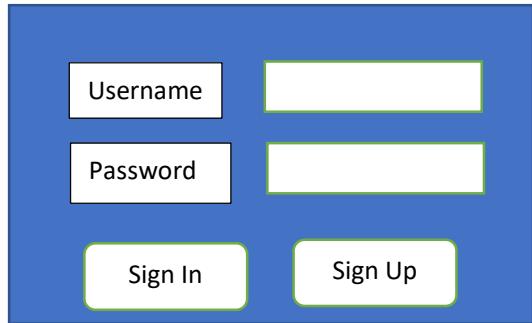


Problem statement:

Create a Course Registration app with the following features

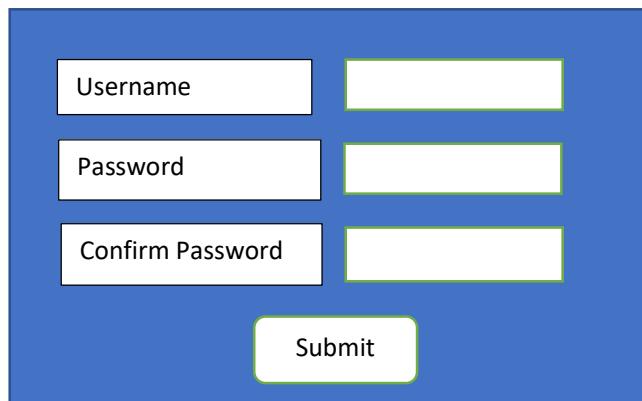
1. Create a Login HTML file as given below



A blue rectangular form interface. It contains two input fields: 'Username' and 'Password', each with a label above it. Below these are two buttons: 'Sign In' on the left and 'Sign Up' on the right, both enclosed in rounded rectangles.

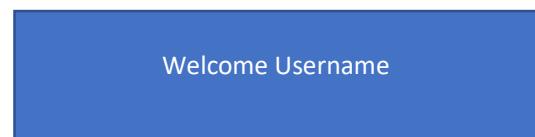
- i. Sign Up Procedure

- a. Write a java program to invoke servlets from the Sign Up HTML file as below



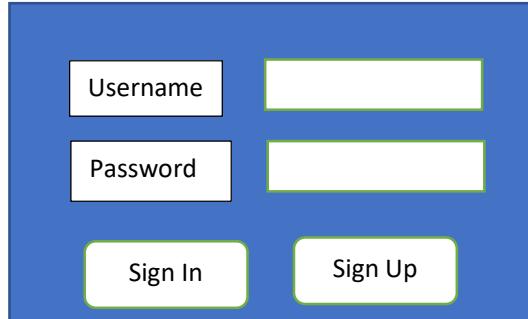
A blue rectangular form interface. It contains three input fields: 'Username', 'Password', and 'Confirm Password', each with a label above it. Below these is a single 'Submit' button, all enclosed in rounded rectangles.

- b. At the click of Submit button, the below dialog box should be displayed and data should be stored in the database.



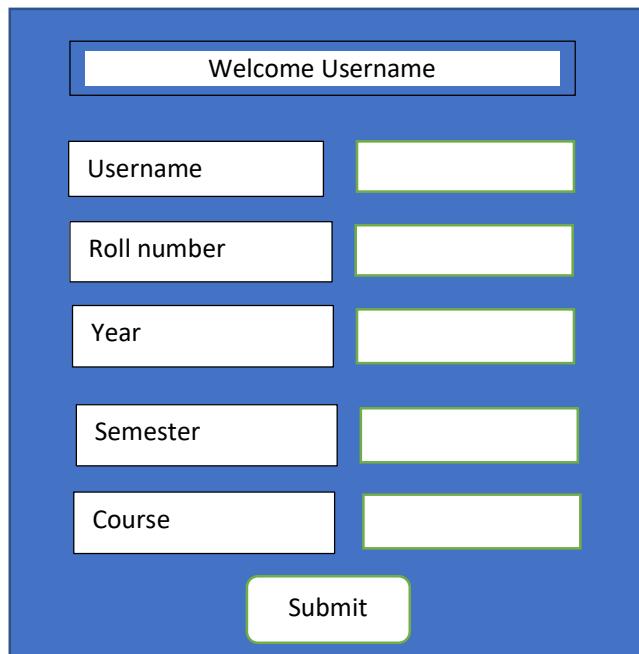
ii. Sign In Procedure

- a. Login through the Sign In HTML form and write a java program for session tracking using Hidden field form. When you hit the “Sign In” button control should go to “Course registration” form and your session should start.



A blue rectangular form with two input fields: "Username" and "Password", each with a green border. Below them are two buttons: "Sign In" and "Sign Up", also with green borders.

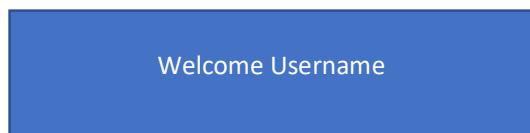
- b. Create a Course registration HTML file as below. Create a Hidden form field which should take the username from the Sign In HTML file and display it in the dialog box.



A blue rectangular form with five input fields: "Welcome Username" (a header), "Username", "Roll number", "Year", and "Semester", followed by a "Course" field. Each input field has a green border. At the bottom is a "Submit" button with a green border.

Course Registration Form

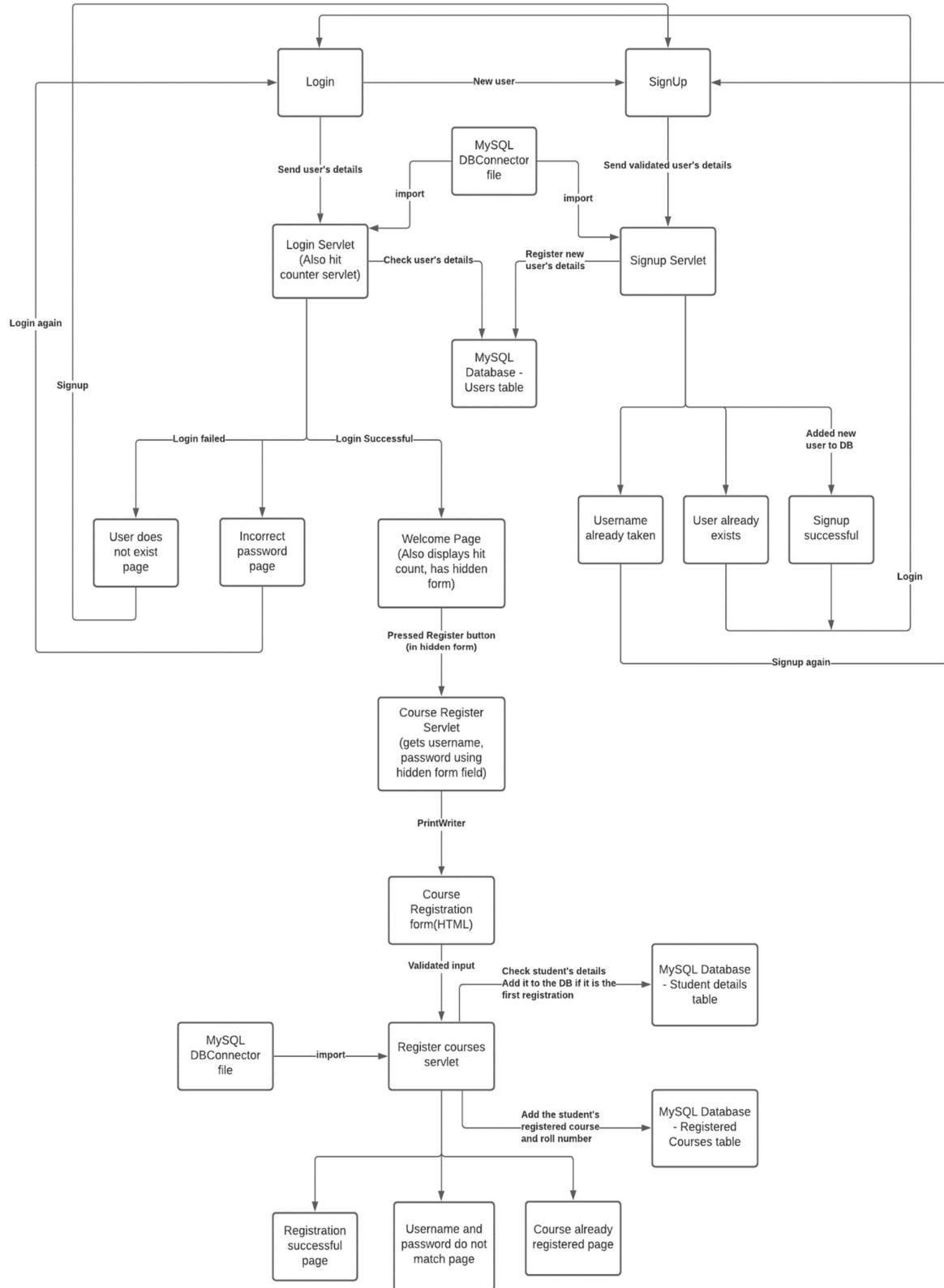
- c. Create a dialog box that takes username from the course registration form and displays it



