**Servlets :**

**Print message (Heading)**

**package** example.servlet;

**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;

/\*\*

\* Servlet implementation class HelloServlet

\*/

**public** **class** HelloServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

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

response.setContentType("text/html"); // server will send HTML content to web browser.

PrintWriter out = response.getWriter(); // how servlet will send the data -using PrintWriter

out.println("<h2>Welcome from servlet...</h2>");

}

}

Init():

**package** example.servlet;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** javax.servlet.ServletConfig;

**import** javax.servlet.ServletException;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

/\*\*

\* Servlet implementation class GreetingServlet

\*/

**public** **class** GreetingServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

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

response.setContentType("text/html"); // server will send HTML content to web browser.

PrintWriter out = response.getWriter();

String user = getInitParameter("UserName");

String msg = getInitParameter("greetingMessage");

out.println("<h1>"+msg+ " " + user+"</h1");

}

**public** **void** init(ServletConfig config)**throws** ServletException{

**super**.init(config);

System.***out***.println("Inside init()");

}

**public** **void** init()**throws** ServletException{

System.***out***.println("Inside init2()");

}

**public** **void** destroy() {

System.***out***.println("Inside destroy");

}

}

ServletContext:

**package** example.servlets;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** java.time.LocalTime;

**import** javax.servlet.ServletContext;

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

**import** example.beans.Timeintervals;

/\*\*

\* Servlet implementation class DataStoreServlet

\*/

@WebServlet(name = "MyDataStore", urlPatterns = { "/store" })

**public** **class** DataStoreServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

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

response.setContentType("text/html");

PrintWriter out = response.getWriter();

ServletContext ctx = getServletContext();

Object obj = ctx.getAttribute("times");

Timeintervals interval = **null**;

**if** (obj == **null**) {

interval = **new** Timeintervals();

}

**else** {

interval = (Timeintervals) obj;

}

interval.addTimeInterval(LocalTime.*now*());

ctx.setAttribute("times", interval);

out.println("<h1>Local Time added...</h1>");

}

}

package example.beans;

import java.time.LocalTime;

import java.util.ArrayList;

import java.util.List;

public class Timeintervals {

private List<LocalTime> timeInervals= new ArrayList<>();

public void addTimeInterval(LocalTime locTime) {

timeInervals.add(locTime);

}

public List<LocalTime> getTimeInterval(){

return timeInervals;

}

}

package example.servlets;

import java.io.IOException;

import java.io.PrintWriter;

import java.time.LocalTime;

import java.util.List;

import javax.servlet.ServletContext;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import example.beans.Timeintervals;

/\*\*

\* Servlet implementation class DataStoreServlet

\*/

@WebServlet(name = "MyDataLoad", urlPatterns = { "/load" })

public class DataLoadServlet extends HttpServlet {

private static final long serialVersionUID = 1L;

/\*\*

\* @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

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

response.setContentType("text/html");

PrintWriter out = response.getWriter();

ServletContext ctx = getServletContext();

Object obj = ctx.getAttribute("times");

Timeintervals interval = null;

if (obj == null) {

out.println("<h1> Data has not been set</h1>");

}

else {

interval = (Timeintervals) obj;

List<LocalTime> times = interval.getTimeInterval();

for(LocalTime lt : times) {

out.println("<h2>" +lt+ "</h2>");

}

}

}

}

Login and validate results :

**package** example.beans;

**import** java.util.HashMap;

**import** java.util.Map;

**public** **class** UserRepository {

**private** **static** Map<String, User> *user* = **new** HashMap();

**static** {

User user1 = **new** User("james", "phoenix123");

User user2 = **new** User("neel", "kingFisher456");

User user3 = **new** User("mac", "jenny3454");

*user*.put("james", user1);

*user*.put("neel", user2);

*user*.put("mac", user3);

}

**public** **static** User getUser(String username) {

User us = *user*.get(username);

**return** us;

}

}

**package** example.beans;

**public** **class** User {

**private** String userName;

**private** String password;

**public** User(String userName, String password) {

**super**();

**this**.userName = userName;

**this**.password = password;

}

**public** String getUserName() {

**return** userName;

}

**public** **void** setUserName(String userName) {

**this**.userName = userName;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

@Override

**public** **int** hashCode() {

**final** **int** prime = 31;

**int** result = 1;

result = prime \* result + ((password == **null**) ? 0 : password.hashCode());

result = prime \* result + ((userName == **null**) ? 0 : userName.hashCode());

**return** result;

}

@Override

**public** **boolean** equals(Object obj) {

**if** (**this** == obj)

**return** **true**;

**if** (obj == **null**)

**return** **false**;

**if** (getClass() != obj.getClass())

**return** **false**;

User other = (User) obj;

**if** (password == **null**) {

**if** (other.password != **null**)

**return** **false**;

} **else** **if** (!password.equals(other.password))

**return** **false**;

**if** (userName == **null**) {

**if** (other.userName != **null**)

**return** **false**;

} **else** **if** (!userName.equals(other.userName))

