1. Create Servlet file which contains following functions:
1. Connect 2. Create Database 3. Create Table 4. Insert Records into respective table 5. Update records of particular table of database 6. Delete Records from table. 7. Delete table and also database.

Program1.java

```
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 java.sql.*;

public class program1 extends HttpServlet
{
	public void doGet(HttpServletRequest req,HttpServletResponse res)throws
	ServletException,IOException
	{
		res.setContentType("text/html");
		PrintWriter out=res.getWriter();
		 try
		{
			 //Step 1 loading drivers
			Class.forName("sun.jdbc.odbc.JdbcOdbcDriver");

			//Step 2 Establishing Connection
			Connection con = DriverManager.getConnection("jdbc:odbc:BX");

			//Create table
			Statement s = con.createStatement();
			out.print("Table Created:\t"+s.executeUpdate("Create table test(ID
			Number, Name Text, Age Number)"));

			//Insert into table
			Statement s1 = con.createStatement();
			out.print("Rows Inserted:\t"+s1.executeUpdate("Insert into test
			values(1,'angel',21)"));

			//Update table
			Statement s2 = con.createStatement();
```

```
                    out.print("Rows Updated:\t"+s2.executeUpdate("Update test set
                    Name='Khushi' where ID=1"));
                    //Delete from table
                     Statement s3 = con.createStatement();
                    int ans=s3.executeUpdate("Delete from test where ID=2");
                    out.print("Rows Deleted:\t"+ans);

                    //Execute statement
                    Statement se = con.createStatement();
                    ResultSet rs = se.executeQuery("Select * from test");

                    //Getting Results
                    out.println("ID\tName\tAge");
                    out.println("<br>==========");
                    while(rs.next())
                    {
                     out.println("<br>"+rs.getInt(1)+"\t"+rs.getString(2)+"\t"+rs.getInt(3));
                    }

                    //Delete Table
                    Statement s4 = con.createStatement();
                    out.print("\nTABLE DELETED\t"+s4.executeUpdate("Drop table
                    test")+"\n\n");

                     // Close the connection
                    rs.close();
                    se.close();
                    con.close();
            }
            catch (Exception ex)
            {
                    out.println("Exception"+ex);
            }
        }
}
```

Output

2. Write a program that demonstrates RequestDispatcher.

Program2.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
     <form action="p2">
        Username <input type="text" name="uname"/><br>
        Password <input type="password" name="pass"/><br>
        <input type="submit" value="login"/>
    </form>
   </body>
</html>
```

web.xml

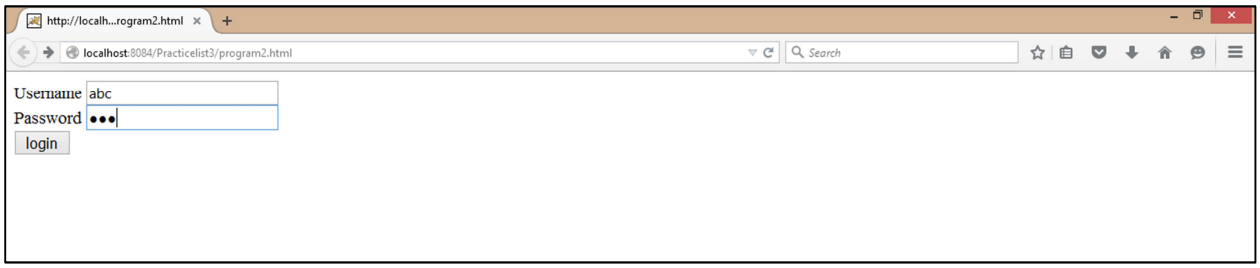
```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>p2</servlet-name>
      <servlet-class>p2</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>p2</servlet-name>
      <url-pattern>/p2</url-pattern>
   </servlet-mapping>
</web-app>
```

p2.java

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class p2 extends HttpServlet
{
```

```
        public void doGet(HttpServletRequest req,HttpServletResponse res) throws
        ServletException,IOException
        {
                res.setContentType("text/html");
                PrintWriter out=res.getWriter();
                String un=req.getParameter("uname");
                String pw=req.getParameter("pass");
                if(un.equals("abc")&& pw.equals("123"))
                {
                        out.println("login success");
                }
                else
                {
                        out.println("login unsuccess");
                        RequestDispatcher rd=req.getRequestDispatcher("program2.html");
                        rd.include(req, res);
                }
        }
}
```

Output



3. Implement dynamic Authentication filter using filters API.

Program3.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <h1>Login Application</h1>
      <form action="servlet">
         <table>
            <tr>
               <td>User name:</td>
               <td><input type="text" name="nm"></td>
            </tr>
            <tr>
               <td>
                  Password:
               </td>
               <td>
                  <input type="password" name="pass">
               </td>
            </tr>
            <tr>
               <td></td>
               <td><input type="submit" value="OK" ></td>
            </tr>
         </table>
      </form>
   </body>
</html>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
  <web-app>
   <filter>
      <filter-name>filter1</filter-name>
      <filter-class>filter1</filter-class>
   </filter>
   <filter-mapping>
      <filter-name>filter1</filter-name>
      <url-pattern>/servlet</url-pattern>
   </filter-mapping>
```