A blue rectangular dialog box with a single text area containing the placeholder "Welcome Username".

2. Write a java program to track sessions for a hit count using life cycle of a servlet
 - i. Initialize global variable in init() method.
 - ii. Increase the global variable everytime when you trigger doGet() method or doPost() method.
 - iii. Display the total number of HITS in the browser whenever you call the Login HTML file.

Design: (Block diagram)

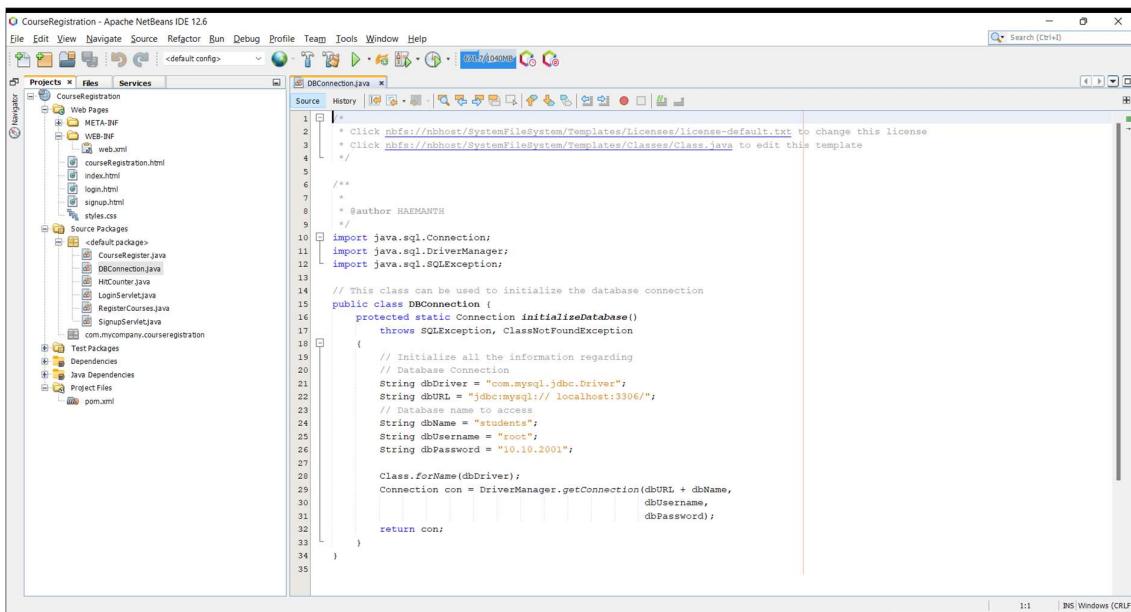


Tool used:

- Apache Tomcat
- NetBeans IDE
- Java JDK
- MySQL
- Java Servlets
- HTML
- CSS
- Javascript

Code :

Database Connector file:



The screenshot shows the NetBeans IDE interface with the project 'CourseRegistration' open. The 'DBConnection.java' file is selected in the center editor pane. The code implements a static method to initialize a database connection using JDBC.

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes.java to edit this template
 */
package com.mycompany.courseregistration;

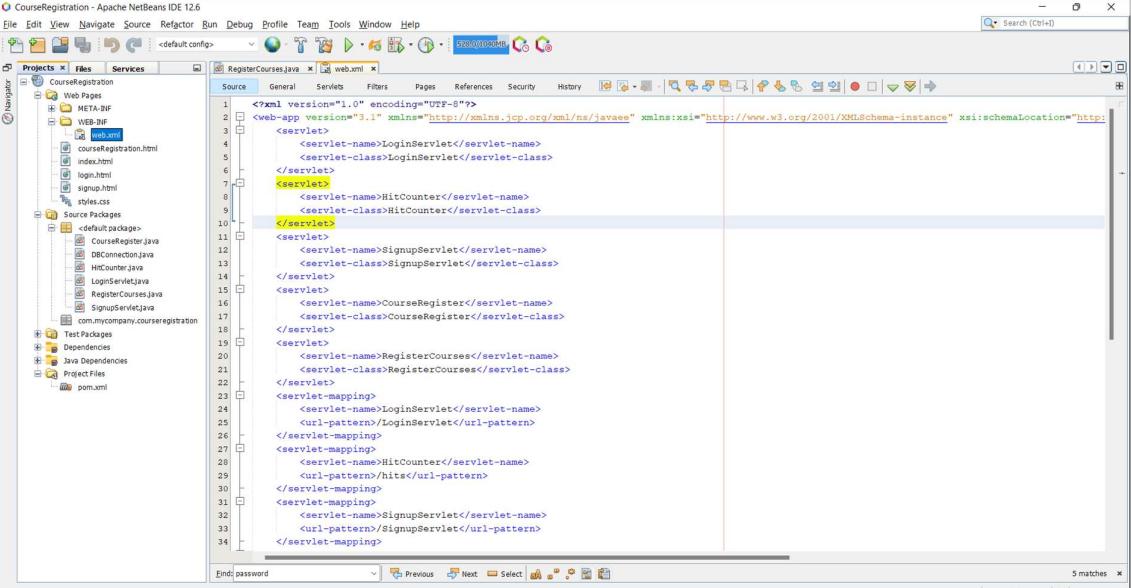
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

// This class can be used to initialize the database connection
public class DBConnection {
    protected static Connection initializeDatabase()
        throws SQLException, ClassNotFoundException
    {
        // Initialize all the information regarding
        // Database Connection
        String dbDriver = "com.mysql.jdbc.Driver";
        String dbURL = "jdbc:mysql://localhost:3306/";
        // Database name and address
        String dbName = "stedienc";
        String dbUsername = "root";
        String dbPassword = "10.10.2001";