**return** **false**;

**return** **true**;

}

}

**package** example.beans;

**public** **class** UserValidator {

**public** **static** **boolean** isValid(User currentUser) {

String username = currentUser.getUserName();

User existingUser = UserRepository.*getUser*(username);

**boolean** found = currentUser.equals(existingUser);

**return** found;

}

}

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body bgcolor = *"cyan"*>

<form action=*"Login"* method = *"post"*>

<pre>

First input: <input type=*"text"* name = *'uid'*/>

Second input: <input type=*"password"* name = *'pwd'*/>

<input type=*"submit"* value = *'Sign In'*/>

</pre>

</form>

</body>

</html>

**package** example.servlets;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebInitParam;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

**import** example.beans.User;

**import** example.beans.UserValidator;

/\*\*

\* Servlet implementation class LoginServlet

\*/

@WebServlet(

urlPatterns = { "/Login" },

initParams = {

@WebInitParam(name = "successMessage", value = "Welcome to our website"),

@WebInitParam(name = "failureMessage", value = "Sorry, Access Denied")

})

**public** **class** LoginServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

**protected** **void** doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, IOException {

response.setContentType("text/html");

PrintWriter out = response.getWriter();

String uname = request.getParameter("uid");

String passw = request.getParameter("pwd");

User currUser = **new** User(uname,passw);

**boolean** success = UserValidator.*isValid*(currUser);

String loginStatus = **null**;

**if**(success) {

loginStatus = getInitParameter("successMessage");

}

**else** {

loginStatus = getInitParameter("failureMessage");

}

out.println("<h1>" +loginStatus + "</h1>");

}

}

Response from one servlet to another :

**package** example.beans;

**import** java.util.HashMap;

**import** java.util.Map;

**public** **class** UserRepository {

**private** **static** Map<String, User> *user* = **new** HashMap<>();

**private** **static** Map<User, UserInformation> *userDetails* = **new** HashMap<>();

**static** {

User user1 = **new** User("james", "phoenix123");

User user2 = **new** User("neel", "kingFisher456");

User user3 = **new** User("mac", "jenny3454");

*user*.put("james", user1);

*user*.put("neel", user2);

*user*.put("mac", user3);

UserInformation info1 = **new** UserInformation("James Gosling","james@oracle.com", 75);

UserInformation info2 = **new** UserInformation("neel Gosling","neel@oracle.com", 60);

UserInformation info3 = **new** UserInformation("Mac Gosling","mac@oracle.com", 40);

*userDetails*.put(user1, info1);

*userDetails*.put(user2, info2);

*userDetails*.put(user3, info3);

}

**public** **static** User getUser(String username) {

User us = *user*.get(username);

**return** us;

}

**public** **static** UserInformation getUserInformation(User us) {

UserInformation ui = *userDetails*.get(us);

**return** ui;

}

}

**package** example.beans;

**public** **class** User {

**private** String userName;

**private** String password;

**public** User(String userName, String password) {

**super**();

**this**.userName = userName;

**this**.password = password;

}

**public** String getUserName() {

**return** userName;

}

**public** **void** setUserName(String userName) {

**this**.userName = userName;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

@Override

**public** **int** hashCode() {

**final** **int** prime = 31;

**int** result = 1;

result = prime \* result + ((password == **null**) ? 0 : password.hashCode());

result = prime \* result + ((userName == **null**) ? 0 : userName.hashCode());

**return** result;

}

@Override

**public** **boolean** equals(Object obj) {

**if** (**this** == obj)

**return** **true**;

**if** (obj == **null**)

**return** **false**;

**if** (getClass() != obj.getClass())

**return** **false**;

User other = (User) obj;

**if** (password == **null**) {

**if** (other.password != **null**)

**return** **false**;

} **else** **if** (!password.equals(other.password))

**return** **false**;

**if** (userName == **null**) {

**if** (other.userName != **null**)

**return** **false**;

} **else** **if** (!userName.equals(other.userName))

**return** **false**;

**return** **true**;

}

}

**package** example.beans;

**public** **class** UserValidator {

**public** **static** **boolean** isValid(User currentUser) {

String username = currentUser.getUserName();

User existingUser = UserRepository.*getUser*(username);

**boolean** found = currentUser.equals(existingUser);

**return** found;

}

}

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body bgcolor = *"cyan"*>

<form action=*"Login"* method = *"post"*>

<pre>

First input: <input type=*"text"* name = *'uid'*/>

Second input: <input type=*"password"* name = *'pwd'*/>

<input type=*"submit"* value = *'Sign In'*/>

</pre>

</form>

</body>

</html>

**package** example.servlets;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** javax.servlet.RequestDispatcher;

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebInitParam;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