```
   <servlet>
      <servlet-name>servlet1</servlet-name>
      <servlet-class>servlet</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>servlet1</servlet-name>
      <url-pattern>/servlet</url-pattern>
   </servlet-mapping>
</web-app>
```

filter1.java

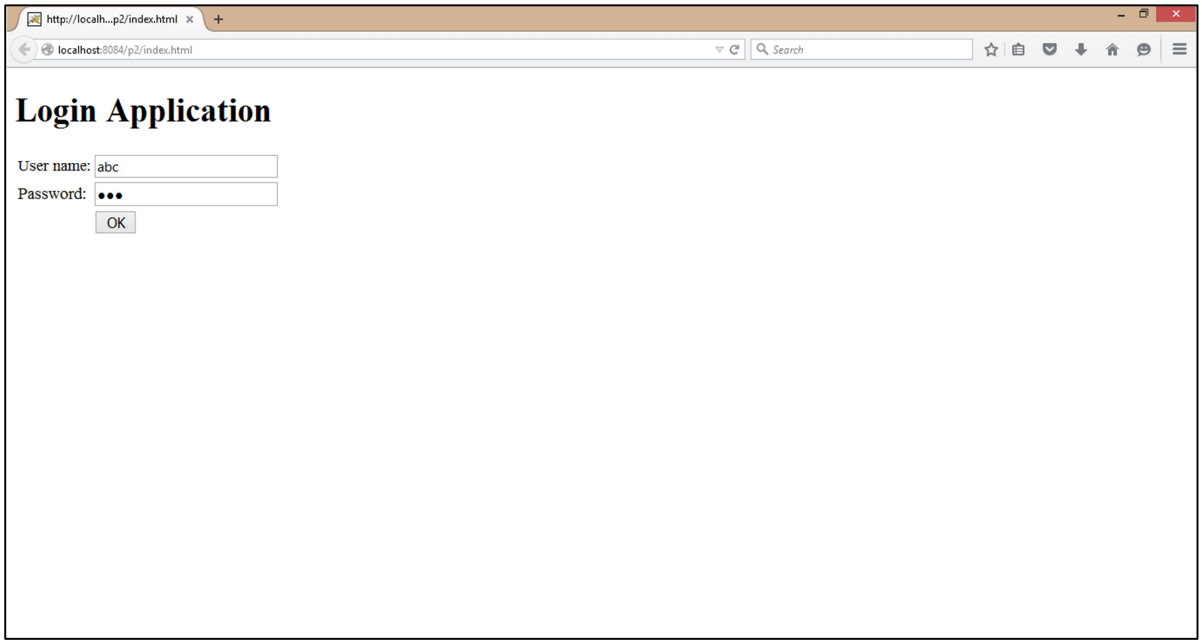
```
import java.io.*;
import java.io.PrintWriter;
import javax.servlet.Filter;
import javax.servlet.FilterChain;
import javax.servlet.FilterConfig;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;
import javax.servlet.*;
import java.sql.*;

public class filter1 implements Filter
{
        public void init(FilterConfig filterConfig) throws ServletException
        {
        }

        public void doFilter(ServletRequest request, ServletResponse response, FilterChain
        chain) throws IOException, ServletException
        {
                response.setContentType("text/html");
                PrintWriter out = response.getWriter();
                String name = request.getParameter("nm");
                String password = request.getParameter("pass");
                boolean flg=false;
                try
                {
                        Class.forName("sun.jdbc.odbc.JdbcOdbcDriver");
                        Connection con = DriverManager.getConnection("jdbc:odbc:BX");
                        Statement s = con.createStatement();
                        ResultSet rs = s.executeQuery("select * from login");
                        while(rs.next())
                        {
                            if(rs.getString(1).equals(name)&&rs.getString(2).equals(password))
                           {
                                flg=true;
                                out.println("User is  valid");
```

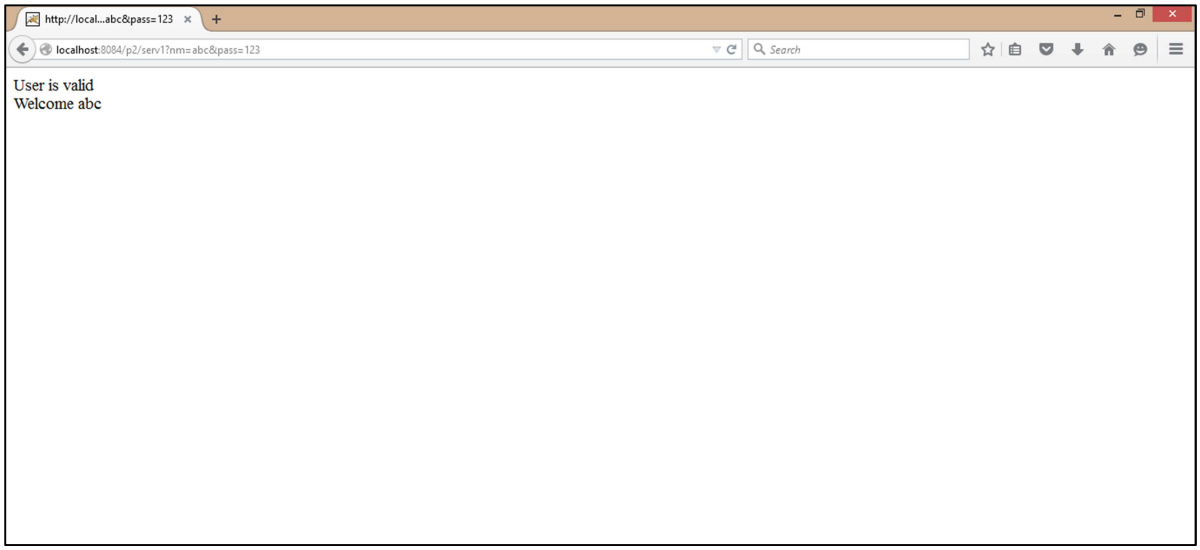
```
                                chain.doFilter(request, response);
                                s.close();
                                con.close();
                            }
                        }
                        if(flg==false)
                        {
                            out.println("User is not valid");
                            RequestDispatcher rd=request.getRequestDispatcher("index.html");
                            rd.include(request, response);
                            s.close();
                            con.close();
                        }

