocery supermarket  
stores in southern India, the business was later sold to Aditya Birla  
Group. It is popularly known as 'More' retail chain.[6] In 2011 they  
launched bigbasket online grocery delivery service. On August 9,  
2019, bigbasket partnered with a non-profit organisation Goonj and  
through their Rahat flood programme provided relief materials to  
people who were affected during the Kerala Flood");
```

```
}
```

```
String FAQ(){
```

```
// System.out.println("----- FAQs -----");  
// System.out.println("1. when was bigbasket founded?");  
// System.out.println("2007");  
// System.out.println("1. who founded big basket?");  
// System.out.println("someone did");
```

```
return ("----- FAQs -----\n1. when was bigbasket  
founded?\n2007\n2. who founded big basket?\nsomeone did");
```

```
}
```

```
int check_inventory(int itm){
```

```
return (qty.get_count(itm+1));
```

```
}
```



```
}
```

```
import java.util.*;
```

```
public class HM_count {
```

```
    private HashMap<Integer,Integer> mp=new  
    HashMap<Integer,Integer>();
```

```
    HM_count(){
```

```
        // Inventory before user purchase/restock
```

```
        //VEGETABLES;
```

```
        mp.put(1, 4);//Spinach
```

```
        mp.put(2, 5 );//Cauli-flower
```

```
        mp.put(3, 20);//Mushrooms
```

```
        mp.put(4, 5);//Beet
```

```
        mp.put(5, 0);//Brocolli
```

```
        mp.put(6, 3);//Cabbage
```

```
        //FRUITS
```

```
        mp.put(7, 10);//Apple
```

```
        mp.put(8, 7);//Orange
```

```
        mp.put(9, 20);//Bananas
```

```
        mp.put(10, 20);//Cherries
```

```
        //MEAT
```

```
        mp.put(11, 1);//Chicken
```

```
        mp.put(12, 5);//Fish
```

```
        mp.put(13, 10);//Crabs
```

```

    }

    public boolean buy(Integer item_key, Integer item_bought_count)
    {
        if(mp.get(item_key)>=item_bought_count){
            mp.put(item_key, mp.get(item_key) - item_bought_count);
            return true;
        }
        return false;
    }

    public Integer get_count(Integer item_key){
        return mp.get(item_key);
    }

    public void _set_(Integer item_key, Integer count){
        mp.put(item_key, count);
    }//for re-stocking

    public void set_0(Integer item_key){
        mp.put(item_key, 0);
    }//for when food get expired

}

import java.util.*;

public class HM_expDate {
    private Integer item_count=13;
    private HashMap<Integer,Integer> mp=new
    HashMap<Integer,Integer>();

```

```

HM_expDate(){
    //ID , days until it expires

    mp.put(1, 2);//Spinach
    mp.put(2, 5 );//Cauli-flower
    mp.put(3, 7);//Mushrooms
    mp.put(4, 3);//Beet
    mp.put(5, 1);//Broccoli
    mp.put(6, 7);//Cabbage

    mp.put(7, 5);//Apple
    mp.put(8, 2);//Orange
    mp.put(9, 7);//Bananas
    mp.put(10, 11);//Cherries

    mp.put(11, 6);//Chicken
    mp.put(12, 5);//Fish
    mp.put(13, 3);//Crabs
}

public Integer get_expDate(Integer item_key){
    return mp.get(item_key);
}

public Boolean pass_day(){
    Boolean flag=false;
    for(Integer ct=1; ct<=item_count; ct++){
        if(mp.get(ct) != 0)
            mp.put(ct, mp.get(ct) - 1);
        if(mp.get(ct)==0){
            flag=true;
        }
    }
}

```

```

    }
    return flag;
} //reduce expiry by a day

public void set_exp_date(){
    //FIXEDD

    mp.put(1, 2); //Spinach
    mp.put(2, 5 ); //Cauli-flower
    mp.put(3, 7); //Mushrooms
    mp.put(4, 3); //Beet
    mp.put(5, 1); //Brocolli
    mp.put(6, 7); //Cabbage

    mp.put(7, 5); //Apple
    mp.put(8, 2); //Orange
    mp.put(9, 7); //Bananas
    mp.put(10, 11); //Cherries

    mp.put(11, 6); //Chicken
    mp.put(12, 5); //Fish
    mp.put(13, 3); //Crabs
}
}

import java.util.*;

public class Main {

    static Scanner in = new Scanner(System.in);
    static general gen = new general();

```



```

public static void main(String[] args) throws Exception {

    int repeat =1;
    while(repeat==1){

        gen.market_status();
        gen._login_();
        gen.pass_day();

        System.out.println("login/leave shop? (1/0) : ");
        repeat = Integer.parseInt(in.nextLine());
    }
}

```

```

import java.util.*;

public class HM_count {

    private HashMap<Integer,Integer> mp=new
    HashMap<Integer,Integer>();

    HM_count(){
        // Inventory before user purchase/restock

        //VEGETABLES;
        mp.put(1, 4);//Spinach
        mp.put(2, 5 );//Cauli-flower
        mp.put(3, 20);//Mushrooms
        mp.put(4, 5);//Beet
    }
}

```

```
mp.put(5, 0); //Broccoli  
mp.put(6, 3); //Cabbage
```

```
//FRUITS  
mp.put(7, 10); //Apple  
mp.put(8, 7); //Orange  
mp.put(9, 20); //Bananas  
mp.put(10, 20); //Cherries
```

```
//MEAT  
mp.put(11, 1); //Chicken  
mp.put(12, 5); //Fish  
mp.put(13, 10); //Crabs  
}
```

```
public boolean buy(Integer item_key, Integer item_bought_count)  
{  
    if(mp.get(item_key) >= item_bought_count){  
        mp.put(item_key, mp.get(item_key) - item_bought_count);  
        return true;  
    }  
    return false;  
}
```

```
public Integer get_count(Integer item_key){  
    return mp.get(item_key);  
}
```

```
public void _set_(Integer item_key, Integer count){  
    mp.put(item_key, count);  
} //for re-stocking
```

```
public void set_0(Integer item_key){  
    mp.put(item_key, 0);  
} //for when food get expired
```

```
}
```