practical 1a.

Create a simple calculator application using servlet.

index.html
```html
<html>
 <head>
     <title>Calculator App</title>
</head>
   <body>
     <form action="CalculatorServlet" >
        Enter First Number     <input type="text" name="txtN1"
><br>
        Enter Second Number     <input type="text" name="txtN2"
><br>
        Select an Operation     <input type="radio" name="opr"
value="+">
        ADDTION <input type="radio" name="opr" value="-">
        SUBSTRACTION <input type="radio" name="opr" value="*">
        MULTIPLY <input type="radio" name="opr" value="/">
        DIVIDE <br> <input type="reset">
        <input type="submit" value="Calculate" >
     </form>
   </body>
</html>
```
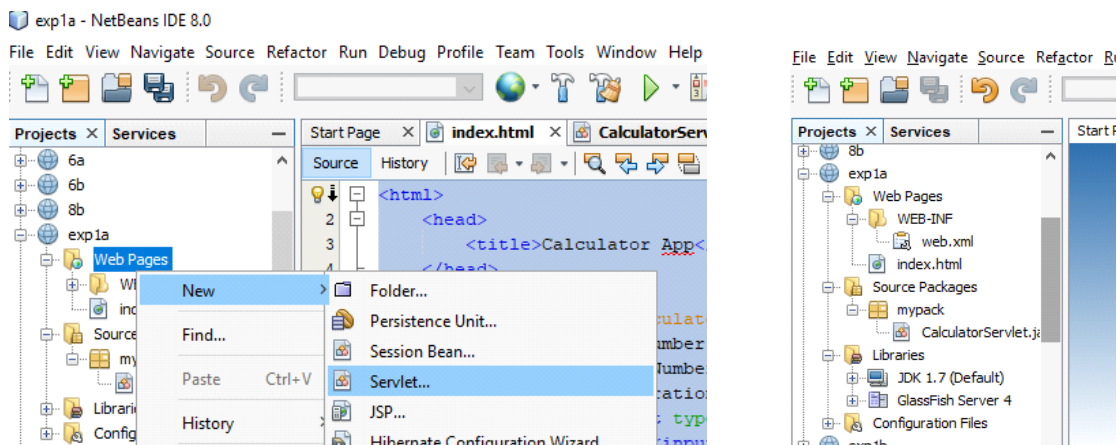
Add a new Servlet to source package

Check "Add information to deployment descriptor" to add servlet into web.xml
But preferably use annotation.

CalculatorServlet.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class CalculatorServlet extends HttpServlet
{
    public void doGet(HttpServletRequest request, HttpServletResponse
response)
        throws ServletException, IOException
    {

        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        out.println("<html><head><title>Servlet
CalculatorServlet</title></head><body>");
        double n1 = Double.parseDouble(request.getParameter("txtN1"));
         double n2 =
Double.parseDouble(request.getParameter("txtN2"));
        double result =0;
        String opr=request.getParameter("opr");
        if(opr.equals("+")) result=n1+n2;
        if(opr.equals("-")) result=n1-n2;
        if(opr.equals("*")) result=n1*n2;
        if(opr.equals("/")) result=n1/n2;
        out.println("<h1> Result = "+result);
        out.println("</body></html>");
    }
}
```

Output:

Practical 1b.

Create a servlet for a login page. If the username and password are correct then it says message
"Hello <username>" else a message "login failed"

index.html
```
html>
   <head>
     <title>Login Form</title>
   </head> <form action="LoginServlet" >

     Enter User ID<input type="text" name="txtId"><br>
     Enter Password<input type="password" name="txtPass"><br>
     <input type="reset">
     <input type="submit" value=" Click to Login " >
   </form>
</html>
```

LoginServlet.java
```
package mypack;
import java.io.*;
import javax.servlet.ServletException;
import javax.servlet.http.*;
```

```
public class LoginServlet extends HttpServlet
{
    public void doGet(HttpServletRequest request, HttpServletResponse
response)
        throws ServletException, IOException
    {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        out.println("<html><head><title>Servlet
LoginServlet</title></head>");
        String uname = request.getParameter("txtId");
        String upass = request.getParameter("txtPass");
        if(uname.equals("admin") && upass.equals("12345"))
        {
            out.println("<body bgcolor=blue >");
            out.println("<h1> Welcome !!! "+uname+"</h1>");
        }
        else
        {
            out.println("<body bgcolor=red >");
            out.println("<h1> Login Fail !!! </h1>");
        }
        out.println("</body></html>");
    }
}
```
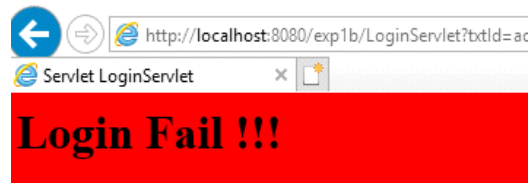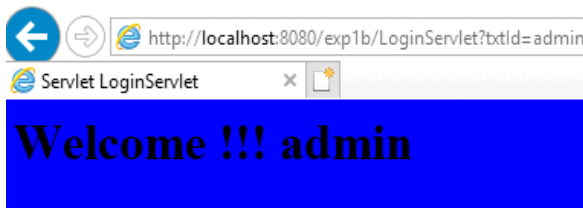

Practical 1c.

Create a registration servlet in Java using JDBC. Accept the details such as Username, Password,Email, and Country from

the user using HTML Form and store the registration details in the database.

MySql queries
create database LoginDB;
use LoginDB;

create table user(username varchar(20) PRIMARY KEY, password varchar(20), email varchar(20),country varchar(20));

insert into user values ('admin','admin','admin@admin.com','India');
select * from user;

index.html

```
<html>
   <head>
      <title>Registration Page</title>
   </head>
   <body>
     <form action="RegisterServlet" >
        <H1>Welcome to Registration page</H1>
        Enter User Name
        <input type="text" name="txtUid"><br>
        Enter Password
        <input type="password" name="txtPass"><br>
        Enter Email      <input type="text" name="txtEmail" ><br>
        Enter Country        <input type="text" name="txtCon" ><br>
        <input type="reset" >
        <input type="submit" value="REGISTER" >
     </form>
   </body>
</html>
```

RegisterServlet.java

```
package mypack;
import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class RegisterServlet extends HttpServlet {
    public void doGet(HttpServletRequest request,HttpServletResponse response)
```

```
        throws ServletException, IOException {
      response.setContentType("text/html;charset=UTF-8");
   PrintWriter out = response.getWriter();
   String id = request.getParameter("txtUid");
   String ps = request.getParameter("txtPass");
   String em = request.getParameter("txtEmail");
   String co = request.getParameter("txtCon");
try{
   Class.forName("com.mysql.jdbc.Driver");
   Connection con
=DriverManager.getConnection("jdbc:mysql://localhost:3306/logindb","
root","hr");
   PreparedStatement pst = con.prepareStatement("insert into user
values(?,?,?,?)");
   pst.setString(1,id);
   pst.setString(2,ps);
   pst.setString(3,em);
   pst.setString(4,co);
   int row = pst.executeUpdate();
   out.println("<h1>"+row+ " Inserted Succesfullyyyyy");
}
catch(Exception e){out.println(e);}
}
}
```


Welcome to Registration page

Enter User Name | Deepak
Enter Password | •••
Enter Email | djpal86@gmail.com ×
Enter Country | india
[Reset] [REGISTER]

http://localhost:8080/exp1c/RegisterServlet?txtUid=Deepak&t...

localhost

1 Inserted Succesfullyyyyy

Practical 2a.

**Using Request Dispatcher Interface create a Servlet which will validate the password entered by
the user, if the user has entered "Servlet" as password, then he will be forwarded to Welcome Servlet
else the user will stay on the index.html page and an error message will be displayed.**

index.html

