**Exercise-22**

**JDBC**

**Q1.  Define database.**

A database is an organized collection of structured information, or data, stored electronically in a computer system.

**Q2.  Define JDBC.**

JDBC stands for Java Database Connectivity. JDBC is a Java API.  It is a part of JavaSE (Java Standard Edition).  JDBC helps you to write Java applications that manage these three programming activities:

1. Connect to a data source, like a database
2. Send queries and update statements to the database
3. Retrieve and process the results received from the database in answer to your query

**Q3.  List the types of JDBC drivers.**

JDBC-ODBC Bridge Driver,

Native Driver,

Network Protocol Driver, and

Thin Driver

**Q4.  List the interfaces that are helpful to process queries.**

Statement interface

PreparedStatement interface

ResultSet interface

**Q5.  List two methods of ResultSet Object.**

public abstract boolean next() throws java.sql.SQLException

public abstract void close() throws java.sql.SQLException;

**Q6.  Write the steps the connect to the database and execute queries**

Import JDBC packages.

Load and register the JDBC driver.

Open a connection to the database.

Create a statement object to perform a query.

Execute the statement object and return a query resultset.

Process the resultset.

Close the resultset and statement objects.

**Programs**

**Q1.  Write a program to open and close the connection to a database.**

import java.sql.\*;

import java.util.\*;

class Connect

{

public static void main(String[] strng) throws Exception

{

Connection con = DriverManager.getConnection("jdbc:mysql://localhost/shiva","root","069");

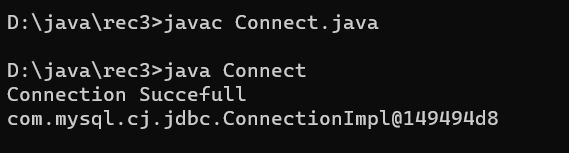
System.out.println("Connection Succefull");

System.out.println(con);

}

}

**Output**



**Q2.  Write a program to perform to execute update and select query**

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import java.sql.\*;

public class DataAccess

{

static final String DB\_URL = "jdbc:mysql://localhost/shiva";

static final String USER = "root";

static final String PASS = "069";

static final String UPDATE\_QUERY = "UPDATE jex set pin= 3 WHERE pin=3";

public static void main(String[] args) {

try(Connection conn = DriverManager.getConnection(DB\_URL, USER, PASS);

Statement stmt = conn.createStatement();

) {

int ret = stmt.executeUpdate(UPDATE\_QUERY);

System.out.println("Update result return value="+ret);

ResultSet rs = stmt.executeQuery("SELECT pin , name FROM jex");

while (rs.next()) {

System.out.println(rs.getInt("pin")+"-"+rs.getString("name"));

}

rs.close();

stmt.close();

conn.close();