                }
                catch(Exception e)
                {
                        out.println(e);
                }
        }

        public void destroy()
        {

        }
}
```

servlet.java

```
import java.io.*;
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 serv1 extends HttpServlet
{
        public void doGet(HttpServletRequest req,HttpServletResponse res) throws
        IOException,ServletException
        {
                res.setContentType("text/html");
                String name=req.getParameter("nm");
                PrintWriter out = res.getWriter();
                out.println("<br>Welcome "+name);
                out.close();
        }
}
```

Output


http://localh...p2/index.html
localhost:8084/p2/index.html
Search
Login Application
User name: abc
Password: •••
OK


http://local...abc&pass=123
localhost:8084/p2/serv1?nm=abc&pass=123
Search
User is valid
Welcome abc

4. Write a servlet which accept two numbers using POST methods and display the maximum of them.

Program4.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form action="servlet" method="post">
         Enter no1:<input type="text" name="num1"><br>
         Enter no2:<input type="text" name="num2"><br>
         <input type="submit" value="ok">
      </form>
   </body>
</html>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>servlet1</servlet-name>
      <servlet-class>servlet</servlet-class>
   </servlet>>
   <servlet-mapping>
      <servlet-name>servlet1</servlet-name>
      <url-pattern>/servlet</url-pattern>
   </servlet-mapping>
</web-app>
```

servlet.java

```
import java.io.*;
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 servlet1 extends HttpServlet
{
   public void doPost(HttpServletRequest req,HttpServletResponse res) throws
   IOException,ServletException
   {
      res.setContentType("text/html");
      PrintWriter out=res.getWriter();
      String s1=req.getParameter("num1");
      String s2=req.getParameter("num2");
      int n1=Integer.parseInt(s1);
      int n2=Integer.parseInt(s2);
      if(n1>n2)
      {
         out.println("Larger number is:");
         out.println("<b>"+n1+"<br>");
      }
      else if(n2>n1)
      {
         out.println("Larger number is:");
         out.println("<b>"+n2+"<br>");
      }
      else
      {
         out.println("Both number are equal...");
      }
      out.close();
   }
}
```

Output

5. Write a web application using servlet to compute an area of a circle. Get the radius from the client. Write necessary web.xml file.

Program5.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form action="servlet" method="post">
         Enter radius:<input type="text" name="t1"><br>
         <input type="submit" value="ok">
      </form>
   </body>
</html>
```

web.xml

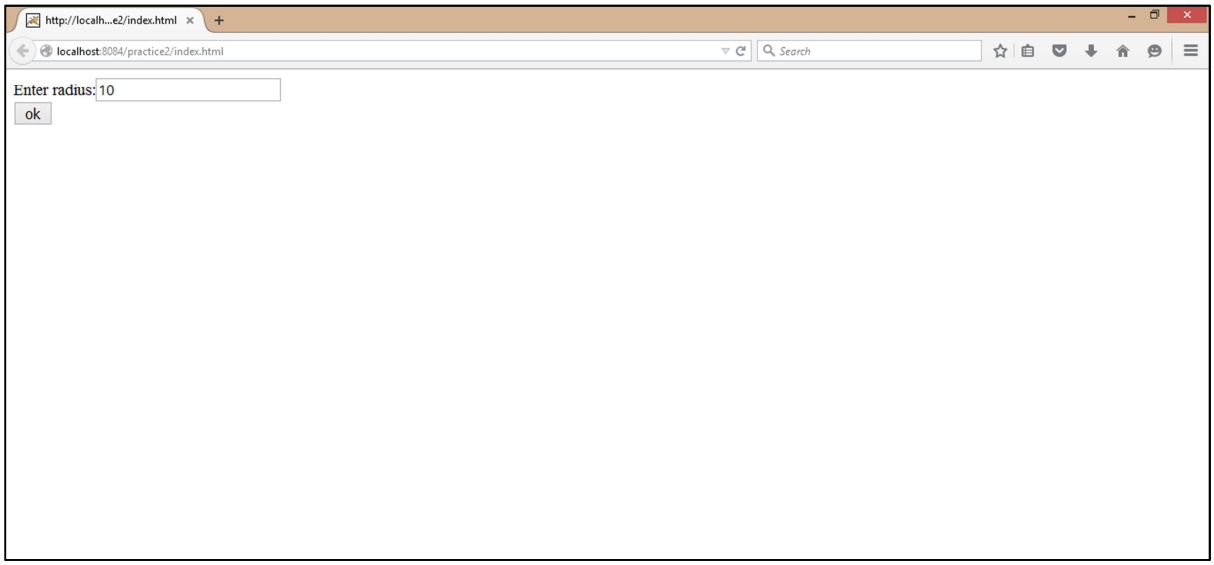
```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>servlet1</servlet-name>
      <servlet-class>servlet</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>servlet1</servlet-name>
      <url-pattern>/servlet</url-pattern>
   </servlet-mapping>
</web-app>
```

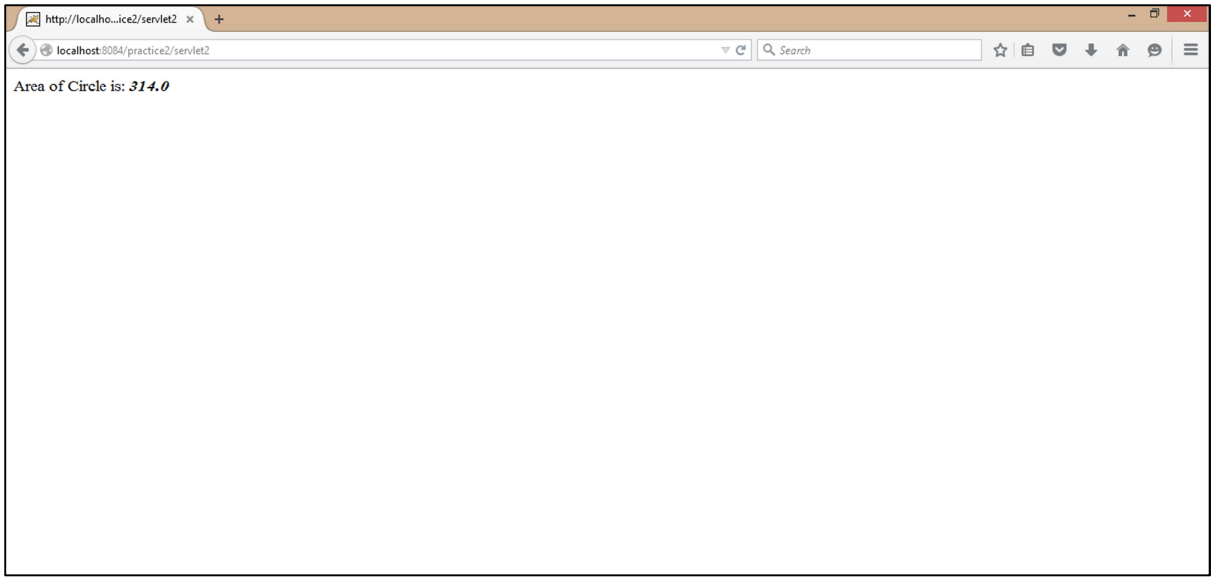
servlet.java