```html
<html>
   <head>
     <title>Login Form</title>
   </head> <form action="LoginServlet" >
     Enter User ID<input type="text" name="txtId"><br>
     Enter Password<input type="password" name="txtPass"><br>
     <input type="reset"> <input type="submit" value=" Click to
Login " >
   </form>
</html>
```

LoginServlet.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
```

```java
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.RequestDispatcher;
public class LoginServlet extends HttpServlet
{
    public void doGet(HttpServletRequest request,HttpServletResponse
response)
            throws ServletException, IOException

    {
        response.setContentType("text/html;charset=UTF-8");

    PrintWriter out = response.getWriter();
    out.println("<html><head>");
    out.println("<title>Servlet LoginServlet</title></head>");
    String uname = request.getParameter("txtId");
    String upass = request.getParameter("txtPass");
if(uname.equals("admin") && upass.equals("servlet"))
{
    out.println("<body bgcolor=blue >");
 out.println("<h1> Welcome !!!  to the world of servlet </h1>");
}
else
{
    out.println("<body bgcolor=red >");
    out.println("<h1> Login Fail !!! </h1>");
    RequestDispatcher rd =
request.getRequestDispatcher("index.html");
    rd.include(request, response);
}
out.println("</body>");
out.println("</html>");
}
}
```

NewServlet.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.RequestDispatcher;
public class NewServlet extends HttpServlet {
```
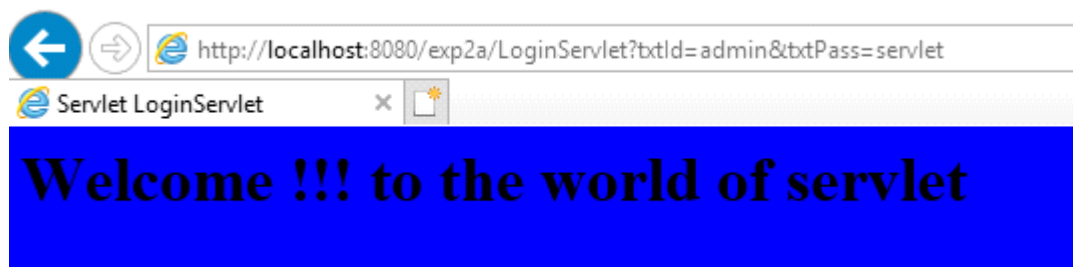
```java
public void doGet(HttpServletRequest request, HttpServletResponse response)
 throws ServletException, IOException {
 response.setContentType("text/html;charset=UTF-8");
 PrintWriter out = response.getWriter();
 out.println("<html><head>");
 out.println("<title>Servlet LoginServlet</title></head>");
 String uname = request.getParameter("txtId");
 String upass = request.getParameter("txtPass");
 if(uname.equals("admin") && upass.equals("servlet")){
 RequestDispatcher rd = request.getRequestDispatcher("NewServlet");
 rd.forward(request, response);
 }
 else{
 out.println("<body bgcolor=red >");
 out.println("<h1> Login Fail !!! </h1>");
 RequestDispatcher rd = request.getRequestDispatcher("index.html");
 rd.include(request, response);
 }
 out.println("</body>");
 out.println("</html>");
 }
}
```


Practical 2b.

Create a servlet that uses Cookies to store the number of times a user has visited servlet.

index.html

```
<html>
<head><title>Cookie Demo</title></head>
<body>
<form action="Page1" >
 Enter Your Name <input type="text" name="txtName"><br>
<input type="submit" value="~~~ Click to Enter ~~~">
</form>
</body>
</html>
```

Page1.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.Cookie;
public class Page1 extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse response)
 throws ServletException, IOException {
 response.setContentType("text/html;charset=UTF-8");
 PrintWriter out = response.getWriter();
 out.println("<html><head><title>Page1</title></head>");
 out.println("<body bgcolor=pink >");
 String uname = request.getParameter("txtName");
 out.println("<h1>~~~ Welcome "+uname+"</h1>");
 Cookie ck1 = new Cookie("username", uname);
 Cookie ck2 = new Cookie("visit","1");
 response.addCookie(ck1); response.addCookie(ck2);
 out.println("<h1><a href=Page2 >Click to visit Page 2 </a></h1>");
 out.println("</body>");
 out.println("</html>");
 }
 }
```

Page2.java

```java
package mypack;
import java.io.*;
import javax.servlet.ServletException;
import javax.servlet.http.*;
public class Page2 extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse response)
```

```
throws ServletException, IOException {
response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
out.println("<html><head><title>Page2</title></head>");
out.println("<body bgcolor=yellow >");
Cookie [] ck = request.getCookies();
for(int i=0;i<ck.length;i++){
if(ck[i].getName().equals("visit")){
int count = Integer.parseInt(ck[i].getValue())+1;
out.println("<h1>Visit No : "+count+"</h1>");
ck[i] = new Cookie("visit",count+"");
response.addCookie(ck[i]);
}
else {
 out.println(ck[i].getName()+ " = "+ck[i].getValue()); }
out.println("<h1><a href=Page3 >Click to visit Page 3 </a></h1>");
out.println("<h1><a href=Page4 >Click to visit Page 4 </a></h1>");
out.println("<h1><a href=Page5 >Click to visit Page 5 </a></h1>");
out.println("</body>");
out.println("</html>");
}}
```

Enter Your Name [   ]

[~~~ Click to Enter ~~~]

~~~ **Welcome dman**

Click to visit Page 2

Click to visit Page 3

Click to visit Page 4

Click to visit Page 5

Visit No : 2

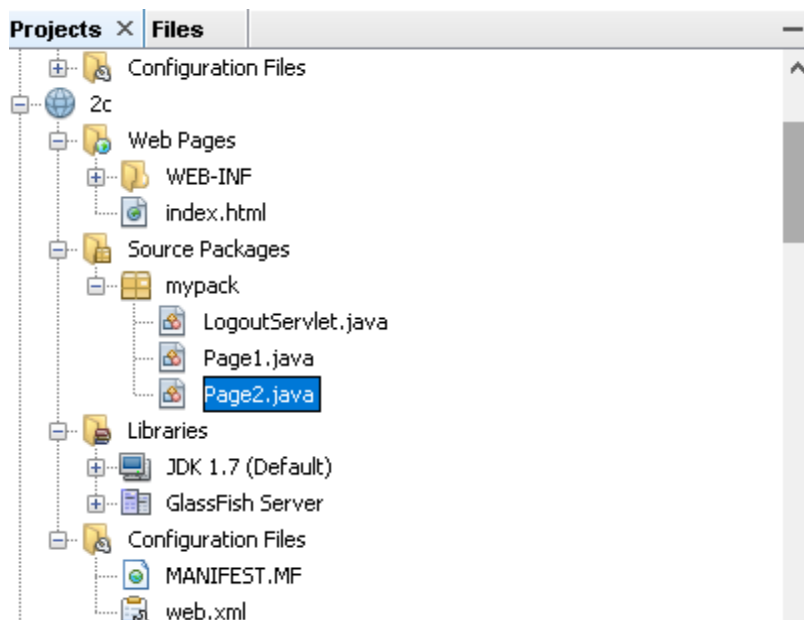**Click to visit Page 3**

Click to visit Page 4

Click to visit Page 5

Practical2c.

Create a servlet demonstrating the use of session creation and destruction. Also check whether the
user has visited this page first time or has visited earlier also using sessions.

index.html