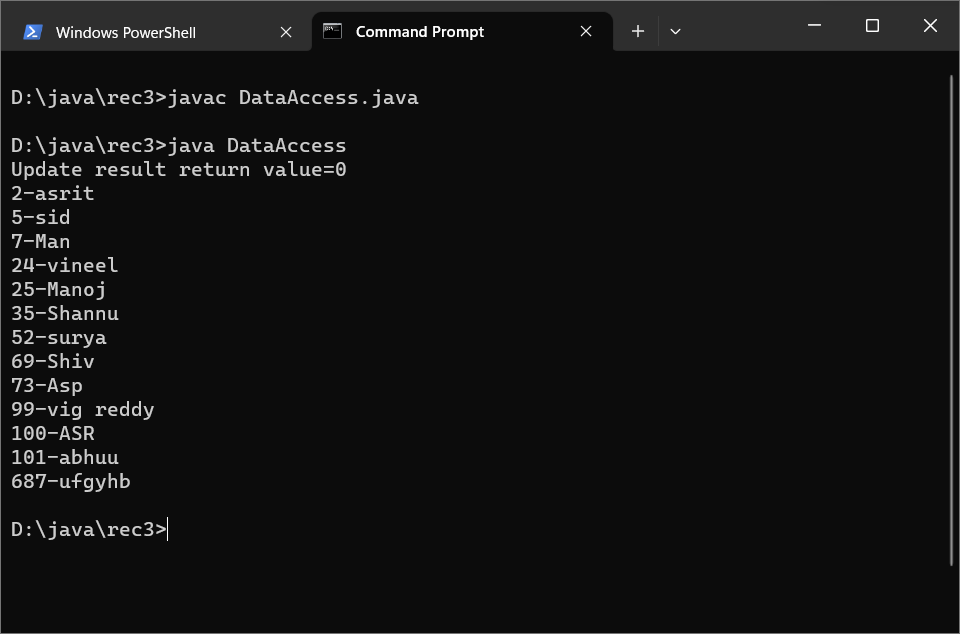
} catch (SQLException e) {

e.printStackTrace();

}

}

}

Output:   
  
 

**Q3.  Write a java program to execute a insert statement using prepared statement.**

import java.sql.\*;

import java.util.\*;

class DeletePS

{

public static void main(String[] strng) throws Exception

{

Connection con = DriverManager.getConnection("jdbc:mysql://localhost/shiva","root","069");

Scanner sc= new Scanner(System.in);

int choice=1;

while(choice==1)

{

PreparedStatement pt = con.prepareStatement("insert into jex values(?,?) ");

System.out.println("Enter the pin ");

int n = sc.nextInt();

pt.setInt(1,n);

System.out.println("Enter the name ");

sc.nextLine();

String s = sc.nextLine();

pt.setString(2,s);

pt.executeUpdate();

System.out.println("Want to continue ?(0-no/1-yes)");

choice= sc.nextInt();

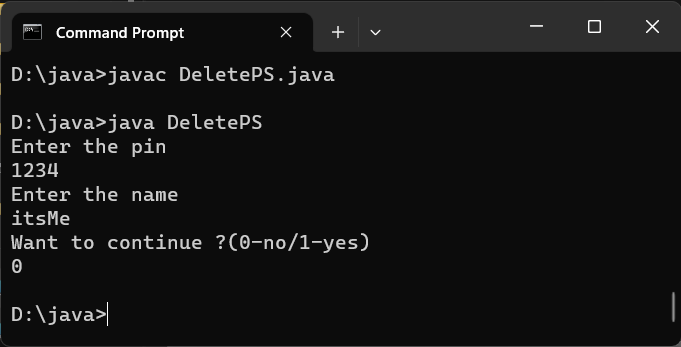
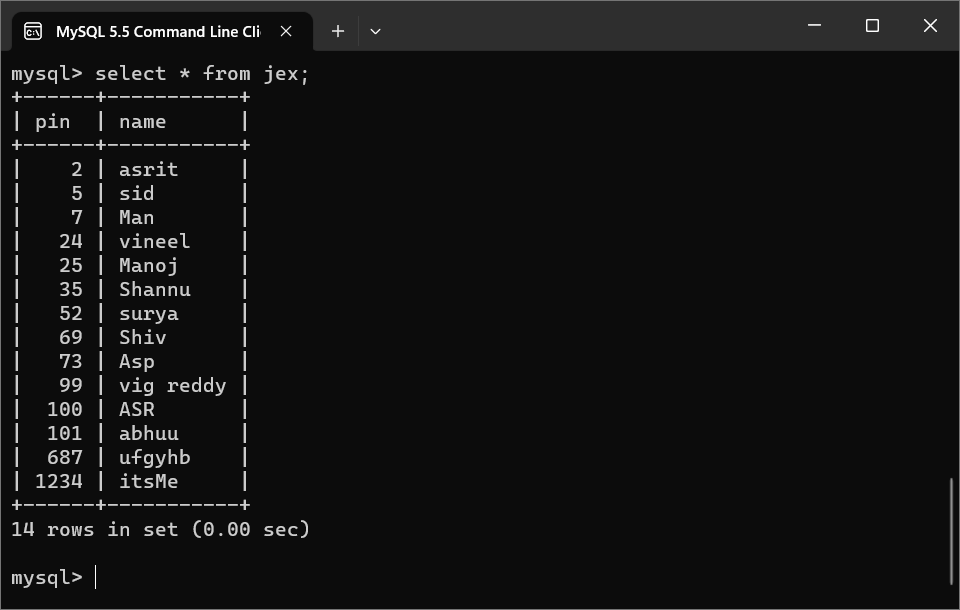
}

con.close();