```
import java.io.*;
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 servlet2 extends HttpServlet
{
    public void doPost(HttpServletRequest req,HttpServletResponse res) throws
    IOException,ServletException
    {
       res.setContentType("text/html");
       PrintWriter out=res.getWriter();
       String s1=req.getParameter("t1");
       Double r = Double.parseDouble(s1);
       Double area;
       area=3.14*r*r;
       out.println("Area of Circle is:");
       out.println("<b><i>"+area+"</i></b>");
       out.close();
    }
}
```

Output





6. Write a servlet which counts the number of digits into an integer received as parameter. Give the necessary web.xml file to deploy the servlet

Program6.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form action="servlet" method="post">
         Enter Text with Digit:<input type="text" name="t1"><br>
         <input type="submit" value="OK">
      </form>
   </body>
</html>
```

web.xml

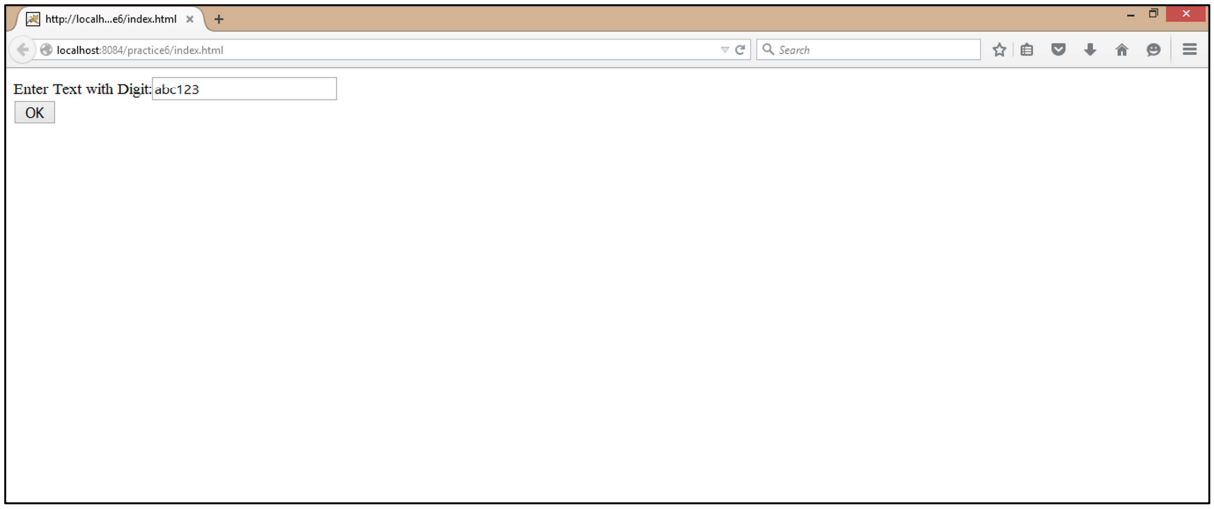
```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>servlet1</servlet-name>
      <servlet-class>servlet</servlet-class>
   </servlet>
```

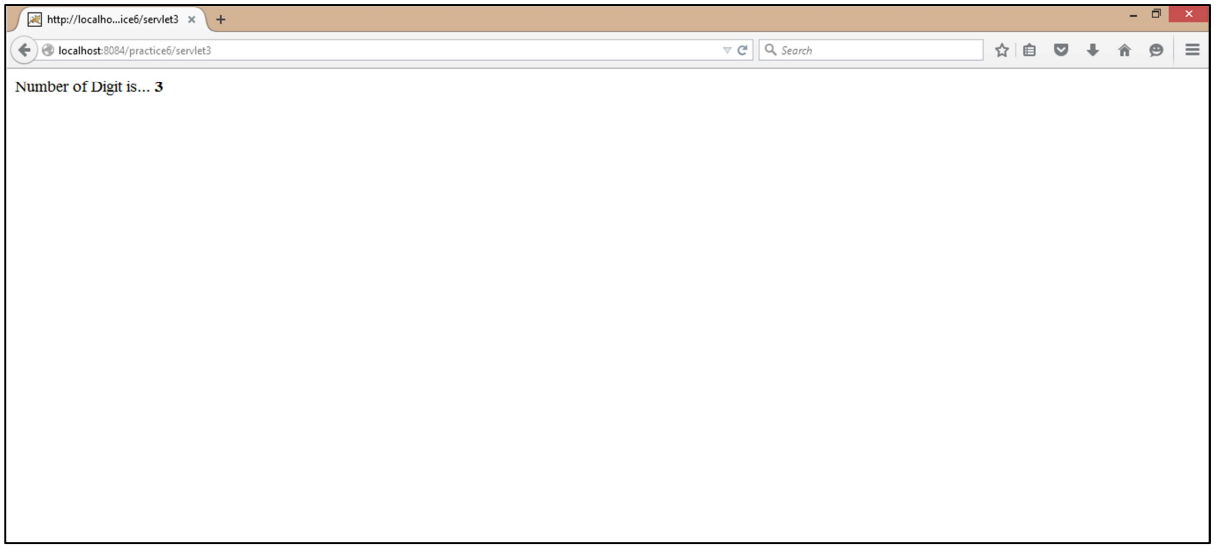
```
   <servlet-mapping>
      <servlet-name>servlet1</servlet-name>
      <url-pattern>/servlet</url-pattern>
   </servlet-mapping>
</web-app>
```

servlet.java

```
import java.io.*;
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 servlet3 extends HttpServlet
{
    public void doPost(HttpServletRequest req,HttpServletResponse res) throws
   IOException,ServletException
   {
      res.setContentType("text/html");
      PrintWriter out=res.getWriter();
      String s1=req.getParameter("t1");
      int digit=0,i;
      for(i=0;i<s1.length();i++)
      {
         char c = s1.charAt(i);
         if(Character.isDigit(c))
         {
                  digit++;
         }
       }
      out.println("Number of Digit is...");
      out.println("<b>"+digit+"</b>");
      out.close();
   }
}
```