        Class.forName(dbDriver);
        Connection con = DriverManager.getConnection(dbURL + dbName,
                                                     dbUsername,
                                                     dbPassword);

        return con;
    }
}
```

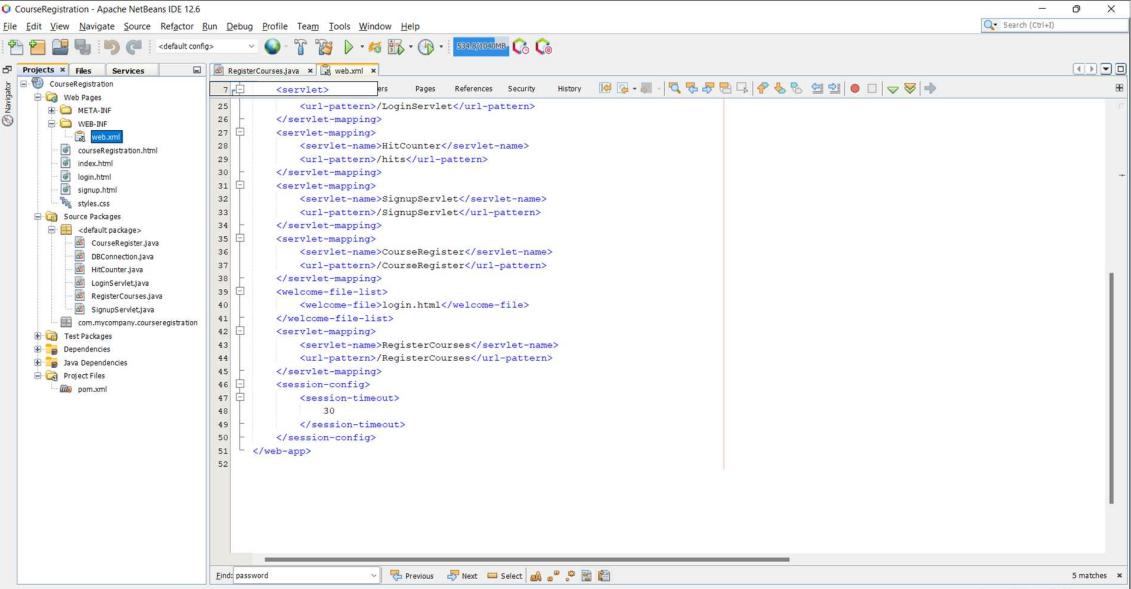
Web.xml file:



The screenshot shows the Apache NetBeans IDE interface with the 'web.xml' file open in the central editor. The code is as follows:

```
<?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://www.w3.org/2001/XMLSchema-instance">
    <servlet>
        <servlet-name>LoginServlet</servlet-name>
        <servlet-class>LoginServlet</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>HitCounter</servlet-name>
        <servlet-class>HitCounter</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>SignupServlet</servlet-name>
        <servlet-class>SignupServlet</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>CourseRegister</servlet-name>
        <servlet-class>CourseRegister</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>RegisterCourses</servlet-name>
        <servlet-class>RegisterCourses</servlet-class>
    </servlet>
    <welcome-file-list>
        <welcome-file>index.html</welcome-file>
    </welcome-file-list>
    <session-config>
        <session-timeout>30</session-timeout>
    </session-config>

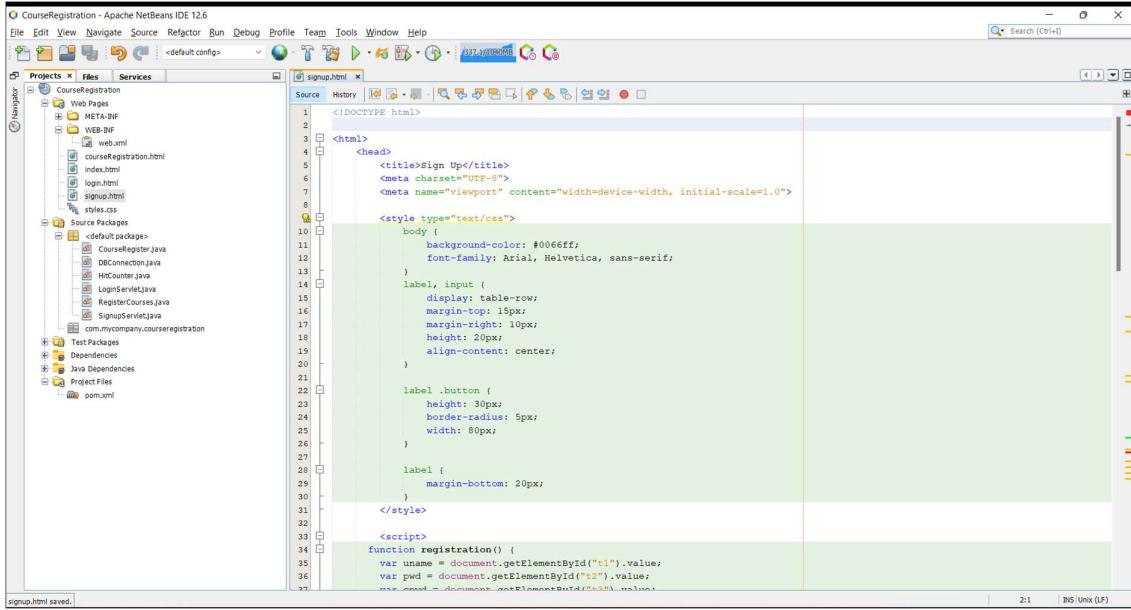
```



The screenshot shows the Apache NetBeans IDE interface with the 'web.xml' file open in the central editor. The code has been modified to include session timeout and welcome files:

```
<?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://www.w3.org/2001/XMLSchema-instance">
    <servlet>
        <servlet-name>LoginServlet</servlet-name>
        <servlet-class>LoginServlet</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>HitCounter</servlet-name>
        <servlet-class>HitCounter</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>SignupServlet</servlet-name>
        <servlet-class>SignupServlet</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>CourseRegister</servlet-name>
        <servlet-class>CourseRegister</servlet-class>
    </servlet>
    <servlet>
        <servlet-name>RegisterCourses</servlet-name>
        <servlet-class>RegisterCourses</servlet-class>
    </servlet>
    <welcome-file-list>
        <welcome-file>index.html</welcome-file>
        <welcome-file>login.html</welcome-file>
    </welcome-file-list>
    <session-config>
        <session-timeout>30</session-timeout>
    </session-config>
```

SignUp Form:



CourseRegistration - Apache NetBeans IDE 12.6

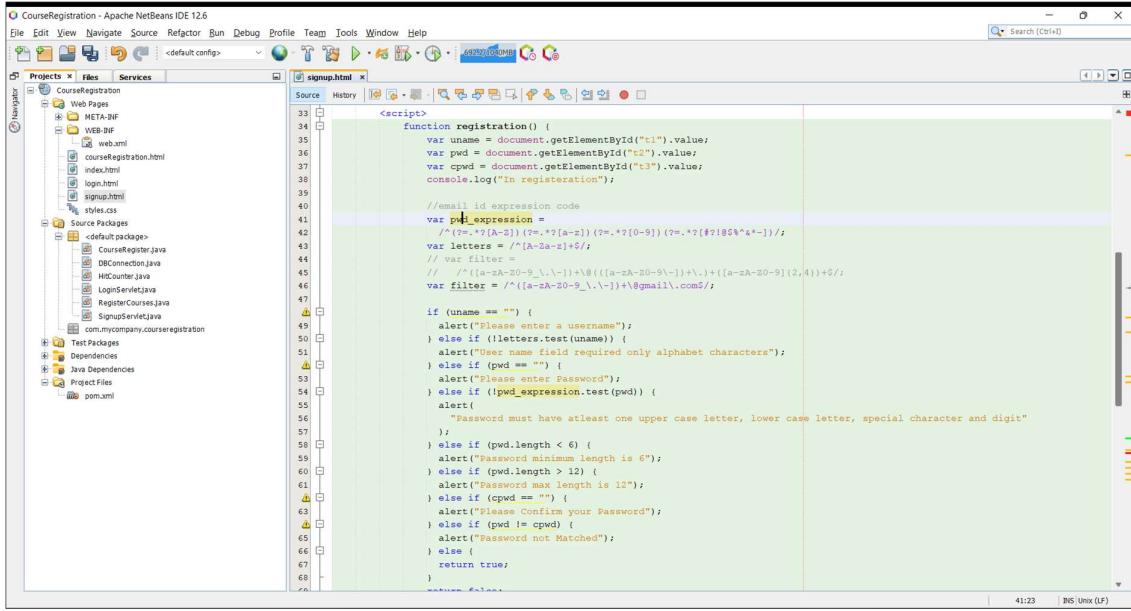
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

Projects Files Services

signup.html