}

}

**Output :**

**** 

**Q4.  Write a java program to perform update operation using prepared statement.**

import java.sql.\*;

import java.util.\*;

class DeletePS

{

public static void main(String[] strng) throws Exception

{

Connection con = DriverManager.getConnection("jdbc:mysql://localhost/shiva","root","069");

Scanner sc= new Scanner(System.in);

int choice=1;

while(choice==1)

{

PreparedStatement pt = con.prepareStatement("update jex set name=? where pin=? ");

System.out.println("Enter the pin ");

int n = sc.nextInt();

pt.setInt(2,n);

System.out.println("Enter the name ");

sc.nextLine();

String s = sc.nextLine();

pt.setString(1,s);

pt.executeUpdate();

System.out.println("Want to continue ?(0-no/1-yes)");

choice= sc.nextInt();

}

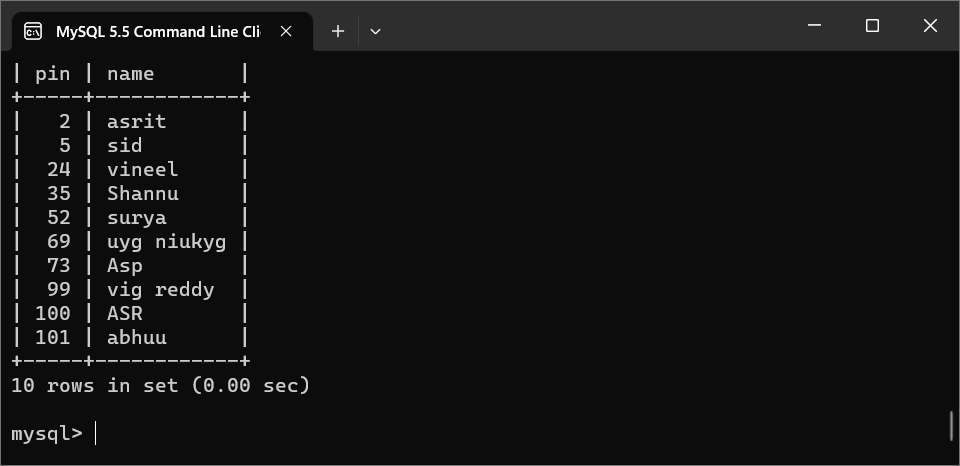
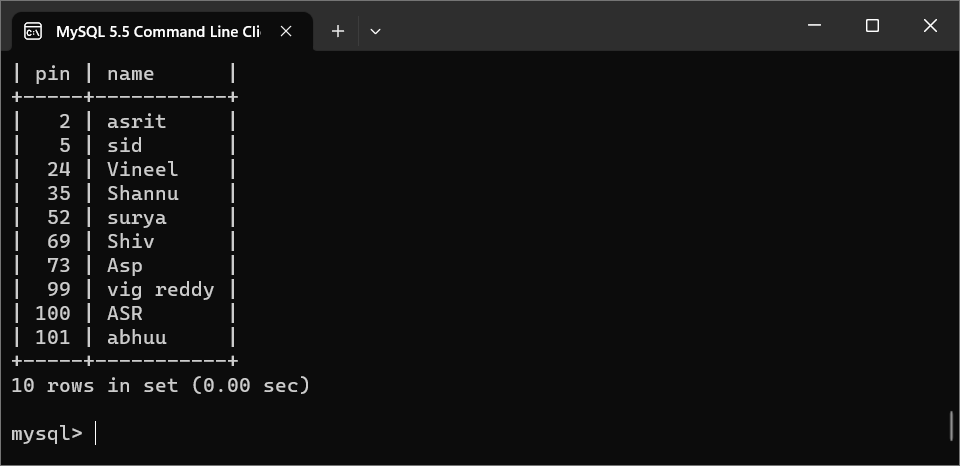
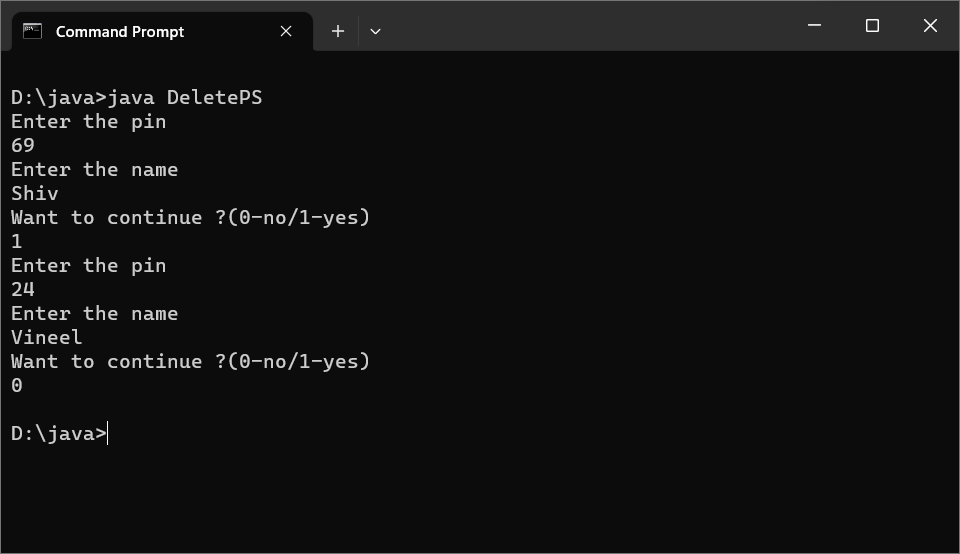
con.close();