**import** example.beans.User;

**import** example.beans.UserInformation;

**import** example.beans.UserRepository;

**import** example.beans.UserValidator;

/\*\*

\* Servlet implementation class LoginServlet

\*/

@WebServlet(

urlPatterns = { "/Login" },

initParams = {

@WebInitParam(name = "successMessage", value = "Welcome to our website"),

@WebInitParam(name = "failureMessage", value = "Sorry, Access Denied")

})

**public** **class** LoginServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

**protected** **void** doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, IOException {

response.setContentType("text/html");

PrintWriter out = response.getWriter();

String uname = request.getParameter("uid");

String passw = request.getParameter("pwd");

User currUser = **new** User(uname,passw);

**boolean** success = UserValidator.*isValid*(currUser);

RequestDispatcher rd = **null**;

String loginStatus = **null**;

**if**(success) {

loginStatus = getInitParameter("successMessage");

rd = request.getRequestDispatcher("ShowUser");

UserInformation ui = UserRepository.*getUserInformation*(currUser);

request.setAttribute("userinfo", ui);

request.setAttribute("status", loginStatus);

rd.forward(request, response);

}

**else** {

loginStatus = getInitParameter("failureMessage");

rd = request.getRequestDispatcher("Login.html");

out.println("<h2>" +loginStatus+ "Please try again!! + </h2>");

rd.include(request, response);

}

out.println("<h1>" +loginStatus + "</h1>");

}

}

**package** example.beans;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

/\*\*

\* Servlet implementation class ShowUserServlet

\*/

@WebServlet("/ShowUser")

**public** **class** ShowUserServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)

\*/

**protected** **void** doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, IOException {

response.setContentType("text/html");

PrintWriter out = response.getWriter();

String uname = request.getParameter("uid"); // orginal request are obtaining through get parameter

Object userInfo = request.getAttribute("userinfo");// request transfer from another using getAttreibute

Object status = request.getAttribute("status");

out.println("<h1>Hello" +uname + "</h1>");

out.println("<h1>" +status + "</h1>");

out.println("<h1>your details are: </h1>");

out.println("<h1>" +userInfo + "</h1>");

}

}

Session Management :

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body bgcolor = *"cyan"*>

<form action=*"Login"* method = *"post"*>

<pre>

First input: <input type=*"text"* name = *'uid'*/>

Second input: <input type=*"password"* name = *'pwd'*/>

<input type=*"submit"* value = *'Sign In'*/>

</pre>

</form>

</body>

</html>

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body bgcolor = *"cyan"*>

<form action=*"sessionExample"* method = *"post"*>

<pre>

First input: <input type=*"text"* name = *'uid'*/>

Second input: <input type=*"password"* name = *'pwd'*/>

<input type=*"submit"* name = *"sub"* value = *'User Entry'*/>

</pre>

</form>

</body>

</html>

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body bgcolor = *"cyan"*>

<form action=*"sessionExample"* method = *"post"*>

<pre>

First input: <input type=*"text"* name = *'fname'*/>

Second input: <input type=*"text"* name = *'email'*/>

third input: <input type=*"text"* name = *'age'*/>

<input type=*"submit"* name = *"sub"* value = *'UserInfo Entry'*/>

</pre>

</form>

</body>

</html>

<!DOCTYPE html>

<html>

<head>

<meta charset=*"ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

To view all information, please <a href = *"sessionExample"*>Click Here</a>

</body>

</html>

**package** example.servlets;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** javax.servlet.RequestDispatcher;

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

**import** javax.servlet.http.HttpSession;

**import** example.beans.User;

**import** example.beans.UserInformation;

/\*\*

\* Servlet implementation class SessionExampleServlet

\*/

@WebServlet("/sessionExample")

**public** **class** SessionExampleServlet **extends** HttpServlet {

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

/\*\*

\* **@see** HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)

\*/

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

response.setContentType("text/html");

PrintWriter out = response.getWriter();

HttpSession session = request.getSession();

Object obj1 = session.getAttribute("user");

Object obj2 = session.getAttribute("userInfo");

out.println(obj1);

out.println(obj2);

}

**protected** **void** doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, IOException {

response.setContentType("text/html");

PrintWriter out = response.getWriter();

String button = request.getParameter("sub");

HttpSession session = request.getSession();

RequestDispatcher rd = **null**;

**if**(button.equals("User Entry"))

{

String uname = request.getParameter("uid");

String passw = request.getParameter("pwd");

User user = **new** User(uname, passw);

session.setAttribute("user", user);

rd = request.getRequestDispatcher("userInfoEntry.html");

out.println("<h1>User Credential accepted.</h1>");

rd.include(request, response);

}

**else** {

String fname1 = request.getParameter("fname");

String email1 = request.getParameter("email");

String sAge = request.getParameter("age");

**int** age1 = Integer.*parseInt*(sAge);

UserInformation ui = **new** UserInformation(fname1, email1, age1);

session.setAttribute("userInfo", ui);

rd = request.getRequestDispatcher("userShow.html");

out.println("<h1>User Information Accepted</h1>");

rd.include(request, response);

}

}

}