```
<!DOCTYPE html>
<html>
  <head>
    <title>Sign Up</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <style type="text/css">
      body {
        background-color: #0066ff;
        font-family: Arial, Helvetica, sans-serif;
      }
      label, input {
        display: table-row;
        margin-top: 15px;
        margin-right: 10px;
        height: 20px;
        align-content: center;
      }
      label .button {
        height: 30px;
        border-radius: 5px;
        width: 80px;
      }
      label {
        margin-bottom: 20px;
      }
    </style>
    <script>
      function registration() {
        var uname = document.getElementById("t1").value;
        var pwd = document.getElementById("t2").value;
        var cpwd = document.getElementById("t3").value;
        console.log("In registration");
      }
    </script>
  </head>
  <body>
    <label>User Name:</label>
    <input type="text" id="t1" />
    <label>Password:</label>
    <input type="password" id="t2" />
    <label>Confirm Password:</label>
    <input type="password" id="t3" />
    <input type="button" value="Submit" class="button" onclick="registration();"/>
  </body>
</html>
```

signup.html saved. | 2:1 | INS Unix (LF)



CourseRegistration - Apache NetBeans IDE 12.6

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

Projects Files Services

signup.html

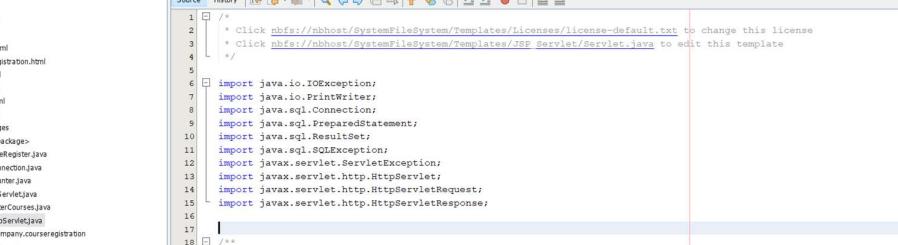
```
<script>
  function registration() {
    var uname = document.getElementById("t1").value;
    var pwd = document.getElementById("t2").value;
    var cpwd = document.getElementById("t3").value;
    console.log("In registration");

    //email id expression code
    var pwd_expression = /^[a-zA-Z0-9]+@[a-zA-Z0-9]+\.[a-zA-Z]{2,3}$/
    var letters = /^[a-zA-Z]+$/;
    // var filter =
    //   ^([a-zA-Z0-9_\.\-])+@[a-zA-Z0-9\.\-]+\.(a-zA-Z0-9){2,4}$/
    var filter = ^([a-zA-Z0-9_\.\-])+@[a-zA-Z0-9\.\-]+\.(a-zA-Z0-9){2,4}$/

    if (uname == "") {
      alert("Please enter a username");
    } else if (!letters.test(uname)) {
      alert("User name field required only alphabet characters");
    } else if (pwd == "") {
      alert("Please enter Password");
    } else if (!pwd_expression.test(pwd)) {
      alert(
        "Password must have atleast one upper case letter, lower case letter, special character and digit"
      );
    } else if (pwd.length < 6) {
      alert("Password minimum length is 6");
    } else if (pwd.length > 12) {
      alert("Password max length is 12");
    } else if (cpwd == "") {
      alert("Please Confirm your Password");
    } else if (pwd != cpwd) {
      alert("Password not Matched");
    } else {
      return true;
    }
  }
</script>
```

41:23 | INS Unix (LF)

Signup Servlet(stores user details in DB):



The screenshot shows the Apache NetBeans IDE interface with the following details:

- Title Bar:** CourseRegistration - Apache NetBeans IDE 12.6
- Menu Bar:** File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
- Toolbar:** Includes icons for New, Open, Save, Cut, Copy, Paste, Find, and others.
- Project Explorer (Left):**
 - Projects: CourseRegistration
 - Files: META-INF, WEB-INF, web.xml, courseRegistration.html, index.html, login.html, signup.html, styles.css
 - Source Packages:
 - default package
 - CourseRegister.java
 - DBConnection.java
 - HICounter.java
 - LoginServlet.java
 - RegisterCourses.java
 - SignupServlet.java
 - mycompany.courseRegistration
 - pom.xml
 - Test Packages
 - Dependencies
 - Java Dependencies
 - Project Files
- Code Editor (Right):** Displays the `SignupServlet.java` file content.
- Status Bar:** Shows "17:1 INS Windows (CRF)"

CourseRegistration - Apache NetBeans IDE 12.6

```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History <default config> Search (Ctrl+F)
Projects Files Services SignupServlet.java
CourseRegistration
  Web Pages
    META-INF
      web.xml
    WEB-INF
      classes
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginService.java
        RegisterCourses.java
        SignupServlet.java
      com.mycompany.courseregistration
    Test Packages
    Dependencies
    Java Dependencies
  Project Files pom.xml
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  out.println("style type='text/css'");
  out.println("body (background-color: #257ef2;\n" +
  "font-family: Arial, Helvetica, sans-serif;)");
  out.println("</style>");
  out.println("</head>");
  String username = request.getParameter("username");
  String password = request.getParameter("password");

  // Initialize the database
  Connection con = DBConnection.initializeDatabase();

  PreparedStatement st = con.prepareStatement("SELECT * FROM users WHERE username=? AND password=?");

  st.setString(1, username);

  // Same for second parameter
  st.setString(2, password);

  ResultSet rs = st.executeQuery();
  if (rs.next()) {
    out.println("<body>");
    out.println("<center>");
    out.println("<h1>User already exists!</h1>");
    out.println("<p>Click <a href='login.html'>here</a> to login</p>");
    out.println("</center>");
    out.println("</body>");
    out.println("</html>");
    return;
  }

  // Close all the connections
  st.close();

  st = con.prepareStatement("SELECT * FROM users WHERE username=?");

  st.setString(1, username);

  17:1 | IN Windows (CR/LF)
```

CourseRegistration - Apache NetBeans IDE 12.6

```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History <default config> Search (Ctrl+F)
Projects Files Services SignupServlet.java
CourseRegistration
  Web Pages
    META-INF
      web.xml
    WEB-INF
      classes
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginService.java
        RegisterCourses.java
        SignupServlet.java
      com.mycompany.courseregistration
    Test Packages
    Dependencies
    Java Dependencies
  Project Files pom.xml
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  rs = st.executeQuery();
  if (rs.next()) {
    out.println("<body>");
    out.println("<center>");
    out.println("<h1>Username already chosen! Choose a different username!</h1>");
    out.println("<p>Click <a href='signup.html'>here</a> to signup again</p>");
    out.println("</center>");
    out.println("</body>");
    out.println("</html>");
    return;
  }

  // Close all the connections
  st.close();

  // Create a SQL query to insert data into demo table
  // demo table consists of two columns, so two '?' is used
  st = con.prepareStatement("INSERT INTO users(username, password) VALUES(?,?)");
  st.setString(1, username);
  st.setString(2, password);

  // Execute the insert command using executeUpdate()
  // to make changes in database
  st.executeUpdate();

  // Close all the connections
  st.close();
  con.close();