```
<html>
<head><title>Session Demo</title></head>
```

```html
<form action="Page1" method="get" >
Enter User ID <input type="text" name="txtName"><br>
<input type="reset" ><input type="submit" >
</form>
</html>
```

LogoutServlet.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class LogoutServlet extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse
response)
throws ServletException, IOException {
response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
out.println("<html><head><title>Servlet
LogoutServlet</title></head>");
out.println("<body>");
javax.servlet.http.HttpSession hs = request.getSession();
if(hs != null) hs.invalidate();
out.println("<h1>You are Logged out now........</h1>");
out.println("</body>");
out.println("</html>");
}
}
```

Page1.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
```

```java
public class Page1 extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse
response)
throws ServletException, IOException {
response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
out.println("<html><head><title>Servlet Page1</title></head>");
HttpSession hs = request.getSession(true);
if(hs.isNew()){
out.println("<body bgcolor=yellow>");
String name = request.getParameter("txtName");
hs.setAttribute("uname", name);
hs.setAttribute("visit", "1");
out.println("<h1>Welcome First Time</h1>");
}
else{
out.println("<h1>Welcome Again</h1>");
int visit = Integer.parseInt((String)hs.getAttribute("visit"))+1;
out.println("<h1>You Visited "+visit+"Times</h1>");
hs.setAttribute("visit", ""+visit);
}
out.println("<h1>Your Session ID "+hs.getId()+"</h1>");
out.println("<h1>You Logged in at "+new
java.util.Date(hs.getCreationTime())+"</h1>");
out.println("<h1><a href=Page2>Click for Page 2 </a></h1>");
out.println("<h1><a href=Page3>Click for Page 3 </a></h1>");
out.println("<h1><a href=Page4>Click for Page 4 </a></h1>");
out.println("<h1><a href=LogoutServlet>Click to Terminate Session
</a></h1>");
out.println("</body>");
out.println("</html>");
}
}
```
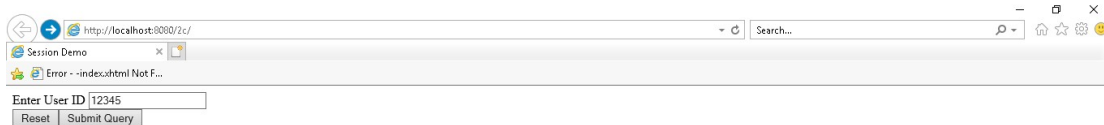
Page2.java

```java
package mypack;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
public class Page2 extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse
```
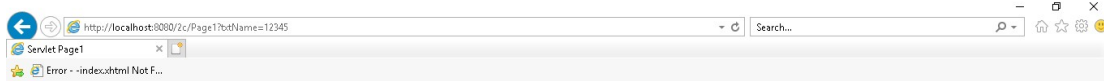
```java
response)
throws ServletException, IOException {
response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
out.println("<html><head><title>Servlet Page2</title></head>");
HttpSession hs = request.getSession(false);
out.println("<h1>Welcome Again on Page No. 2</h1>");
int visit = Integer.parseInt((String)hs.getAttribute("visit"))+1;
out.println("<h1>You Visited "+visit+"Times</h1>");
hs.setAttribute("visit", ""+visit);
out.println("<h1>Your Session ID "+hs.getId()+"</h1>");
out.println("<h1>You Logged in at "+new
java.util.Date(hs.getCreationTime())+"</h1>");
out.println("<h1><a href=Page1>Click for Page 1 </a></h1>");
out.println("<h1><a href=Page3>Click for Page 3 </a></h1>");
out.println("<h1><a href=Page4>Click for Page 4 </a></h1>");
out.println("<h1><a href=LogoutServlet>Click for Terminate Session
</a></h1>");
out.println("</body>");
out.println("</html>");
}
}
```

Welcome Again

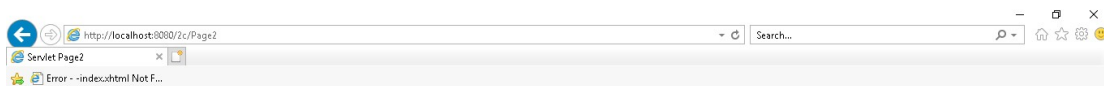You Visited 3Times

Your Session ID 47fafe3cf1c3b09df8a238c71b15

You Logged in at Fri Aug 09 09:20:20 IST 2019

Click for Page 2

Click for Page 3

Click for Page 4

Click to Terminate Session

Welcome Again on Page No. 2

You Visited 4Times

Your Session ID 47fafe3cf1c3b09df8a238c71b15

You Logged in at Fri Aug 09 09:20:20 IST 2019

Click for Page 1

Click for Page 3

Click for Page 4

Click for Terminate Session

practical 3a

.Create a Servlet application to upload and download a file.

index.html

<html>

```
<body>
<form action="FileUploadServlet" method="post"
enctype="multipart/form-data">
Select File to Upload:<input type="file" name="file" id="file">
Destination <input type="text" value="/tmp" name="destination">
<br>
<input type="submit" value="Upload file" name="upload"
id="upload">
</form>
</body>
</html>
```

DownloadServlet.java

```
package filedownloadapp;
import java.io.IOException;
import java.io.InputStream;
import java.io.PrintWriter;
import javax.servlet.ServletContext;
import javax.servlet.ServletException;
import javax.servlet.ServletOutputStream;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class DownloadServlet extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse
response)
        throws ServletException, IOException {
response.setContentType("APPLICATION/OCTET-STREAM");
String filename = request.getParameter("filename");
ServletContext context = getServletContext();
InputStream is = context.getResourceAsStream("/" + filename);
//ServletOutputStream out = response.getOutputStream(); // any of the
two works
PrintWriter out=response.getWriter();
response.setHeader("Content-Disposition","attachment; filename=\""
+ filename + "\""); // if comment this statement then it wl ask you
about the editor with which you want to open the file
int i;
while ((i=is.read()) != -1) {
out.write(i);
}
is.close();
out.close();
}
}
```

FileUploadServlet.java

