ADVANCED JAVA PROGRAMMING

TUTORIAL – 4

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1) Write a server side program in JSP/SERVLET for calculating the simple interest accept the necessary parameters from client side by using HTML form.

HTML CODE

```
<!DOCTYPE html>

<html>

<head>

    <title>Simple Interest Calculator</title>

</head>

<body>

    <h2>Simple Interest Calculator</h2>

    <form action="calculateInterest" method="post">

        <label for="principal">Principal Amount:</label>

        <input type="number" id="principal" name="principal"

        required><br><br> <label for="rate">Interest Rate:</label>

        <input type="number" id="rate" name="rate" required><br><br>

        <label for="time">Time Period (in years):</label>

        <input type="number" id="time" name="time" required><br><br>

        <input type="submit" value="Calculate">

    </form>

</body>

</html>
```

JAVA CODE

```
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;

public class CalculateInterestServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request,
HttpServletResponse response)

        throws ServletException, IOException {

    int principal =

    Integer.parseInt(request.getParameter("principal")); float rate =

    Float.parseFloat(request.getParameter("rate")); int time =

    Integer.parseInt(request.getParameter("time")); float interest =

    (principal * rate * time) / 100;

    response.setContentType("text/html");

    PrintWriter out = response.getWriter()

    out.println("<html>");

    out.println("<head>");

    out.println("<title>Simple Interest Result</title>");

    out.println("</head>");

    out.println("<body>");

    out.println("<h2>Simple Interest Result</h2>");

    out.println("<p>Principal Amount: " + principal +

    "</p>"); out.println("<p>Interest Rate: " + rate +

    "%</p>");

    out.println("<p>Time Period: " + time + " years</p>");

    out.println("<p>Simple Interest: " + interest + "</p>");

    out.println("</body>");

    out.println("</html>");

    }}
```

XML CODE

```xml
<servlet>
```

```
    <servlet-name>CalculateInterestServlet</servlet-name>

    <servlet-class>CalculateInterestServlet</servlet-class>

</servlet>

<servlet-mapping>

    <servlet-name>CalculateInterestServlet</servlet-name>

    <url-pattern>/calculateInterest</url-pattern>

</servlet-mapping>
```

2) Write a server side JSP/SERVLET program for checking prime number, accept number from html file

HTML CODE

```
<!DOCTYPE html>

<html>

<head>

    <title>Prime Number Checker</title>

</head>

<body>

    <h2>Prime Number Checker</h2>

    <form action="checkPrime" method="post">

        <label for="number">Enter a number:</label>

        <input type="number" id="number" name="number"

        required><br><br> <input type="submit" value="Check">

    </form>

</body>

</html>
```

JAVA CODE

```
import java.io.IOException;

import java.io.PrintWriter;
```

```java
import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

public class CheckPrimeServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response)

            throws ServletException, IOException {

        int number = Integer.parseInt(request.getParameter("number"));

        boolean isPrime = checkPrime(number);

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        out.println("<html>");

        out.println("<head>");

        out.println("<title>Prime Number Result</title>");

        out.println("</head>");

        out.println("<body>");

        out.println("<h2>Prime Number Result</h2>");

        out.println("<p>Number: " + number + "</p>");

        out.println("<p>Is Prime: " + isPrime + "</p>");

        out.println("</body>");

        out.println("</html>");

    }

    private boolean checkPrime(int number) {

        if (number <= 1) {

            return false;

        }
        for (int i = 2; i <= Math.sqrt(number); i++) {

            if (number % i == 0) {

                return false;

            }

        }

        return true;
```

```
    }
 }
```

XML CODE

```xml
<servlet>
   <servlet-name>CheckPrimeServlet</servlet-name>
   <servlet-class>CheckPrimeServlet</servlet-class>
</servlet>
<servlet-mapping>
   <servlet-name>CheckPrimeServlet</servlet-name>
   <url-pattern>/checkPrime</url-pattern>
</servlet-mapping>
```

3) Write a Java JSP Program to Implement Verification of a Particular User Login And display A Welcome Page. Use Jsp:Include & Jsp:Forward Action To display A Web Page.

HTML (login.jsp)

```html
<!DOCTYPE html>
<html>
<head>
   <title>Login</title>
</head>
<body>
   <h2>Login</h2>
   <form action="verifyLogin.jsp" method="post">
      <label for="username">Username:</label>
      <input type="text" id="username" name="username"
      required><br><br> <label for="password">Password:</label>
      <input type="password" id="password" name="password"
      required><br><br> <input type="submit" value="Login">
   </form>
```

</body>

</html>

JSP

```jsp
<%@ page import="java.util.HashMap" %>

<%@ page import="java.util.Map" %>

<%@ page import="java.io.*" %>

<%

   Map<String, String> users = new HashMap<>();

   users.put("john", "password123");

   users.put("jane", "qwerty");

   String username = request.getParameter("username");

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

   if (users.containsKey(username) && users.get(username).equals(password)) {

      request.setAttribute("username", username);

      request.getRequestDispatcher("welcome.jsp").forward(request,

   response); } else {

      request.setAttribute("errorMessage", "Invalid username or password.");

   request.getRequestDispatcher("login.jsp").include(request, response); }

%>
```

HTML (welcome.jsp)

```html
<!DOCTYPE html>

<html>

<head>

   <title>Welcome</title>

</head>

<body>

   <h2>Welcome, <%= request.getAttribute("username") %>!</h2>

   <p>This is the welcome page</p>

</body>

</html>
```