Output





7. Write a servlet that reads and prints all the previous cookies and add a cookie with your name.

Program7.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form action="servlet1" method="post">
         Name:<input type="text" name="userName"/><br/>
         <input type="submit" value="go"/>
      </form>
```

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

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
         <servlet-name>Servlet1</servlet-name>
         <servlet-class>FirstServlet</servlet-class>
   </servlet>
   <servlet-mapping>
          <servlet-name>Servlet1</servlet-name>
         <url-pattern>/servlet1</url-pattern>
   </servlet-mapping>
   <servlet>
         <servlet-name>Servlet2</servlet-name>
         <servlet-class>SecondServlet</servlet-class>
   </servlet>
   <servlet-mapping>
         <servlet-name>Servlet2</servlet-name>
         <url-pattern>/servlet2</url-pattern>
   </servlet-mapping>
</web-app>
```

FirstServlet.java

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

public class FirstServlet extends HttpServlet
{
   public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException,IOException
   {
         response.setContentType("text/html");
         PrintWriter out = response.getWriter();
         String n=request.getParameter("userName");
         out.print("Welcome "+n);

         //creating cookie object
         Cookie ck=new Cookie("uname",n);


         //adding cookie in the response
```

```
        response.addCookie(ck);

        //creating submit button
        out.print("<form action='servlet2' method='post'>");
        out.print("<input type='submit' value='go'>");
        out.print("</form>");
        out.close();
    }
}
```

SecondServlet.java

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

public class SecondServlet extends HttpServlet
{
   public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException,IOException
   {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        Cookie ck[]=request.getCookies();
        int i;
        for(i=0;i<ck.length;i++)
        {
            out.print("Hello "+ck[i].getValue());
            out.close();
        }

   }
}
```

Output

8. Create login form and perform state management using Cookies, HttpSession, URL Rewriting and Hidden field

Program-1: Session state management using Cookie:

Program8.1.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form method="post" action="MyServlet">
```

```
        Name:<input type="text" name="user" /><br/>
        Password:<input type="text" name="pass" ><br/>
        <input type="submit" value="submit">
      </form>
   </body>
</html>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
   <web-app>
        <servlet>
                <servlet-name>MyServlet</servlet-name>
                <servlet-class>MyServlet</servlet-class>
        </servlet>
        <servlet-mapping>
                 <servlet-name>MyServlet</servlet-name>
                <url-pattern>/MyServlet</url-pattern>
        </servlet-mapping>
        <servlet>
                <servlet-name>First</servlet-name>
                <servlet-class>First</servlet-class>
         </servlet>
        <servlet-mapping>
                <servlet-name>First</servlet-name>
                <url-pattern>/First</url-pattern>
        </servlet-mapping>
</web-app>
```

MyServlet.java

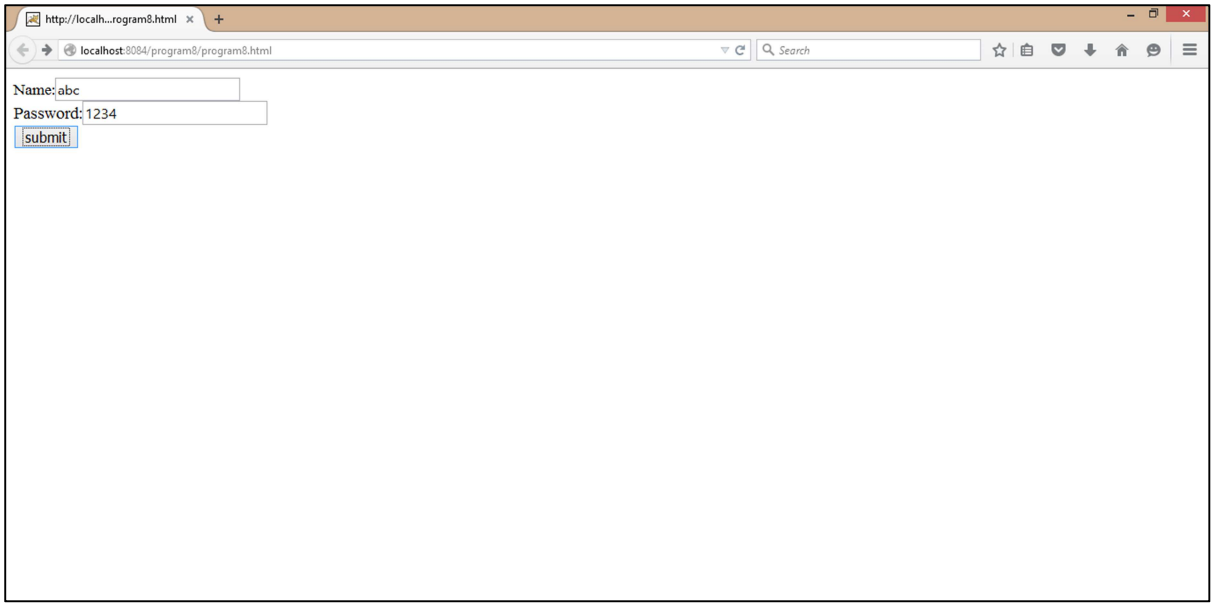
```
import java.io.IOException;
import javax.servlet.ServletException;
import javax.servlet.http.Cookie;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class MyServlet extends HttpServlet
{
   public void doPost(HttpServletRequest request, HttpServletResponse response)
   throws ServletException, IOException
   {
      response.setContentType("text/html");
      String name = request.getParameter("user");
      String pass = request.getParameter("pass");
```

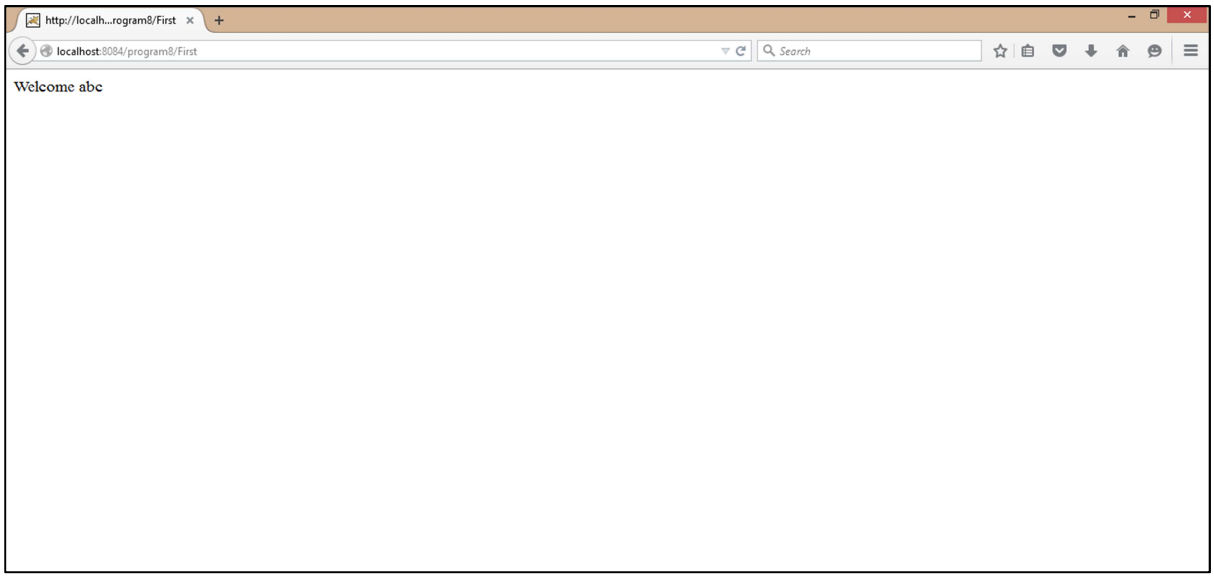
```
        if(name.equals("abc") && pass.equals("1234"))
        {
            Cookie ck = new Cookie("username",name);
            response.addCookie(ck);
            response.sendRedirect("First");
        }
    }
}
```

First.java

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.Cookie;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class First extends HttpServlet
{
    public void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException
    {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        Cookie[] cks = request.getCookies();
        out.println("Welcome "+cks[0].getValue());
    }
}
```