```java
package fileservletapp;
import java.io.*;
import javax.servlet.*;
import javax.servlet.annotation.MultipartConfig;
import javax.servlet.http.*;
@MultipartConfig
public class FileUploadServlet extends HttpServlet {
public void doPost(HttpServletRequest req,HttpServletResponse res)
throws ServletException, IOException
{
res.setContentType("text/html");
PrintWriter out = res.getWriter();
String path=req.getParameter("destination");
Part filePart=req.getPart("file");
String filename=filePart.getSubmittedFileName().toString();
out.print("<br><br><hr> file name: "+filename);
OutputStream os=null;
InputStream is=null;
try {
os=new FileOutputStream(new File(path+File.separator+filename));
is=filePart.getInputStream();
int read=0;
while ((read = is.read()) != -1) {
os.write(read);
}
out.println("<br>file uploaded sucessfully...!!!");
}
catch(FileNotFoundException e){out.print(e);}
} }
```

web.xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="3.1" xmlns="http://xmlns.jcp.org/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/web-app_3_1.xsd">
   <servlet>
      <servlet-name>NewServlet</servlet-name>
      <servlet-class>mypack.NewServlet</servlet-class>
   </servlet>
   <servlet>
      <servlet-name>FileUploadServlet</servlet-name>
      <servlet-class>fileservletapp.FileUploadServlet</servlet-class>
   </servlet>
   <servlet>
      <servlet-name>DownloadServlet</servlet-name>
```
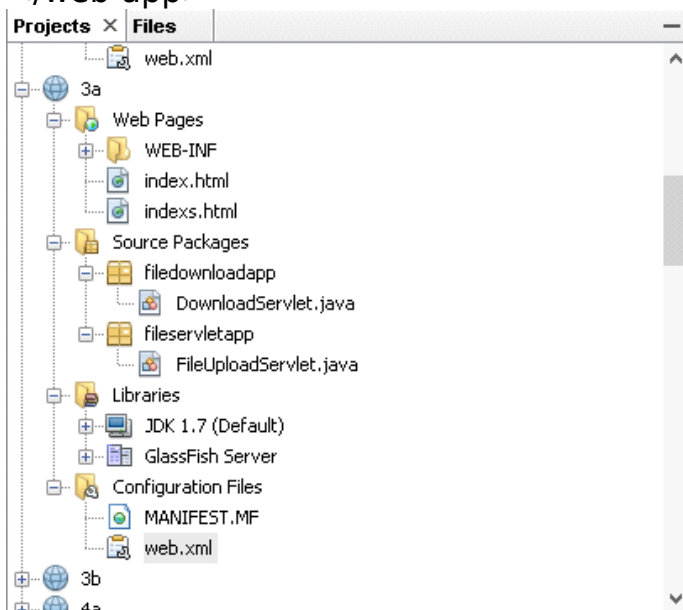
```xml
        <servlet-class>filedownloadapp.DownloadServlet</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>NewServlet</servlet-name>
        <url-pattern>/NewServlet</url-pattern>
    </servlet-mapping>
    <servlet-mapping>
        <servlet-name>FileUploadServlet</servlet-name>
        <url-pattern>/FileUploadServlet</url-pattern>
    </servlet-mapping>
    <servlet-mapping>
        <servlet-name>DownloadServlet</servlet-name>
        <url-pattern>/DownloadServlet</url-pattern>
    </servlet-mapping>
    <session-config>
        <session-timeout>
            30
        </session-timeout>
    </session-config>
</web-app>
```
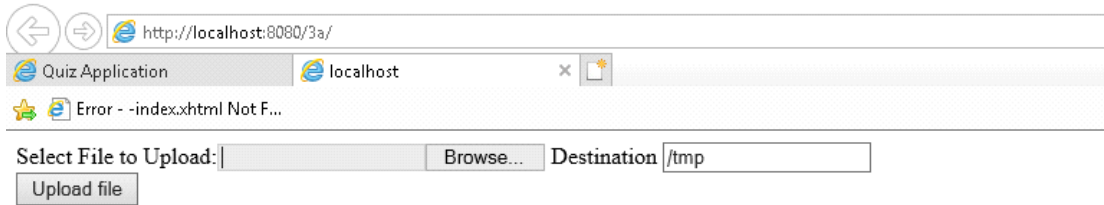

OUTPUT

3b. Develop Simple Servlet Question Answer Application using Database.

create database qadb;
use qabd;
create table quiz (qno varchar(5) PRIMARY KEY,question varchar(100), op1 varchar(50), op2 varchar(50), op3 varchar(50), op4 varchar(50), ans varchar(50)) ;
insert into quiz values('001','What is the capital of India??','New Delhi','Kolkata','Chennai','Mumbai','New Delhi');
insert into quiz values('002','Who was the First President of India??','Dr. Rajendra Prasad','Dr. S. Radhakrishnan','Ram Nath Kovind','V. V. Giri','Dr. Rajendra Prasad');
 insert into quiz values('003','What is ORM','Object Ratio Mean','Object Rotation Measure','Object Relation Mapping','Oracle Request Management','Object Relation Mapping');
 insert into quiz values('004','Unit of Energy is ___','Dozon','Kilo Meter ','Joul','Hertz','Joul') ;
insert into quiz values('005',' --- is the smallest memory unit.','bit','byte','Kilo Byte','Giga Byte','bit');

index.html
```
<html>
   <head>
      <title>Quiz Application</title>
   </head> <body>
      <h1>Welcome to Quiz Servlet </h1>
      <h1><a href="QuizServlet" >CLICK TO START QUIZ</a>
      </h1>
   </body>
</html>
```

QuizServlet.java
package mypack;

```java
import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class QuizServlet extends HttpServlet
{
    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    PrintWriter out = response.getWriter(); out.println("<form action=ShowResult >");
    try {
        Class.forName("com.mysql.jdbc.Driver");
    Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/dman","root","hr");
    Statement stmt = con.createStatement();
    ResultSet res = stmt.executeQuery("select * from quiz");
    out.println("<table border=1 >");
    int qno=0; while(res.next())
    {
        qno++; out.println("<tr><td>"+res.getString(1)+"</td>");
        out.println("<td>"+res.getString(2)+"</td></tr>");
        out.println("<tr><td><input type=radio name="+qno+"
value="+res.getString(3)+"></td><td>"+res.getString(3)+"</td></tr>");
        out.println("<tr><td><input type=radio name="+qno+"
value="+res.getString(4)+"></td><td>"+res.getString(4)+"</td></tr>");
        out.println("<tr><td><input type=radio name="+qno+"
value="+res.getString(5)+"></td><td>"+res.getString(5)+"</td></tr>");
        out.println("<tr><td><input type=radio name="+qno+"
value="+res.getString(6)+"></td><td>"+res.getString(6)+"</td></tr>");
    }
    }
     catch(Exception e)
     {
        out.println(e);
    }
    out.println("</table>");
    out.println("<input type=reset >");
    out.println("<input type=submit value=SUBMIT >");
    out.println("</form>");
    }
}
```
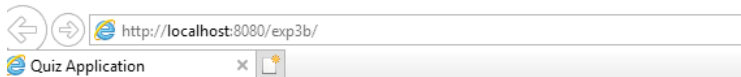
ShowResult.java
```java
package mypack;
```

```java
import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.http.*;
public class ShowResult extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse response)
 throws ServletException, IOException {
 response.setContentType("text/html;charset=UTF-8");
 PrintWriter out = response.getWriter();
 try {
 Class.forName("com.mysql.jdbc.Driver");
 Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/qadb","root","hr");
Statement stmt = con.createStatement();
ResultSet res = stmt.executeQuery("select ans from quiz");
int count =0, qno=0;
while(res.next()){
 if(res.getString(1).equals(request.getParameter(""+(++qno))))
 { count++;
 out.println("<h1>Correct </h1>");
 }
 else {
 out.println("<h1>Incorrect </h1>");
 }
}
out.println("<h1>Your Score is "+count+" </h1>");
 }catch(Exception e){out.println(e);}}}
```


http://localhost:8080/exp3b/

Quiz Application

Welcome to Quiz Servlet

CLICK TO START QUIZ

001	What is the capital of India??	Incorrect
○	New Delhi	
○	Kolkata	
○	Chennai	
○	Mumbai	
002	Who was the First President of India??	Incorrect
○	Dr. Rajendra Prasad	
○	Dr. S. Radhakrishnan	
○	Ram Nath Kovind	Incorrect
○	V. V. Giri	
003	What is ORM	
○	Object Ratio Mean	
○	Object Rotation Measure	Correct
○	Object Relation Mapping	
○	Oracle Request Management	Correct
004	Unit of Energy is ___	
○	Dozon	
○	Kilo Meter	
○	Joul	Incorrect
○	Hertz	
005	--- is the smallest memory unit.	
○	bit	Your Score is 2
○	byte	
○	Kilo Byte	
○	Giga Byte	