}

}

**Output:**

**Before : After :**

**Q5.  Write a java program to delete the record using prepared statement.**

import java.sql.\*;

import java.util.\*;

class DeletePS

{

public static void main(String[] strng) throws Exception

{

Connection con = DriverManager.getConnection("jdbc:mysql://localhost/shiva","root","069");

Scanner sc= new Scanner(System.in);

int choice=1;

while(choice==1)

{

PreparedStatement pt = con.prepareStatement(" delete from jex where pin=? ");

System.out.println("Enter the pin ");

int n = sc.nextInt();

pt.setInt(1,n);

pt.executeUpdate();

System.out.println("Want to continue ?(0-no/1-yes)");

choice= sc.nextInt();

}

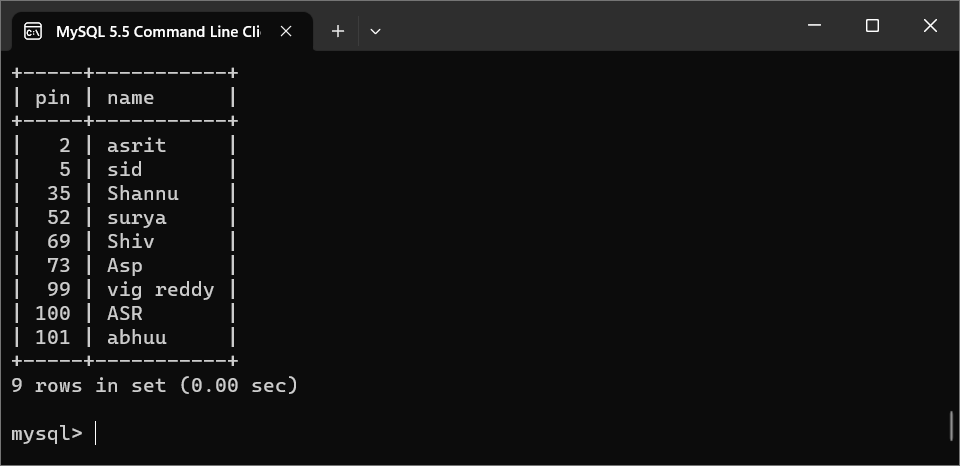
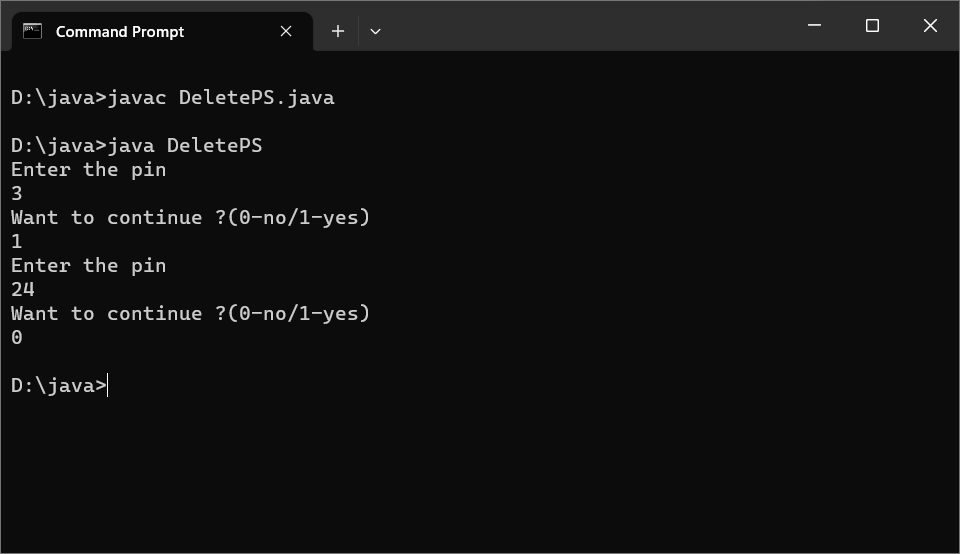
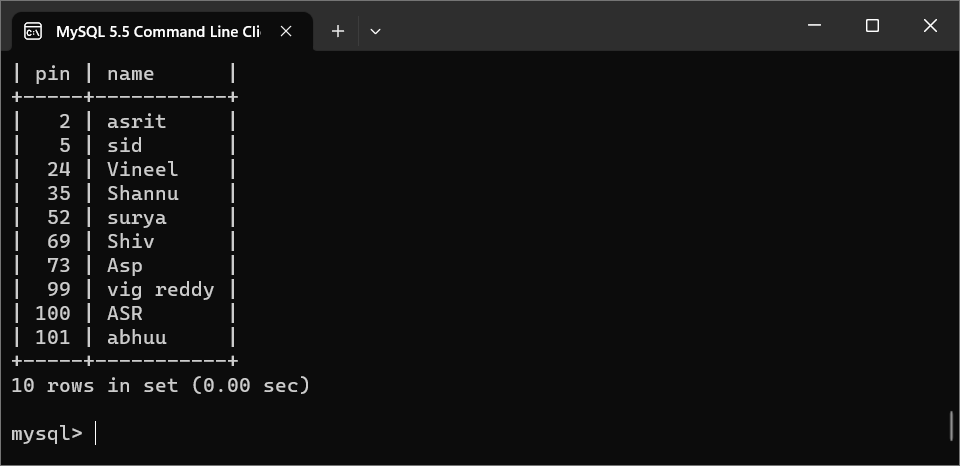
con.close();

}

}

}

**Output**



**Q6.  Write a java program using callable statement to call stored procedure.**

**Stored Procedure to be save in Mysql Database**

delimiter $$

create procedure find\_by\_id(IN p\_id int, OUT p\_name varhcar(30))

begin

select name

into p\_name

from student

where id=p\_id;

END $$

**Java Program**

import java.sql.\*;

import java.io.\*;

class StoredProcedure{

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

{

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

Connection con=DriverManager.getConnection("jdbc:mysql://localhost/college","root","cme");

CallableStatement cstmt=con.prepareCall("call find\_by\_id(?,?)");

cstmt.setInt(1,4);

cstmt.registerOutParameter(2, java.sql.Types.VARCHAR);

System.out.println("Executing Stored Procedure....");

cstmt.execute();

String name=cstmt.getString(2);

System.out.println("Student Name with Id:4 is "+name);

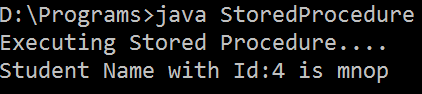
cstmt.close();

con.close();

}//main

}//class

**Output**

****

**Exercise-23**

**Servlets**

**Q1.  Define Servlet.**

A Servlet is a class that handles requests, processes them and reply back with a response.