  /* MODIFIED SOURCE CODE BASED ON YOUR REQUIREMENT, PLEASE DON'T COPY IT */
  17:1 | IN Windows (CR/LF)
```

The screenshot shows the Apache NetBeans IDE interface with the following details:

- Title Bar:** CourseRegistration - Apache NetBeans IDE 12.6
- Menu Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help
- Toolbar:** Includes icons for New, Open, Save, Cut, Copy, Paste, Find, Replace, Undo, Redo, and others.
- Search Bar:** Search (Ctrl+F) at the top right.
- Projects Tab:** Shows the project structure with the following files:
 - CourseRegistration
 - META-INF
 - WEB-INF
 - web.xml
 - courseRegistration.html
 - index.html
 - login.html
 - signup.html
 - styles.css
 - Source Packages
 - <default package>
 - CourseRegister.java
 - DBConnection.java
 - HDCCounter.java
 - LoginServlet.java
 - RequestProcessor.java
 - SignupServlet.java
 - com/company/courseRegistration
 - Text Packages
 - Dependencies
 - Java Dependencies
 - Project Files
 - pom.xml
- Editor Area:** Displays the `SignupServlet.java` file content. The code is a Java servlet that handles GET and POST requests to add users to a database. It includes imports for `java.io`, `java.util`, `java.sql`, `javax.servlet`, `javax.servlet.http`, and `javax.servlet.annotation`. The `doGet` method prints a welcome message and a link to the login page. The `doPost` method calls the `processRequest` helper method. The `getServletInfo` method returns a static description. The code uses JSTL tags (`<%>`) and has several TODO comments.
- Bottom Status Bar:** Shows the status "17:1" and "INS: Windows (CR/LF)".

SignIn(Login) form:

CourseRegistration - Apache NetBeans IDE 12.6

```
<script>
function registration() {
    var uname = document.getElementById("t1").value;
    var pwd = document.getElementById("t2").value;

    console.log("In registration");

    if (uname == "") {
        alert("Please enter your username");
    } else if (pwd == "") {
        alert("Please enter your password");
    } else {
        return true;
    }
    return false;
}</script>

</head>
<body>
<div id="main">
<center>
<h1>Login</h1>
<form name="login" method="post" onsubmit="return registration()">
<label>
<input type="textbox" name="uname" value="username" readonly/>
<input type="textbox" name="username" id="t1"/>
</label>
<label>
<input type="textbox" name="pwd" value="password" readonly/>
<input type="password" name="password" id="t2"/><br><br>
</label>
</form>
<form action="signup.html" method="post">
<label>
<input class="button" type="submit" value="Sign In" onclick="registration()" formaction="LoginServlet"/>
</label>
<label>
<input class="button" type="submit" value="Sign Up" />
</label>
</form>
</center>
</div>
</body>
</html>
```

CourseRegistration - Apache NetBeans IDE 12.6

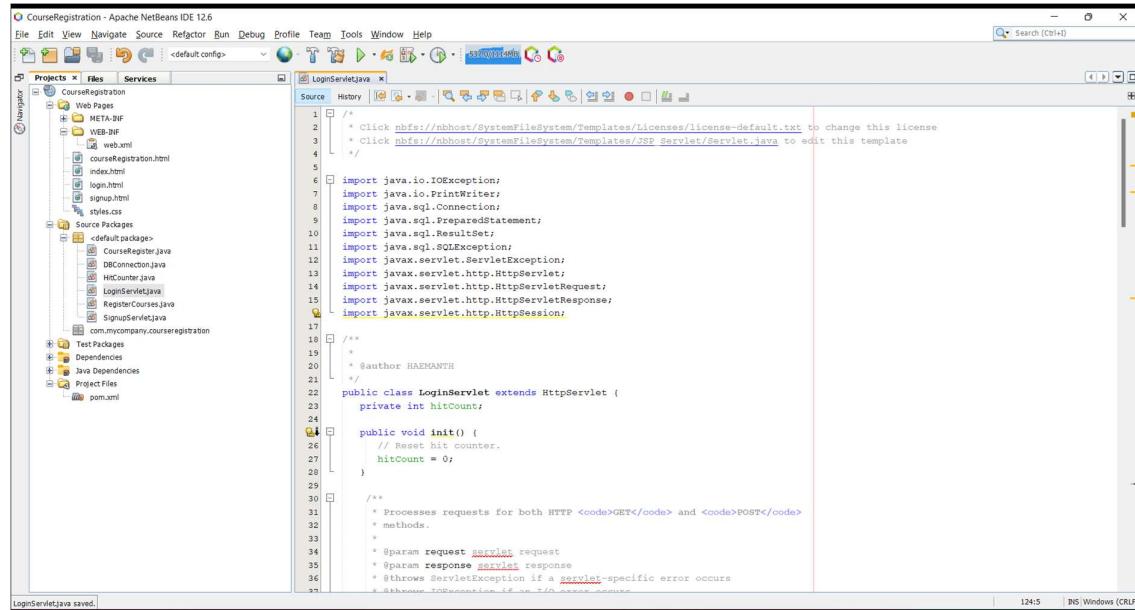
```
<script>
function registration() {
    var uname = document.getElementById("t1").value;
    var pwd = document.getElementById("t2").value;

    console.log("In registration");

    if (uname == "") {
        alert("Please enter your username");
    } else if (pwd == "") {
        alert("Please enter your password");
    } else {
        return true;
    }
    return false;
}</script>

</head>
<body>
<div id="main">
<center>
<h1>Login</h1>
<form name="login" method="post" onsubmit="return registration()">
<label>
<input type="textbox" name="uname" value="username" readonly/>
<input type="textbox" name="username" id="t1"/>
</label>
<label>
<input type="textbox" name="pwd" value="password" readonly/>
<input type="password" name="password" id="t2"/><br><br>
</label>
</form>
<form action="signup.html" method="post">
<label>
<input class="button" type="submit" value="Sign In" onclick="registration()" formaction="LoginServlet"/>
</label>
<label>
<input class="button" type="submit" value="Sign Up" />
</label>
</form>
</center>
</div>
</body>
</html>
```

SignIn(Login) Servlet(uses hidden form field for session tracking):



```

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Builder/Servlet.java to edit this template
 */
package com.mycompany.courseregistration;

import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

/*
 * @author HAEMANTH
 */
public class LoginServlet extends HttpServlet {
    private int hitCount;
    
    public void init() {
        // Reset hit counter.
        hitCount = 0;
    }

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");

        try ( PrintWriter out = response.getWriter() ) {
            /* TODO output your page here. You may use following sample code. */

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

            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<style type='text/css'>");
            out.println("body {background-color: #257ef2;\n" +
                       "font-family: Arial, Helvetica, sans-serif;}");
            out.println("</style>");
            out.println("</head>");

            try {
                Connection con = DBConnection.initializeDatabase();

                PreparedStatement st = con.prepareStatement("SELECT * FROM users WHERE username=?");
                st.setString(1, username);

                ResultSet rs = st.executeQuery();
                if( !rs.next() ){
                    out.println("<body>");
                    out.println("<center>");
                    out.println("<h1>User does not exist!</h1>");
                    out.println("<p><a href='signup.html'>here</a> to signup</p>");
                    out.println("</center>");