Reset   SUBMIT

3c. Create simple Servlet application to demonstrate Non-Blocking Read Operation.

index.html:

```
<html>
<head>
 <title>Non Blocking IO</title>
 <meta charset="UTF-8">
<meta http-equiv="Refresh" content="0; URL=NonBlockingServlet">
 </head>
```

```
<body>
 </body>
</html>
```

NonBlockingServlrt.java :

```java
package nonblkapp;

import java.io.*;
import java.net.*;
import javax.servlet.*;
import javax.servlet.http.*;
public class NonBlockingServlet extends HttpServlet
{
            protected    void    service(HttpServletRequest    request,
HttpServletResponse response)
        throws ServletException, IOException
   {
     response.setContentType("text/html;charset=UTF-8");
     try (PrintWriter out = response.getWriter())
     {
       out.println("<h1>FileReader</h1>");
       String filename="/WEB-INF/booklist.txt";
       ServletContext c=getServletContext();
       InputStream in=c.getResourceAsStream(filename);
                        String   path="http://"+request.getServerName()
+":"+request.getServerPort()+request.getContextPath()+"/Rea
dingNonBloclingServlet";
       URL url=new URL(path);
                                            HttpURLConnection
conn=(HttpURLConnection)url.openConnection();
       conn.setChunkedStreamingMode(2);
       conn.setDoOutput(true);
       conn.connect();
       if(in!=null)
     {
         InputStreamReader inr=new InputStreamReader(in);
         BufferedReader br = new BufferedReader(inr);
         String text="";
         System.out.println("Reading started....");
         BufferedWriter bw=new
                                            BufferedWriter(new
OutputStreamWriter(conn.getOutputStream()));
         while((text=br.readLine())!=null){
```

```
                    out.print(text+"<br>");
                    try{
                        Thread.sleep(1000);
                        out.flush();
                    }
                    catch(InterruptedException ex){} }
out.print("reading completed....");
                bw.flush();
                bw.close();
            }       }     } }
```

ReadingListener.java :
```
package nonblkapp;
import java.io.IOException;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.servlet.AsyncContext;
import javax.servlet.ReadListener;
import javax.servlet.ServletInputStream;
public class ReadingListener implements ReadListener {
    private ServletInputStream input = null;
    private AsyncContext ac = null;
    ReadingListener(ServletInputStream in, AsyncContext c)
    {
        input = in;
        ac = c;
    }
    @Override    public void onDataAvailable()
        throws IOException {     }
    public void onAllDataRead()
        throws IOException {
        ac.complete();
    }    public void onError(final Throwable t)
    {
        ac.complete();
        t.printStackTrace();
    }  }
```

ReadingNonBlockingServlet.java:
```
package nonblkapp;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.AsyncContext;
```

```
import javax.servlet.ServletException;
import javax.servlet.ServletInputStream;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
/** * * @author Beena   */
@WebServlet (name = "ReadingNonBlockingServlet", urlPatterns =
{"/ReadingNonBlockingServlet"},asyncSupported = true )
public class ReadingNonBlockingServlet extends HttpServlet
{ @Override
protected void service(HttpServletRequest request,
HttpServletResponse response)
      throws ServletException, IOException
{
   response.setContentType("text/html");
   AsyncContext ac = request.startAsync();
   ServletInputStream in=request.getInputStream();
in.setReadListener(new ReadingListener(in,ac));
} }
```

Output:

Practical4a.

Develop a simple JSP application to display values obtained from the use of intrinsic objects of various types.

index.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<html><head><title>JSP Page</title></head>
   <body>
      <h1>Use of Intrinsic Objects in JSP</h1>
      <h1>Request Object </h1>
      Query String <%=request.getQueryString() %><br>
      Context Path <%=request.getContextPath() %><br>
      Remote Host  <%=request.getRemoteHost()  %><br>
```
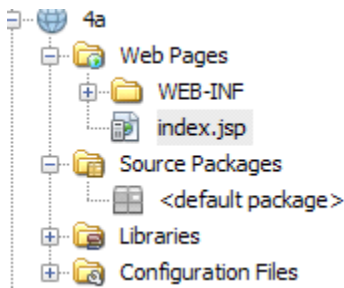
```
<h1>Response Object </h1>
Character Encoding Type <%=response.getCharacterEncoding()
%><br>
Content Type        <%=response.getContentType() %><br>
Locale           <%=response.getLocale() %><br>
<h1>Session Object </h1>
ID <%=session.getId() %><br>
Creation Time <%=new java.util.Date(session.getCreationTime())
%><br>
Last Access Time<%=new
java.util.Date(session.getLastAccessedTime()) %><br>
  </body>
</html>
```
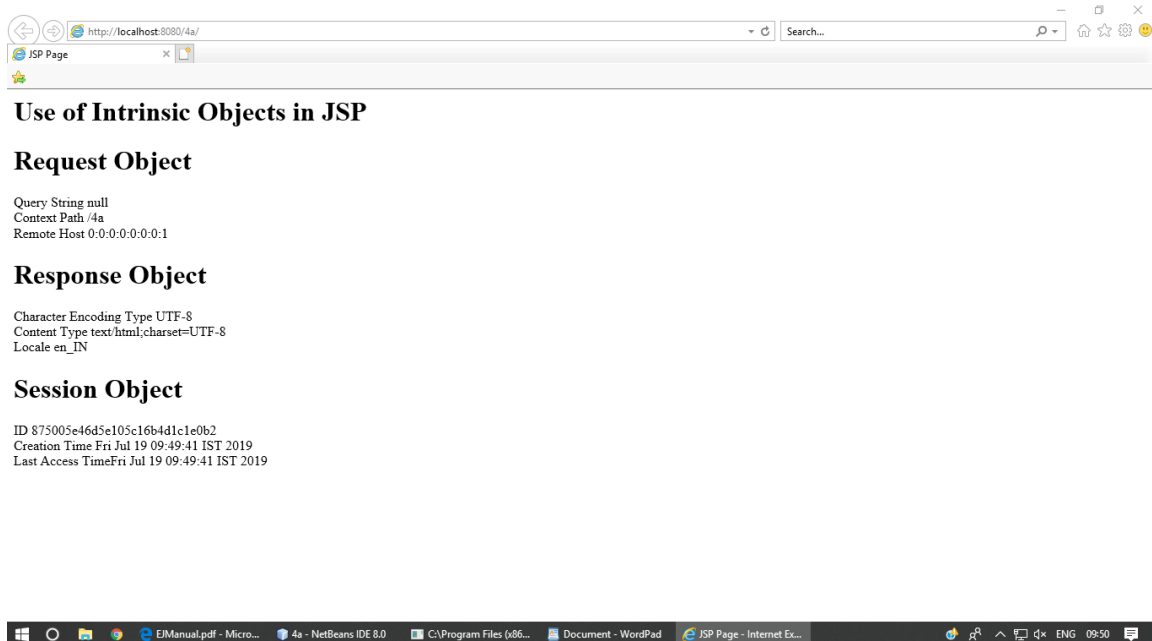
- 4a
  - Web Pages
    - WEB-INF
    - index.jsp
  - Source Packages
    - <default package>
  - Libraries
  - Configuration Files

OUTPUT:-

Use of Intrinsic Objects in JSP

Request Object

Query String null
Context Path /4a
Remote Host 0:0:0:0:0:0:0:1

Response Object

Character Encoding Type UTF-8
Content Type text/html;charset=UTF-8
Locale en_IN

Session Object

ID 875005e46d5e105c16b4d1c1e0b2
Creation Time Fri Jul 19 09:49:41 IST 2019
Last Access TimeFri Jul 19 09:49:41 IST 2019

Practical 4b.

Develop a simple JSP application to pass values from one page to another with validations. (Name-txt, age-txt, hobbies-checkbox, email-txt, gender-radio button).

index.html

