ADVANCED JAVA PROGRAMMING

TUTORIAL – 5

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22MCR037

1) Create a registration page using Servlet/JSP/Java Application and JDBC. Accept the details such as rollnumber, name, 5 subjects marks from the user using HTML Form and calculate total, average, result and grade of a student and store all these details in the database once after clicking the GETRESULT button.

Conditions to be applied while calculating the result and grade:

Percentage	Grade
95-100	O
90-94	A
80-89	B
70-79	C
60-69	D
50-59	E
<50	F

HTML CODE

```
<!DOCTYPE html>
<html>
<head>
  <title>Student Registration</title>
</head>
<body>
  <h2>Student Registration</h2>
  <form action="RegisterServlet" method="post">
    <label for="rollnumber">Roll Number:</label>
    <input type="text" id="rollnumber" name="rollnumber" required><br><br>
    <label for="name">Name:</label>
    <input type="text" id="name" name="name" required><br><br>
```

```html
<label for="subject1">Subject 1:</label>
<input type="number" id="subject1" name="subject1" required><br><br>
<label for="subject2">Subject 2:</label>
<input type="number" id="subject2" name="subject2" required><br><br>
<label for="subject3">Subject 3:</label>
<input type="number" id="subject3" name="subject3" required><br><br>
<label for="subject4">Subject 4:</label>
<input type="number" id="subject4" name="subject4" required><br><br>
<label for="subject5">Subject 5:</label>
<input type="number" id="subject5" name="subject5" required><br><br>
<input type="submit" value="Get Result">
    </form>
</body>
</html>
```

JAVA CODE

```java
import java.io.IOException;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class RegisterServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        String rollNumber = request.getParameter("rollnumber");
        String name = request.getParameter("name");
```

```
int subject1 = Integer.parseInt(request.getParameter("subject1"));

int subject2 = Integer.parseInt(request.getParameter("subject2"));

int subject3 = Integer.parseInt(request.getParameter("subject3"));

int subject4 = Integer.parseInt(request.getParameter("subject4"));

int subject5 = Integer.parseInt(request.getParameter("subject5"));

int totalMarks = subject1 + subject2 + subject3 + subject4 + subject5;

float averageMarks = totalMarks / 5.0f;

String result;

String grade;

if (averageMarks >= 95)

    {result = "Pass";

    grade = "O";

} else if (averageMarks >= 90)

    {result = "Pass";

    grade = "A";

} else if (averageMarks >= 80)

    {result = "Pass
```

2) Calculate body mass index and display the grade from the following grades:

Grades	Condition
Underweight	BMI<18.5
Normal weight	18.5 <= BMI<25.0
Overweight	25.0 <= BMI < 30.0
Obesity	30.0 <= BMI

Where weight is taken in kilograms and height in meters.

Body Mass Index (or BMI) is calculated as your weight (in kilograms) divided by the square of your height (in metres) or BMI = Kg/M 2 .

Design a HTML page to get the values of name of the person, age, Kilograms and height. Calculate the body mass index using Servlet/JSP and store all the details in database

HTML CODE

```html
<!DOCTYPE html>
<html>
<head>
    <title>Calculate BMI</title>
</head>
<body>
    <h2>Calculate BMI</h2>
    <form action="CalculateBMIServlet" method="post">
        <label for="name">Name:</label>
        <input type="text" id="name" name="name" required><br><br>
        <label for="age">Age:</label>
        <input type="number" id="age" name="age" required><br><br>
        <label for="weight">Weight (in kilograms):</label>
        <input type="number" id="weight" name="weight" step="0.01" required><br><br>
        <label for="height">Height (in meters):</label>
        <input type="number" id="height" name="height" step="0.01" required><br><br>
        <input type="submit" value="Calculate BMI">
    </form>
</body>
</html>
```

JAVA CODE

```java
import java.io.IOException;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
```

```java
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
public class CalculateBMIServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        String name = request.getParameter("name");
        int age = Integer.parseInt(request.getParameter("age"));
        float weight = Float.parseFloat(request.getParameter("weight"));
        float height = Float.parseFloat(request.getParameter("height"));
        float bmi = weight / (height * height);
        String grade;
        if (bmi < 18.5) {
            grade = "Underweight";
        } else if (bmi < 25.0)
            { grade = "Normal
            weight";
        } else if (bmi < 30.0)
            { grade = "Overweight";
        } else {
            grade = "Obesity";
        }
        try {
            Connection connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/database_name", "username",
"password");

            String query = "INSERT INTO user_details (name, age, weight, height, bmi, grade)
VALUES (name, age, weight, height, bmi, grade)";
            PreparedStatement statement = connection.prepareStatement(query);
            statement.setString(1, name);
            statement.setInt(2, age);
            statement.setFloat(3, weight);
```

```java
        statement.setFloat(4, height);

        statement.setFloat(5, bmi);

        statement.setString(6, grade);

        statement.executeUpdate();

        statement.close();

        connection.close();
    } catch (SQLException e)

        {e.printStackTrace();

    }
```