Output





Program-2: Session State management using HttpSession

Program8.2.html

```
<html>
   <head>
      <title></title>
      <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
   </head>
   <body>
      <form method="post" action="validate">
         User: <input type="text" name="user" /><br/>
         Password: <input type="text" name="pass" ><br/>
         <input type="submit" value="submit">
      </form>
   </body>
</html>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>validate</servlet-name>
      <servlet-class>validate</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>validate</servlet-name>
      <url-pattern>/validate</url-pattern>
   </servlet-mapping>
   <servlet>
      <servlet-name>welcome</servlet-name>
      <servlet-class>welcome</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>welcome</servlet-name>
      <url-pattern>/welcome</url-pattern>
   </servlet-mapping>
</web-app>
```

validate.java

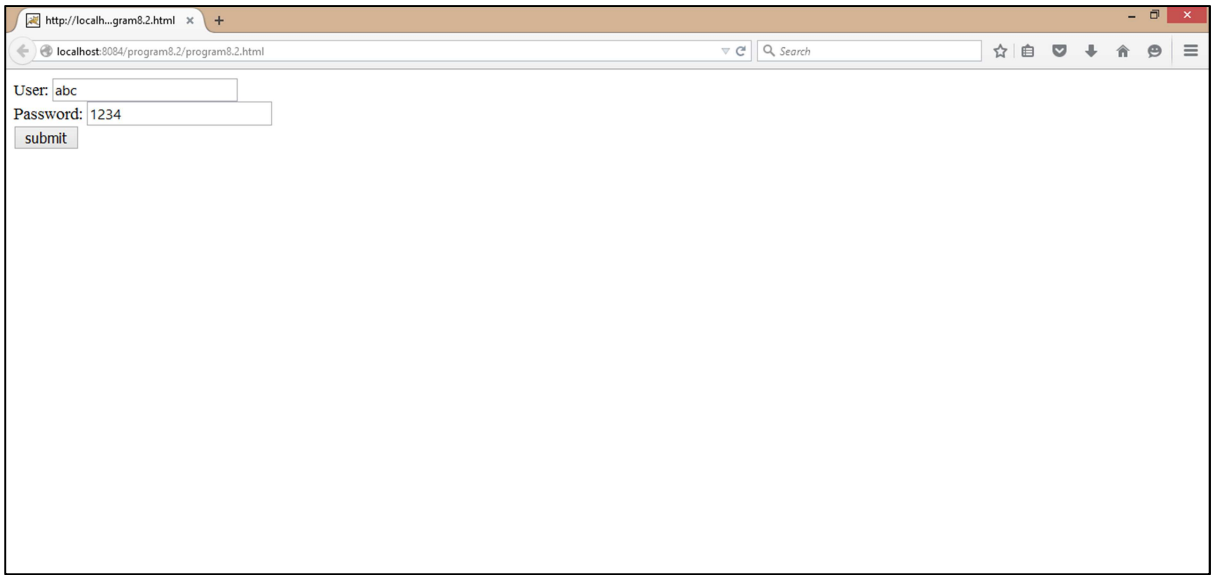
```
import java.io.IOException;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
```