```
<html>
   <head>
      <title>User Information Paage</title>
   </head>
   <body>
      <form action="Validate.jsp">
         Enter Your Name<input type="text" name="name" >
         <br>
         Enter Your Age<input type="text" name="age" >
         <br>
         Select Hobbies <input type="checkbox" name="hob"
value="Singing">
         Singing <input type="checkbox" name="hob" value="Reading">
         Reading Books <input type="checkbox" name="hob"
value="Football">
         Playing Football<br>
         Enter E-mail<input type="text" name="email" >
         <br>
         Select Gender <input type="radio" name="gender" value="male">
         Male <input type="radio" name="gender" value="female">
         Female <input type="radio" name="gender" value="other">
         Other<br>
         <input type="hidden" name="error" value="">
         <input type="submit" value="Submit Form">
      </form>
   </body>
</html>
```

Validate.jsp
```
<%@page contentType="text/html" pageEncoding="UTF-8"
import="mypack.*" %>
<html><head><title>JSP Page</title></head> <body>
 <h1>Validation Page</h1>

<jsp:useBean id="obj"  scope="request"        class="mypack.CheckerBean"
> <jsp:setProperty name="obj" property="*"/>
 </jsp:useBean>
```
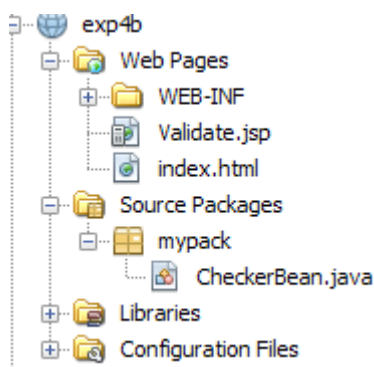
```
<%if (obj.validate()) { %>
<jsp:forward page="successful.jsp"/>
<%   }
 else  {%> <jsp:include page="index.html"/>
<%}%> <%=obj.getError() %>
</body></html>
```

CheckerBean.java

```java
package mypack;

public class CheckerBean
{ private String name, age, hob, email, gender, error; public CheckerBean()
{error="";}
 public void setName(String n){name=n;}
 public void setAge(String a){age=a;}
 public void setHob(String h){hob=h;}
 public void setEmail(String e){email=e;}
public void setGender(String g){gender=g;}
public void setError(String e)
{error=e;} public String getName(){return name;}
public String getAge(){return age;}
public String getHob(){return hob;}
public String getEmail(){return email;}
public String getGender(){return gender;}
 public String getError(){return error;}
public boolean validate(){ boolean res=true; if(name.trim().equals(""))
{error+="<br>
Enter First Name";res=false;}
 if(age.length() > 2 )
 {error+="<br>Age Invalid";res=false;}
 return res; } }
```

_OUTPUT:-

Practical 5a.

Create an html page with fields, eno, name, age, desg, salary. Now on submit this data to a JSP page which will update the employee table of database with matching eno.

‑

--> create table emp(empid varchar(10) PRIMARY KEY, ename varchar(50), salary varchar(50),age varchar(50))
insert into emp values('1','aaa','221234','11')
 insert into emp values('2','bbb','334567','22')
 insert into emp values('3','ccc','44454','33')
 insert into emp values('4','ddd','55123','44')

---- index.html ---------

```
    <html>
<body>
<form action="UpdateEmp.jsp" >
 Enter Employee Number<input type="text" name="txtEno" ><br>
 Enter Name<input type="text" name="txtName" ><br>
 Enter age<input type="text" name="txtAge" ><br>
 Enter Salary<input type="text" name="txtSal" ><br>
<input type="reset" ><input type="submit">
</form>
</body>
</html>
```
------------------ UpdateEmp.jsp-------------------------------

```
<%@page contentType="text/html" import="java.sql.*" %>
<html><body>
<h1>Employee Record Update</h1>
<%
 String eno=request.getParameter("txtEno");
 String name=request.getParameter("txtName");
 String age = request.getParameter("txtAge");
 String sal = request.getParameter("txtSal");
 try{
 Class.forName("com.mysql.jdbc.Driver");
 Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/logindb","root","hr
");
 PreparedStatement stmt = con.prepareStatement("select * from emp where
empid=?");
 stmt.setString(1, eno);
 ResultSet rs = stmt.executeQuery();
 if(rs.next())
 {
  out.println("<h1>~~~ Employee "+name+" Exist ~~~ </h1>");
  PreparedStatement pst1= con.prepareStatement("update emp set salary=?
where empid=?");
  PreparedStatement pst2= con.prepareStatement("update emp set age=?
where empid=?");
  pst1.setString(1, sal); pst1.setString(2, eno);
  pst2.setString(1, age); pst2.setString(2, eno);
  pst1.executeUpdate(); pst2.executeUpdate();
 }
 else{
 out.println("<h1>Employee Record not exist !!!!!</h1>");
 }
 }catch(Exception e){out.println(e);}
%>
   </body>
</html>
```


- 5a
  - Web Pages
    - WEB-INF
    - UpdateEmp.jsp
    - index.html
  - Source Packages
    - <default package>
  - Libraries
    - mysql-connector-java-!
    - JDK 1.7 (Default)
    - GlassFish Server 4
  - Configuration Files
    - MANIFEST.MF

localhost   ×

Enter Employee Number 1
Enter Name aaa
Enter age 5555
Enter Salary 22
Reset | Submit Query

Practical 5b :
Create a JSP page to demonstrate the use of Expression language

index.html
<html>

```html
<head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
    <form action="show.jsp"  >