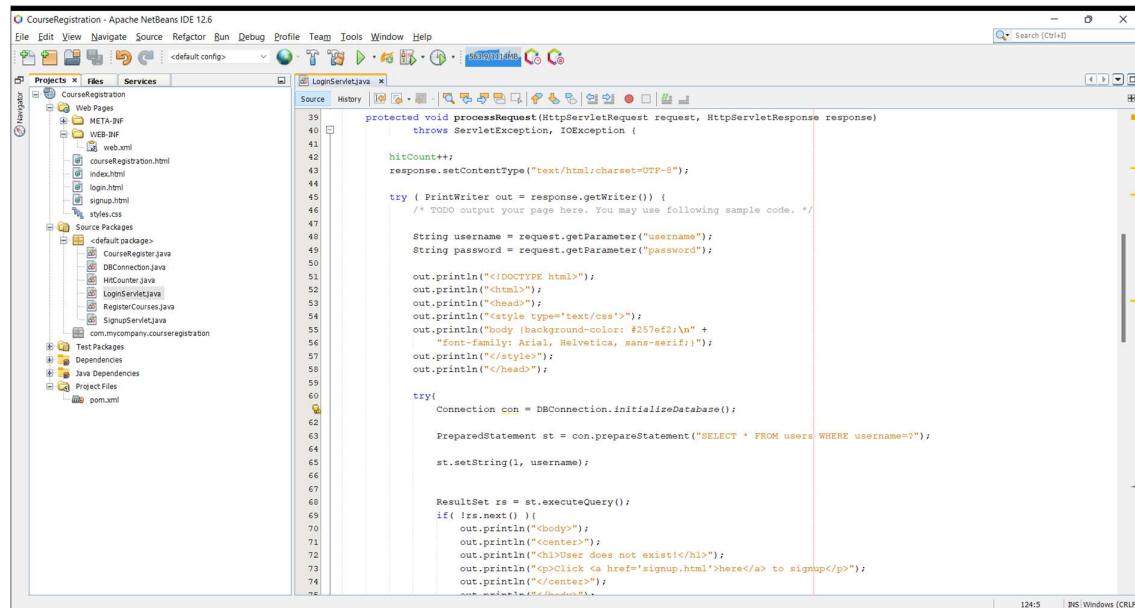
                    rs.close();
                }
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    }

    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on the left to edit the code.">
    /**
     * Handles the HTTP <code>GET</code> method.
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    // 
}

```



```

protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");

    try ( PrintWriter out = response.getWriter() ) {
        /* TODO output your page here. You may use following sample code. */

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

        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<style type='text/css'>");
        out.println("body {background-color: #257ef2;\n" +
                   "font-family: Arial, Helvetica, sans-serif;}");
        out.println("</style>");
        out.println("</head>");

        try {
            Connection con = DBConnection.initializeDatabase();

            PreparedStatement st = con.prepareStatement("SELECT * FROM users WHERE username=?");
            st.setString(1, username);

            ResultSet rs = st.executeQuery();
            if( !rs.next() ){
                out.println("<body>");
                out.println("<center>");
                out.println("<h1>User does not exist!</h1>");
                out.println("<p><a href='signup.html'>here</a> to signup</p>");
                out.println("</center>");

                rs.close();
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}

// <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on the left to edit the code.">
/**
 * Handles the HTTP <code>GET</code> method.
 * @param request servlet request
 * @param response servlet response
 * @throws ServletException if a servlet-specific error occurs
 * @throws IOException if an I/O error occurs
 */
@Override
protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
    processRequest(request, response);
}

/**
 * Handles the HTTP <code>POST</code> method.
 * @param request servlet request
 * @param response servlet response
 * @throws ServletException if a servlet-specific error occurs
 * @throws IOException if an I/O error occurs
 */
@Override
protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
    processRequest(request, response);
}

// 
}

```

CourseRegistration - Apache NetBeans IDE 12.6

```
Source History | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103
```

ResultSet rs = st.executeQuery();
if(!rs.next()) {
 out.println("<body>");
 out.println("<center>");
 out.println("<h1>User does not exist!</h1>");
 out.println("<p>Click here to signup</p>");
 out.println("</center>");
 out.println("</body>");
 out.println("</html>");
 return;
}

else {
 String p = rs.getString("password");
 if(p.equals(password)) {
 out.println("<body>");
 out.println("<center>");
 out.println("<h1>Password is incorrect</h1>");
 out.println("<p>Click here to login again</p>");
 out.println("</center>");
 out.println("</body>");
 out.println("</html>");
 return;
 }
}

// Close all the connections
st.close();
con.close();

out.println("<!DOCTYPE html>");
out.println("<html>");
out.println("<head>");
out.println("<title>Success</title>");
out.println("<style type='text/css'>");
out.println("<body background-color: #257ef2;\n" +
 "margin: 0px; padding: 0px; font-family: Arial, Helvetica, sans-serif;>");
out.println("</style>");
out.println("<head>");
out.println("<body>");
out.println("<center>");
out.println("<h1>Welcome "+username+"! </h1>");
out.println("<form action='CourseRegister' method='post'>");
out.println("<input type='hidden' name='username' value='"+username+"'>");
out.println("<input type='hidden' name='password' value='"+password+"'>");
out.println("<input type='submit' value='Register courses' />");
out.println("</form>");
out.println("<p>Hit count: "+hitCount+"</p>");
out.println("</center>");
out.println("</body>");
out.println("</html>");
}
catch(ClassNotFoundException | SQLException e){
 out.println(e);
}

CourseRegistration - Apache NetBeans IDE 12.6

```
Source History | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130
```

```
con.close();  
  
out.println("<!DOCTYPE html>");  
out.println("<html>");  
out.println("<head>");  
out.println("<title>Success</title>");  
out.println("<style type='text/css'>");  
out.println("<body background-color: #257ef2;\n" +  
    "font-family: Arial, Helvetica, sans-serif;"");  
out.println("</style>");  
out.println("<head>");  
out.println("<body>");  
out.println("<center>");  
out.println("<h1>Welcome "+username+"! </h1>");  
out.println("<form action='CourseRegister' method='post'>");  
out.println("<input type='hidden' name='username' value='"+username+"'>");  
out.println("<input type='hidden' name='password' value='"+password+"'>");  
out.println("<input type='submit' value='Register courses' />");  
out.println("</form>");  
out.println("<p>Hit count: "+hitCount+"</p>");  
out.println("</center>");  
out.println("</body>");  
out.println("</html>");  
}  
catch(ClassNotFoundException | SQLException e){  
    out.println(e);  
}

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


```

```

CourseRegistration - Apache NetBeans IDE 12.6
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History | < > | Search (Ctrl+F) | CourseRegister.java | LoginServlet.java |
Projects | Files | Services
CourseRegistration
  Web Pages
    META-INF
      web.xml
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginServlet.java
        RegisterCourses.java
        SignupServlet.java
      com.mycompany.courseregistration
    Test Packages
    Dependencies
    Java Dependencies
Project Files
  pom.xml

114     out.println("</form>");
115     out.println("<input type='hidden' name='password' value='hitCount' />");
116     out.println("</center>");
117     out.println("</body>");
118     out.println("</html>");
119   }
120   catch(ClassNotFoundException | SQLException e){
121     out.println(e);
122   }
123 }
124
125 @Override
126 protected void doGet(HttpServletRequest request, HttpServletResponse response)
127   throws ServletException, IOException {
128   processRequest(request, response);
129 }
130
131 @Override
132 protected void doPost(HttpServletRequest request, HttpServletResponse response)
133   throws ServletException, IOException {
134   processRequest(request, response);
135 }
136
137
138 @Override
139 public String getServletInfo() {
140   return "Short description";
141 }
142
143 }
144

```

End: password Previous Next Select | < > | Search (Ctrl+F) | CourseRegister.java | LoginServlet.java | 110:77 | INS Windows (CRLF)

Course Registration form(within servlet using hidden form field for session tracking):

```

CourseRegistration - Apache NetBeans IDE 12.6
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History | < > | Search (Ctrl+F) | CourseRegister.java | LoginServlet.java |
Projects | Files | Services
CourseRegistration
  Web Pages
    META-INF
      web.xml
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginServlet.java
        RegisterCourses.java
        SignupServlet.java
      com.mycompany.courseregistration
    Test Packages
    Dependencies
    Java Dependencies
Project Files
  pom.xml