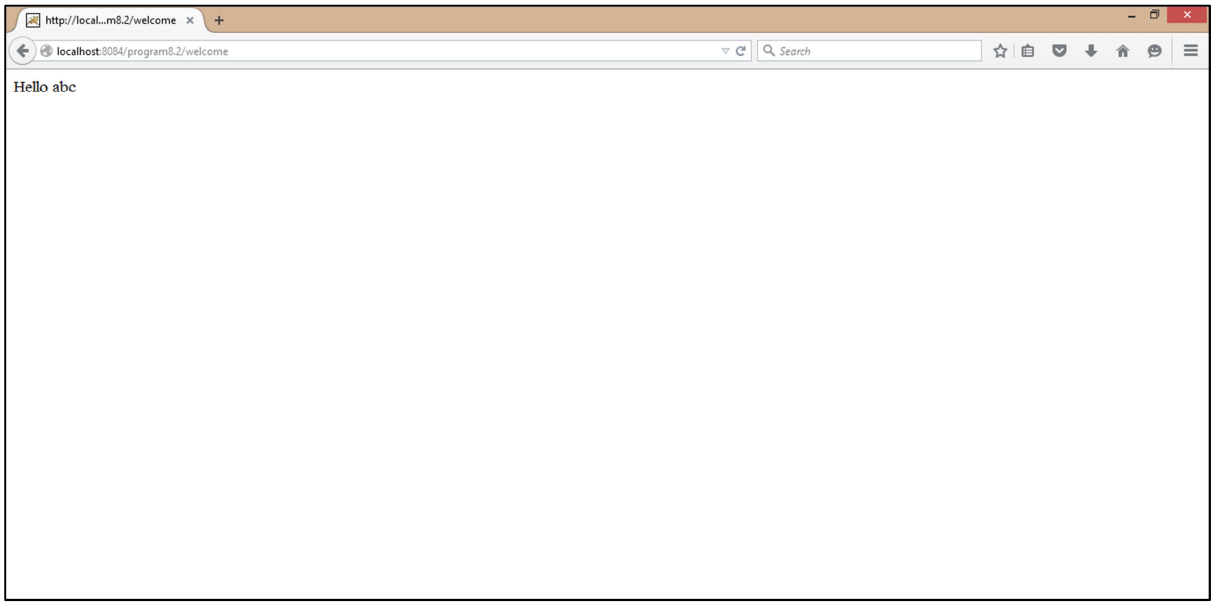
```
import javax.servlet.http.HttpSession;

public class validate extends HttpServlet
{
   protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
    ServletException, IOException
   {
      response.setContentType("text/html;charset=UTF-8");
      String name = request.getParameter("user");
      String pass = request.getParameter("pass");
      if(pass.equals("1234"))
      {
         //creating a session
         HttpSession session = request.getSession();
         session.setAttribute("user", name);
         response.sendRedirect("welcome");
      }
   }
}
```

welcome.java

```
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 welcome extends HttpServlet
{
      protected void doGet(HttpServletRequest request, HttpServletResponse response)
   throws ServletException, IOException
      {
         response.setContentType("text/html;charset=UTF-8");
         PrintWriter out = response.getWriter();
         HttpSession session = request.getSession();
         String user = (String)session.getAttribute("user");
         out.println("Hello "+user);
      }

}
```

Output





Program-3: Session state management using URL Rewriting

Program8.3.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
         <form method="post" action="validate">
                  Name:<input type="text" name="user" /><br/>
                  Password:<input type="text" name="pass" ><br/>
                  <input type="submit" value="submit">
         </form>
   </body>
</html>
```

web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>validate</servlet-name>
      <servlet-class>validate</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>validate</servlet-name>
      <url-pattern>/validate</url-pattern>
   </servlet-mapping>
   <servlet>
      <servlet-name>first</servlet-name>
      <servlet-class>first</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>first</servlet-name>
      <url-pattern>/first</url-pattern>
   </servlet-mapping>
</web-app>
```

validate.java

```
import java.io.IOException;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class validate extends HttpServlet
{
```

```
        protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException
        {
                response.setContentType("text/html");
                String name = request.getParameter("user");
                String pass = request.getParameter("pass");
                if(pass.equals("1234"))
                {
                        response.sendRedirect("first?user_name="+name+"");
                }
        }

}
```

first.java

```
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 first extends HttpServlet
{
        protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException
        {
                response.setContentType("text/html");
                PrintWriter out = response.getWriter();
                String user = request.getParameter("user_name");
                out.println("Welcome "+user);
        }
}
```

Output

Program-4: Session state management using Hidden Form field.

Program8.4.html

```
<html>
   <head>
      <title></title>
   </head>
   <body>
      <form method="post" action="first">
       Name:<input type="text" name="user" /><br/>
       Password:<input type="text" name="pass" ><br/>
       <input type="submit" value="submit">
      </form>
   </body>
</html>
```