    enter uname:<input type="text" name="uname" ><br>
    <h4> to view jsp <a href ="show.jsp" >click here </a></h4>
    </form>
</body>
</html>
```
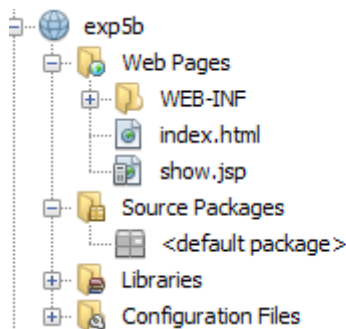
show.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <b> welcome ${param.uname} <b/><br>
    <h1>simple mathematics</h1>
     <br> A=6 B=7 than
     <p> Addition is ${6+7}<br>

    Subtraction of A and B is ${6-7}<br>

    Multiplication of A and B is ${6*7}<br>

    Division of A and B is ${6/7}<br>
     </p>
  </body>
```
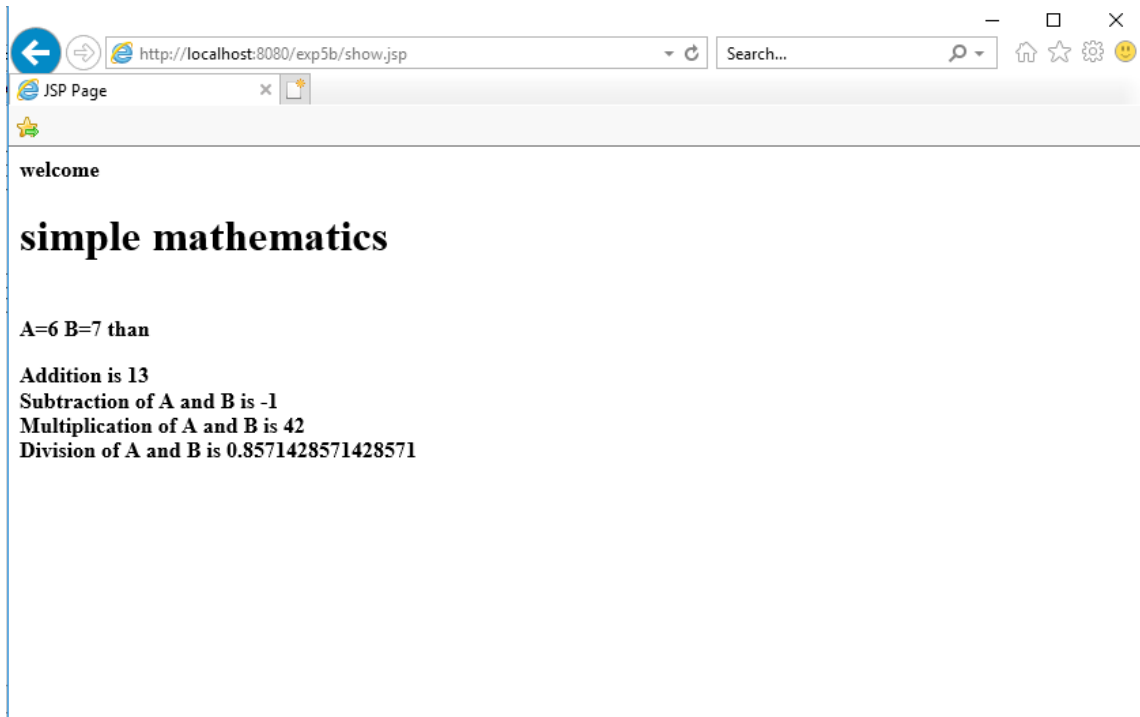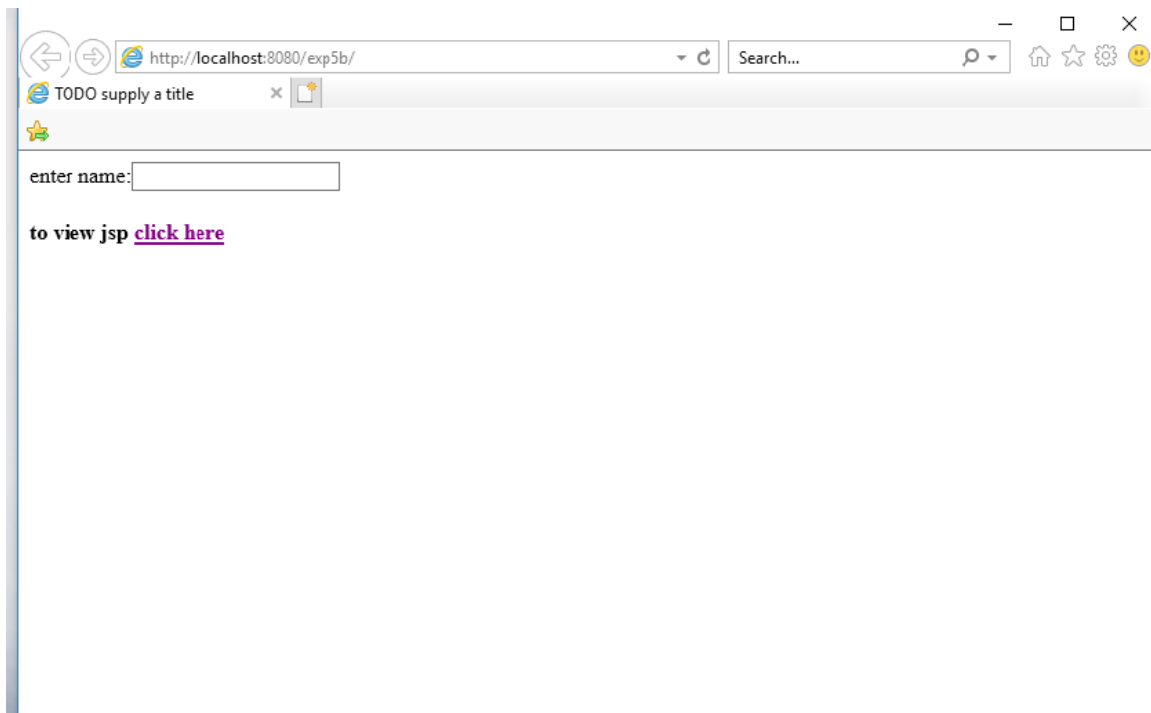
</html>

OUTPUT:

Practical 6a:

Create a Currency Converter application using EJB.

_index.html

```html
<html>
    <head>
        <title>Currency Converter</title>
    </head>
    <body>
        <form action="CCServlet" >
            Enter Amount <input type="text" name="amt"><br>
            Select Conversion Type
            <input type="radio" name="type" value="r2d" checked>
            Rupees to Dollar
            <input type="radio" name="type" value="d2r" >
            Dollar to Rupees<br>
            <input type="reset" >
            <input type="submit" value="CONVERT" >
        </form>
    </body>
</html>
```
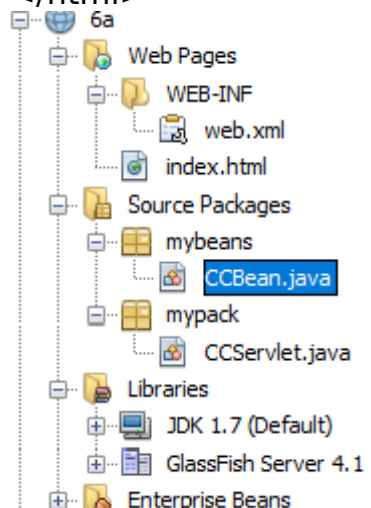

CCServlet.java

```java
package mypack;
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import javax.ejb.EJB;
import mybeans.CCBean;
public class CCServlet extends HttpServlet
```

```
{    @EJB CCBean obj;
public void doGet(HttpServletRequest request, HttpServletResponse
response)
        throws ServletException, IOException
{        response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
double amt = Double.parseDouble(request.getParameter("amt"));
if(request.getParameter("type").equals("r2d"))
{ out.println("<h1>"+amt+ " Rupees = "+obj.r2Dollor(amt)+"
Dollors</h1>");
} if(request.getParameter("type").equals("d2r"))
{ out.println("<h1>"+amt+ " Dollors = "+obj.d2Rupees(amt)+"
Rupees</h1>"); }

}}
```
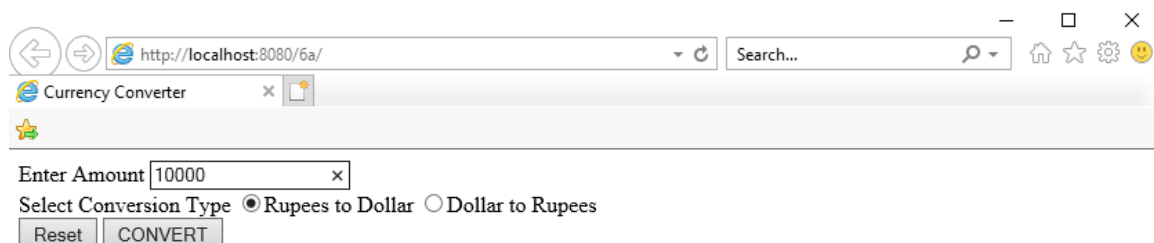
CCBean

```
package mybeans;
 import javax.ejb.Stateless;
 @Stateless
 public class CCBean
{ public CCBean(){} public double r2Dollor(double r)
{   return r/65.65;  } public double d2Rupees(double d)
{   return d*65.65;  } }
```

output:

10000.0 Rupees = 152.3229246001523 Dollors

practical 6b.
Develop a Simple Room Reservation System Application Using EJB.

index.html
```
<form action="RBServlet" >
 Select a room Type
<input type="radio" name="txtType" value="Delux">Delux
<input type="radio" name="txtType" value="Super Delux">Super
Delux
<input type="radio" name="txtType" value="Suit">Suit<br>
 Enter Your Name<input type="text" name="txtCust" ><br>
 Enter Mobile No.<input type="text" name="txtMob" ><br>
<input type="reset" ><input type="submit" value="Book Room">
</form>
```

RBServlet
```
package mybeans;
import javax.ejb.Stateless;
import java.sql.*;
@Stateless
public class RRBean {
public RRBean(){}
public String roomBook(String rt, String cn, String cm){
String msg="";
try{
Class.forName("com.mysql.jdbc.Driver");
Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/logindb","ro
ot","hr");
String query="select * from roombook where RoomType=? and
```

```java
status='Not Booked'";
PreparedStatement pst = con.prepareStatement(query);
pst.setString(1,rt);
ResultSet rs= pst.executeQuery();
if(rs.next()){
String rno=rs.getString(1);
PreparedStatement stm1 = con.prepareStatement("update roombook
set cust=? where RoomId=? ");
PreparedStatement stm2 = con.prepareStatement("update roombook
set mobile=? where RoomId=? ");
PreparedStatement stm3 = con.prepareStatement("update roombook
set status=? where RoomId=? ");
stm1.setString(1,cn); stm1.setString(2,rno);
stm2.setString(1,cm); stm2.setString(2,rno);
stm3.setString(1, "Booked"); stm3.setString(2,rno);
stm1.executeUpdate();
stm2.executeUpdate();
stm3.executeUpdate();
msg = "Room "+rno+ " Booked <br> Charges = "+rs.getString(3);
}
else
{
msg = "Room "+rt+ " currently Not available";
}
}catch(Exception e){msg=""+e;}
return msg;}}
```
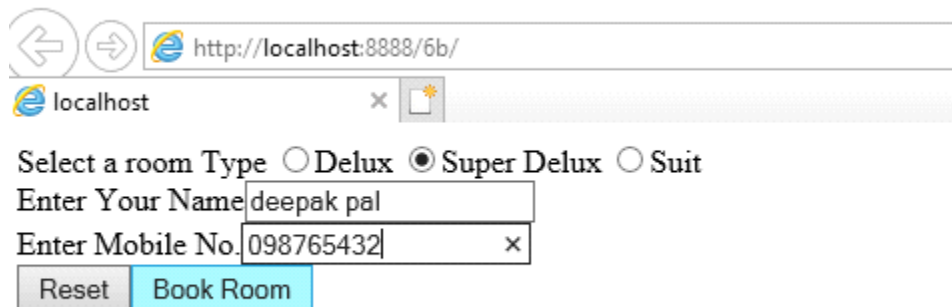
-----RRBean.java

```java
package mypack;
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import javax.ejb.EJB;
import mybeans.RRBean;
public class RBServlet extends HttpServlet {
@EJB RRBean obj;
public void doGet(HttpServletRequest request, HttpServletResponse
response)
throws ServletException, IOException{
PrintWriter out=response.getWriter();
String rt=request.getParameter("txtType");
String cn=request.getParameter("txtCust");
String cm=request.getParameter("txtMob");
String msg = obj.roomBook(rt, cn, cm);
out.println(msg);
}}
```

output:

Select a room Type ○ Delux ● Super Delux ○ Suit
Enter Your Name deepak pal
Enter Mobile No. 098765432 ×
Reset | Book Room

practical 8b.

Develop a Guestbook Application Using JPA.
JPA Practical using GuestBook

Steps:
1. Create Web Application with dedicated folder for Library

2. Add Simple java class or Persitent Entity class from Database (code below GuestBook.java)
3. Add SQL Connector Jar file to Library
4. Create Persistence Unit using jdbc connection to MySQL database
5. Create the JSP files (codes given below)
6. Run the Application.

GuestBook.java

```java
package asif;
import javax.persistence.*;
@Entity
@Table(name="GuestBook")
public class GuestBook {
@Id
@GeneratedValue(strategy = GenerationType.IDENTITY)
@Column(name="VisitorNo", unique=true, updatable=false)
private Integer visitorNo;
@Column(name="VisitorName")
private String visitorName;
@Column(name="Message")
private String message;
@Column(name="MessageDate")
private String messageDate;
public GuestBook() {
}
public Integer getVisitorNo() {
return visitorNo;
}
public void setVisitorNo(Integer visitorNo) {
this.visitorNo = visitorNo;
}
public String getVisitorName() {
```

```java
return visitorName;
}
public void setVisitorName(String visitorName) {
this.visitorName = visitorName;
}
public String getMessage() {
return message;
}
public void setMessage(String message) {
this.message = message;
}
public String getMessageDate() {
return messageDate;
}
public void setMessageDate(String messageDate) {
this.messageDate = messageDate;
}
}
```

index.jsp

```html
<html>
<body style="background-color: pink;">
Sign the Guest Book
<form action="GuestBookView.jsp" method="post">
Visitor Name: <input name="guest" maxlength="25"
size="50" />
Message: <textarea rows="5" cols="36"
name="message"></textarea>
<input type="submit" name="btnSubmit"
value="Submit" />
</form>
</body>
</html>
```

GuestBookView.jsp

```jsp
<%@page
import="java.util.*,javax.persistence.*,asif.GuestBook" %>
<%@page contentType="text/html" pageEncoding="UTF-
8"%>
<!DOCTYPE html>
<%!
private EntityManagerFactory entityManagerFactory;
private EntityManager entityManager;
private EntityTransaction entityTransaction;
List<GuestBook> guestbook7;
%>
<%entityManagerFactory =
Persistence.createEntityManagerFactory("deepak8bPU");
entityManager =
entityManagerFactory.createEntityManager();
String submit = request.getParameter("btnSubmit");
if(submit != null && ("Submit").equals(submit)) {
try {
String guest = request.getParameter("guest");
String message = request.getParameter("message");
String messageDate = new java.util.Date().toString();
GuestBook gb = new GuestBook();
gb.setVisitorName(guest);
gb.setMessage(message);
gb.setMessageDate(messageDate);
entityTransaction = entityManager.getTransaction();
entityTransaction.begin();
entityManager.persist(gb);
entityTransaction.commit();
} catch (RuntimeException e) {
if(entityTransaction != null) entityTransaction.rollback();
throw e;
}
```

```jsp
response.sendRedirect("GuestBookView.jsp");
}
try {
guestbook7 = entityManager.createQuery("SELECT g from
GuestBook g").getResultList();
} catch (RuntimeException e) { }
entityManager.close();
%>
<html>
<body>
View the Guest Book <b>Click <a href="index.jsp">
here</a> to sign the guestbook.</b>
<hr />
<%
Iterator iterator = guestbook7.iterator();
while (iterator.hasNext()) {
GuestBook obj = (GuestBook) iterator.next();
%>
On <%= obj.getMessageDate() %>,<br />
<b><%= obj.getVisitorName() %>:</b>
<%= obj.getMessage() %>
<br /><br />
<%
}
%>
</body>
</html>
```

Output:

Sign the Guest Book

aao kabhi haweli pe...!!!!!!

Visitor Name: deepak   Message: Submit