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit this template
 */
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 CourseRegister extends HttpServlet {
  protected void processRequest(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    try (PrintWriter out = response.getWriter()) {
      /* TODO output your page here. You may use following sample code. */
      String username = request.getParameter("username");
      String password = request.getParameter("password");
      out.println("<!DOCTYPE html>");
      out.println("<html>\n" +
                 "<head>\n" +
                   "<title>Login</title>\n" +
                   "<meta charset='UTF-8'>\n" +
                   "<meta name='viewport' content='width=device-width, initial-scale=1.0'>\n" +
                   "<style type='text/css'>\n" +
                     "body {\n" +
                       "background-color: #0066ff;\n" +
                       "font-family: Arial, Helvetica, sans-serif;\n" +

```

16:1 | INS Windows (CRLF)

The screenshot shows the Apache NetBeans IDE interface with the following details:

- Title Bar:** CourseRegistration - Apache NetBeans IDE 12.6
- Menu Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help
- Toolbar:** Standard Java development tools like New Project, Open, Save, Run, Stop, etc.
- Project Explorer (Left):** Shows the project structure:
 - CourseRegistration (selected)
 - META-INF
 - WEB-INF
 - web.xml
 - course-registration.html
 - index.html
 - login.html
 - signup.html
 - styles.css
 - Source Packages
 - com.mycompany.courseregistration
 - Test Packages
 - Dependencies
 - Java Dependencies
 - Project Files
 - pom.xml
- Code Editor (Right):** Displays the content of CourseRegister.java.

```
<style type="text/css">\n        \n        body {\n            background-color: #0066ff;\n            font-family: Arial, Helvetica, sans-serif;\n        }\n        \n        label, input {\n            display: table-row;\n            margin-top: 15px;\n            margin-right: 10px;\n            height: 20px;\n            align-content: center;\n        }\n        \n        label.button {\n            height: 30px;\n            border-radius: 5px;\n            width: 80px;\n        }\n        \n        label {\n            margin-bottom: 20px;\n        }\n    </style>\n    <script>\n        \n        function Validate() {\n            var roll = document.getElementById('roll').value;\n            var year = document.getElementById('year').value;\n            var semester = document.getElementById('semester').value;\n            var course = document.getElementById('course').value;\n            \n            if (roll == '') {\n                alert("Please enter your roll number");\n            } else if (year == '') {\n                alert("Please enter your year of study");\n            } else if (year > 6) {\n                alert("Year cannot be greater than 6");\n            } else if (semester == '') {\n                alert("Please enter your semester");\n            }\n        }\n    </script>
```
- Search Bar (Top Right):** Search (Ctrl+F)
- Status Bar (Bottom Right):** 18:1 INS Windows (CR LF)

```
CourseRegistration - Apache NetBeans IDE 12.6
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Search (Ctrl+F)
Projects Files Services <default config>
CourseRegistration
  Web Pages
    META-INF
    WEB-INF
      web.xml
      courseRegistration.html
      index.xhtml
      login.html
      signup.html
      styles.css
  Source Packages
    <default package>
      CourseRegister.java
      DBConnection.java
      HICounter.java
      LogonServlet.java
      RegisterCourses.java
      SignUpServlet.java
  company.course.registration
  Test Packages
  Dependencies
  Java Dependencies
  Project Files
  pom.xml

CourseRegister.java
Source History ... More
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  " +
  "        alert(\"Year must be entered in four year or study\");\n" +
  "    } else if (year > 6) {\n" +
  "        alert(\"Year cannot be greater than 6\");\n" +
  "    } else if (semester == \"\") {\n" +
  "        alert(\"Please enter your semester\");\n" +
  "    } else if (semester > 8) {\n" +
  "        alert(\"Semester cannot be greater than 8\");\n" +
  "    } else if ((course == \"\") || (course == null)) {\n" +
  "        alert(\"Enter a course\");\n" +
  "    } else {\n" +
  "        return true;\n" +
  "    }\n" +
  "    return false;\n" +
  "}\n</script>\n" +
"\n" +
"</head>\n" +
"\n" +
"><body >\n" +
<div id="main">\n" +
  "<center>\n" +
    "<h1>Welcome "+username+"</h1>" +
    "<Form name=\"Course Registration\" method=\"post\" onsubmit=\"return validate()\" action=\"RegisterCourses\">\n" +
    "<label>\n" +
      "<label>\n" +
        "<input type=\"text\" name=\"username\" value=\""+username+"\" readonly/>\n" +
        "<input type=\"text\" name=\"username\" id=\"username\" value=\""+username+"\" readonly/>\n" +
      "</label>\n" +
      "<label>\n" +
        "<input type=\"text\" name=\"rno\" value=\"Roll Number\" readonly/>\n" +
        "<input type=\"number\" name=\"roll\" id=\"roll\" value=\"\"/>\n" +
      "</label>\n" +
      "<label>\n" +
        "<input type=\"text\" name=\"yr\" value=\"Year\" readonly/>\n" +

```

CourseRegistration - Apache NetBeans IDE 12.6

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

<default config>

Projects X Files Services

CourseRegistration

META-INF

WEB-INF

web.xml

courseRegistration.html

index.html

login.html

signup.html

styles.css

Source Packages

<default package>

CourseRegister.java

DBConnection.java

HDCCounter.java

LoginServlet.java

RegistrationServlet.java

SignUpServlet.java

com.company.courseregistration

Test Packages

Dependencies

Java Dependencies

Project Files

pom.xml

CourseRegister.java

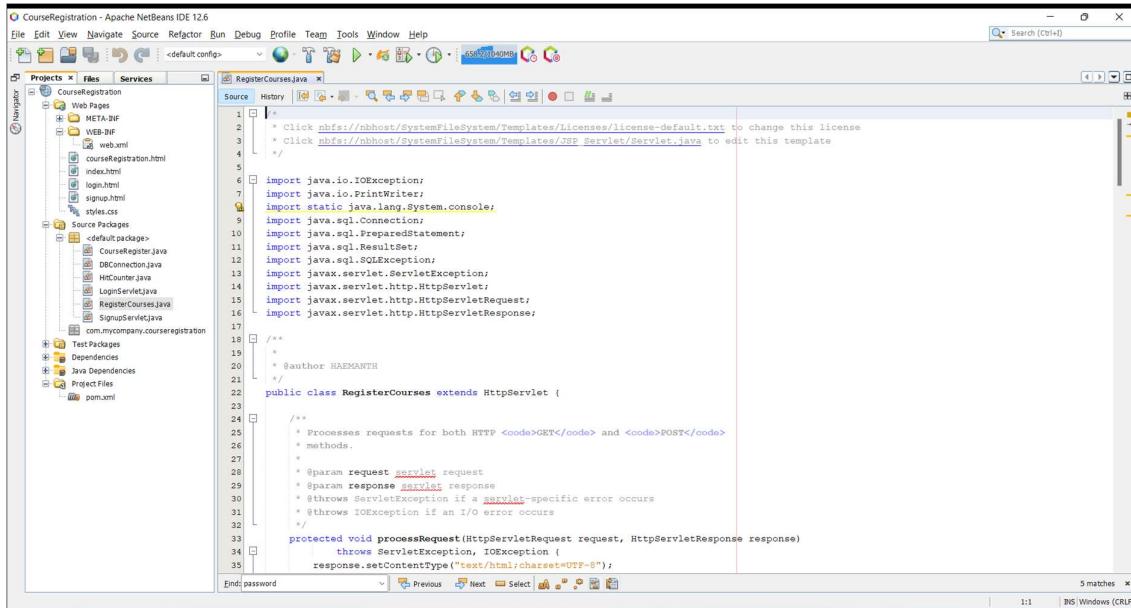
```
Source History |      
```