**Q2.  List the life cycle stages of the Servlet.**

Loading a Servlet.

Initializing the Servlet.

Request handling.

Destroying the Servlet.

**Q3.  What is the difference between Servlet and HttpServlet.**

The main difference between GenericServlet and HttpServlet is that the GenericServlet is protocol independent and can be used with any protocol such as HTTP, SMTP, FTP, and, CGI while HttpServlet is protocol dependent and only used with HTTP protocol.

**Q4.  List the arguments of service method.**

ServletRequest type object

ServletReponse type object

**Q5.  Name two servers that can host Servlets.**

Apache Tomcat

Websphere

**Q6.  What is use of web.xml?**

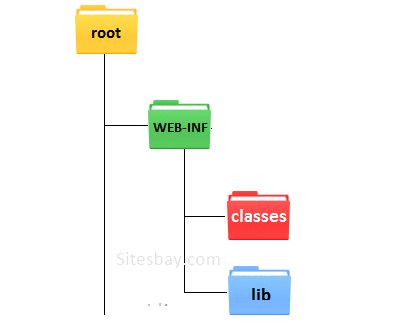
The Web Application Deployment Descriptor for your application. This is an XML file describing the servlets and other components that make up your application, along with any initialization parameters.

**Q7.  Name two packages that are used to work with Servlets.**

import javax.servlet.\*;

import javax.servlet.http.\*;

**Q8.  Draw the Directory organization of web application in apache tomcat server.**

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**Programs**

**Q1.  Write a Java program to display Hello and HelloWorld**

**Program**

import java.util.\*;

import java.io.\*;

import javax.servlet.\*;

import javax.servlet.http.\*;

public class FirstServlet extends HttpServlet

{ String msg="Hello";

String msg2="Hello World";

public void doGet(HttpServletRequest request, HttpServletResponse response)throws ServletException,IOException{

response.setContentType("text/html");

PrintWriter out=response.getWriter();

out.println("<html><head><title>Hello World</title><body><h1>"+msg+"</h1><br><h1>"+msg2+"</h1></body></head></html>");

}

}

**web.xml**

<web-app>

<servlet>

<servlet-name> FirstServlet </servlet-name>

<servlet-class> FirstServlet </servlet-class>

</servlet>

<servlet-mapping>

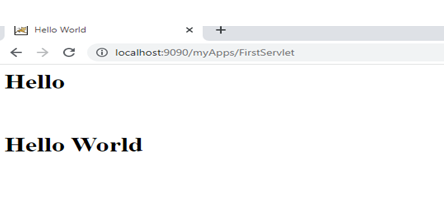
<servlet-name> FirstServlet </servlet-name>

<url-pattern>/ FirstServlet </url-pattern>

</servlet-mapping>

</web-app>

**Output**

****

**Q2.  Write a Java program to handle HTTP requests and responses using doGet() method**

**Program**

import java.io.\*;

import javax.servlet.\*;

import javax.servlet.http.\*;

public class CheckboxServlet extends HttpServlet

{

public void doGet(HttpServletRequest request,HttpServletResponse response)

throws IOException,ServletException

{

response.setContentType("text/html");

PrintWriter pw=response.getWriter();

String[] favPhones=request.getParameterValues("favPhone");

pw.println("Your Fav Phone Is:");

for(String s:favPhones)

{

pw.print(s+" ");