Web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
   <servlet>
      <servlet-name>first</servlet-name>
      <servlet-class>first</servlet-class>
   </servlet>
    <servlet-mapping>
      <servlet-name>first</servlet-name>
      <url-pattern>/first</url-pattern>
   </servlet-mapping>
   <servlet>
      <servlet-name>second</servlet-name>
      <servlet-class>second</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>second</servlet-name>
      <url-pattern>/second</url-pattern>
   </servlet-mapping>
</web-app>
```

first.java

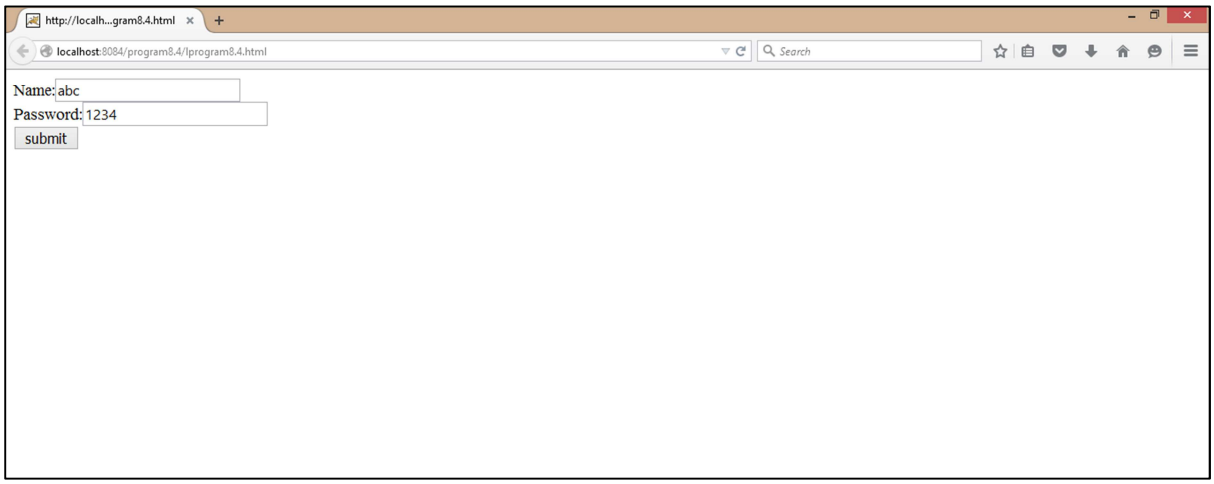
```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
```

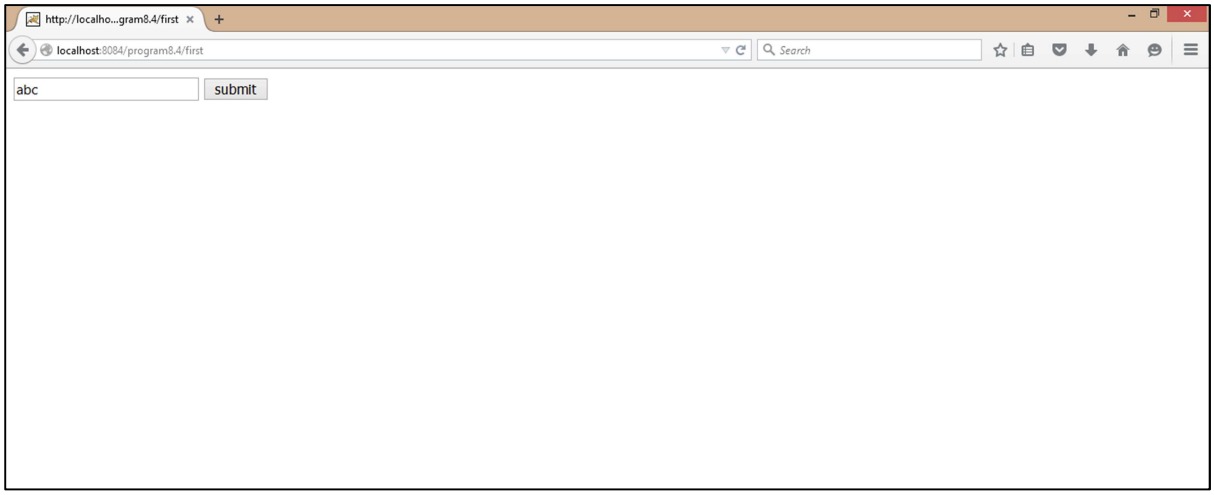
```
import javax.servlet.http.HttpServletResponse;
public class first extends HttpServlet
{
	protected void doPost(HttpServletRequest request, HttpServletResponse response)
	throws ServletException, IOException
	{
		response.setContentType("text/html");
		PrintWriter out = response.getWriter();

		//getting value submitted in form from HTML file
		String user = request.getParameter("user");

		//creating a new hidden form field
		out.println("<form action='second'>");
		out.println("<input type='text' name='user' value='"+user+"'>");
		out.println("<input type='submit' value='submit' >");
		out.println("</form>");
	}
}
```

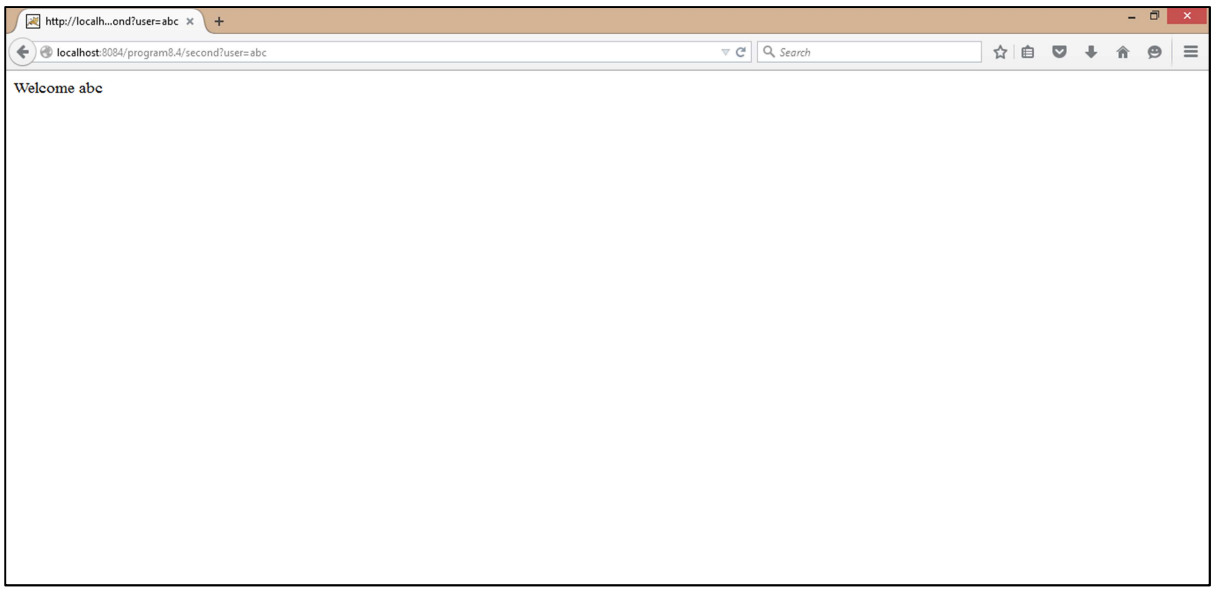
second.java

```
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 second extends HttpServlet
{
	protected void doGet(HttpServletRequest request, HttpServletResponse response)
	throws ServletException, IOException
	{
		response.setContentType("text/html");
		PrintWriter out = response.getWriter();

		//getting parameter from the hidden field
		String user = request.getParameter("user");
		out.println("Welcome "+user);
	}
}
```

Output


http://localh...gram8.4.html
localhost:8084/program8.4/lprogram8.4.html
Search
Name: abc
Password: 1234
submit


http://localho...gram8.4/first
localhost:8084/program8.4/first
Search
abc
submit


http://localh...ond?user=abc
localhost:8084/program8.4/second?user=abc
Search
Welcome abc