}

} }

**HTMLfile**

**FavPhone.html**

<html>

<form action="http://localhost:9090/20BatchS2/CheckboxServlet">

<h>Plz Select Ur Fav Phone..</h><br>

<input type="checkbox" name="favPhone" value="oneplus">One Plus+</input><br>

<input type="checkbox" name="favPhone" value="redmi">Redmi</input><br>

<input type="checkbox" name="favPhone" value="realme">Realme</input><br>

<input type="checkbox" name="favPhone" value="poco">Poco</input><br>

<input type="checkbox" name="favPhone" value="oppo">Oppo</input><br>

<input type="checkbox" name="favPhone" value="vivo">Vivo</input><br>

<input type="checkbox" name="favPhone" value="Infinix">Infinix+</input><br>

<input type="submit">

</html>

**web.xml**

<web-app>

<servlet>

<servlet-name>CheckboxServlet</servlet-name>

<servlet-class>CheckboxServlet</servlet-class>

</servlet>

<servlet-mapping>

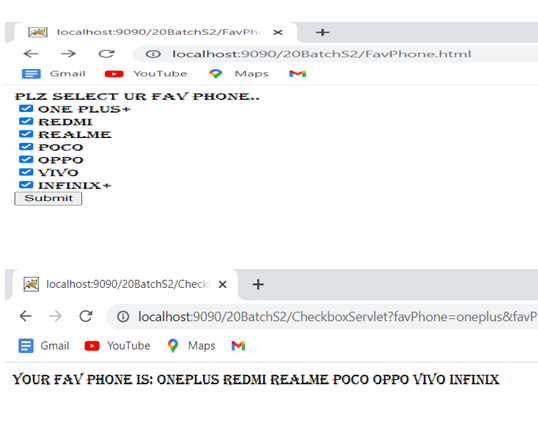
<servlet-name> CheckboxServlet </servlet-name>

<url-pattern>/ CheckboxServlet </url-pattern>

</servlet-mapping>

</web-app>

**Output**

****

**Q3.  Write a Java program to handle HTTP requests and responses using doPost() method**

**HTML page**

<HTML>

          <BODY>

                  <CENTER>

                         <FORM NAME="Form1" METHOD="post" ACTION="http://localhost:8080/website/ServletPostExample">

               <B>Login ID</B> <INPUT TYPE="text" NAME="loginid" SIZE="30">

                                 <P>

                 <B>Password</B> <INPUT TYPE="password" NAME="password" SIZE="30">

                                 </P>

                                 <P>

                                 <INPUT TYPE=submit VALUE="Submit".>

                                 </P

           </BODY>

</HTML>

**Java Program**

import java.io.\*;

import javax.servlet.\*;

import javax.servlet.http.\*;

public class ServletPostExample extends HttpServlet

{

    public void doPost(HttpServletRequest req, HttpServletResponse res) throws ServletException, IOException

   {

      PrintWriter out = res.getWriter();

      String login= req.getParameter("loginid");

      String password= req.getParameter("password");

      out.println("Your login ID is: ");

      out.println(login);

      out.println("Your password is: ");

      out.println(password);

      out.close();

   }

}

**web.xml**

<web-app>

<servlet>

<servlet-name>ServletPostExample</servlet-name>

<servlet-class>ServletPostExample</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name> ServletPostExample </servlet-name>

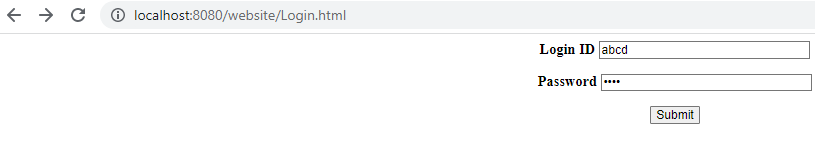
<url-pattern>/ServletPostExample</url-pattern>

</servlet-mapping>

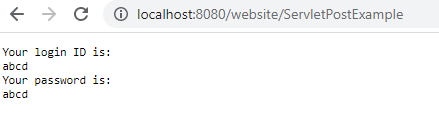
</web-app>

**Output**

**First Screen**

****

**Second Screen**

****