```
1 package com.company.courseregistration;
2
3 import java.io.*;
4 import javax.servlet.*;
5 import javax.servlet.http.*;
6
7 public class CourseRegister {
8
9     protected void doGet(HttpServletRequest request, HttpServletResponse response)
10        throws ServletException, IOException {
11         processRequest(request, response);
12     }
13
14     @Override
15     protected void doPost(HttpServletRequest request, HttpServletResponse response)
16        throws ServletException, IOException {
17         processRequest(request, response);
18     }
19
20     private void processRequest(HttpServletRequest request, HttpServletResponse response)
21        throws ServletException, IOException {
22
23         response.setContentType("text/html");
24         PrintWriter out = response.getWriter();
25
26         String title = "Welcome to Course Registration";
27         String header = "Please fill the following details to register";
28         String footer = "</body></html>";
29
30         out.println(header);
31
32         out.println("<form>");
33
34         out.println("    <label>Name</label>" +
35             "<input type="textbox" name="name" value="John Doe" /><br>");
36         out.println("    <label>Year</label>" +
37             "<input type="textbox" name="yr" value="Year" readonly/><br>" +
38             "<input type="number" name="year" id="year"/><br>" +
39             "</label>" + "<br>" +
40             "<label>Semester</label>" +
41             "<input type="textbox" name="sem" value="Semester" readonly/><br>" +
42             "<input type="number" name="semester" id="semester"/><br>" +
43             "</label>" + "<br>" +
44             "<label>Course</label>" +
45             "<input type="textbox" name="cr" value="Course" readonly/><br>" +
46             "<input type="textbox" name="course" id="course"/><br><br>" +
47             "</label>" + "<br>" +
48             "<label>Password</label>" +
49             "<input type="hidden" name="password" value=""+password+""/>" +
50             "</label>" + "<br>" +
51             "<label>Submit</label>" +
52             "<input class="button" type="submit" value="Register"/><br>" +
53             "</label>" + "<br>" +
54             "</form>" + "<br>" +
55             "</center>" + "<br>" +
56             "</div>" + "<br>" +
57             "</body></html>");
```

The screenshot shows the Apache NetBeans IDE 12.6 interface. The left sidebar displays the project structure under 'CourseRegistration' with files like 'index.html', 'login.html', 'signup.html', and 'styles.css'. The main editor area shows the 'CourseRegister.java' file with the following code:

```
118         </body></html> );
119     }
120   }
121 }
122
123 /**
124  * @Override
125  * protected void doGet(HttpServletRequest request, HttpServletResponse response)
126  *           throws ServletException, IOException {
127  *   processRequest(request, response);
128  * }
129
130 /**
131  * @Override
132  * protected void doPost(HttpServletRequest request, HttpServletResponse response)
133  *           throws ServletException, IOException {
134  *   processRequest(request, response);
135  *
136  * @Override
137  * public String getServletInfo() {
138  *   return "short description";
139  * }
140 }
```

Register Courses servlet(adds courses to the DB)



The screenshot shows the Apache NetBeans IDE 12.6 interface with the 'RegisterCourses.java' file open in the editor. The code implements a HttpServlet for handling GET and POST requests. It includes imports for java.io, java.sql.Connection, and javax.servlet.*. The class contains a protected void processRequest method that handles the database connection and inserts data into the student_details table.

```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit this template
4   */
5
6  import java.io.IOException;
7  import java.io.PrintWriter;
8  import static java.lang.System.console;
9  import java.sql.Connection;
10 import java.sql.PreparedStatement;
11 import java.sql.SQLException;
12 import java.util.SQLFeatureNotSupportedException;
13 import javax.servlet.ServletException;
14 import javax.servlet.http.HttpServlet;
15 import javax.servlet.http.HttpServletRequest;
16 import javax.servlet.http.HttpServletResponse;
17
18 /**
19  * @author HARMANTH
20  */
21 public class RegisterCourses extends HttpServlet {
22
23
24     /**
25      * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
26      * methods.
27      *
28      * @param request servlet request
29      * @param response servlet response
30      * @throws ServletException if a <code>servlet</code>-specific error occurs
31      * @throws IOException if an I/O error occurs
32     */
33     protected void processRequest(HttpServletRequest request, HttpServletResponse response)
34         throws ServletException, IOException {
35         response.setContentType("text/html;charset=UTF-8");
36     }
37
38     // TODO output your page here. You may use following sample code.
39     String username = request.getParameter("username");
40     String password = request.getParameter("password");
41     String roll = request.getParameter("roll");
42     String year = request.getParameter("year");
43     String semester = request.getParameter("semester");
44     String course = request.getParameter("course");
45
46     log(username);
47     log(course);
48
49     try {
50         Connection con = DBConnection.initializeDatabase();
51
52         PreparedStatement st = con.prepareStatement("SELECT * FROM student_details "
53             + "WHERE username=?");
54
55         st.setString(1, username);
56
57         ResultSet rs = st.executeQuery();
58
59         if(!rs.next()){
60
61             st = con.prepareStatement("INSERT INTO student_details(roll, username, year, semester)"
62                 + "VALUES(?, ?, ?, ?)");
63
64             // For the first parameter,
65             // get the data using request object
66             // sets the data to st pointer
67             st.setString(1, roll);
68
69             st.executeUpdate();
70
71             response.sendRedirect("index.html");
72         }
73     } catch (SQLException ex) {
74         ex.printStackTrace();
75     }
76 }
77
78
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```

The screenshot shows the Apache NetBeans IDE interface with the following details:

- Title Bar:** CourseRegistration - Apache NetBeans IDE 12.6
- Menu Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help
- Toolbar:** Standard Java development tools like New, Open, Save, Run, Stop, etc.
- Project Explorer (Projects Tab):** Shows the project structure with packages like com.company.courseregistration, sub-packages like courseRegistration, and files like CourseRegistration.java, DBCreation.java, HIDCounter.java, LogonServlet.java, RegisterServlet.java, RegisterServlet.java, and SignupServlet.java.
- Code Editor (RegisterCourses.java):** Displays Java code for handling course registration requests. The code uses JDBC to insert data into a database and then generates an HTML response based on the result.
- Search Bar:** Search (Ctrl+F) at the top right.

```
// get the data using request object
// sets the data to st pointer
st.setString(1, roll);

// Same for second parameter
st.setString(2, username);
st.setString(3, year);
st.setString(4, semester);

// Execute the insert command using executeUpdate()
// to make changes in database
st.executeUpdate();

// Close all the connections
st.close();

} else {

    String r = rs.getString("roll");

    if(!r.equals(roll)){
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title>Course registered</title>"); out.println("<style type='text/css'>");
        out.println("body {background-color: #257fe2; font-family: Arial, Helvetica, sans-serif;}");
        out.println("</style>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>Welcome " + username + "</h1>");
        out.println("<h2>Your username does not match your roll number</h2>"); out.println("</body>");
        out.println("</html>"); return;
    }
}
```

The screenshot shows the Apache NetBeans IDE interface with the following details:

- Title Bar:** CourseRegistration - Apache NetBeans IDE 12.6
- Menu Bar:** File, Edit, View, Navigate, Source, Refactor, Run, Debug, Profile, Team, Tools, Window, Help
- Toolbar:** Standard NetBeans toolbar with icons for file operations.
- Project Explorer:** Shows the project structure:
 - Web Pages: index.html, index.htm, login.html, signup.html, styles.css
 - Source Packages: default package (CourseRegister.java, DBCConnection.java, HitCounter.java, LoginServlet.java, RegisterCourses.java, SignupServlet.java), com.mycompany.courseregistration (Course.java)
 - Test Packages
 - Dependencies
 - Java Dependencies
 - Project Files: pom.xml
- Code Editor:** The RegisterCourses.java file is open, displaying Java code for database interaction. The code includes preparing statements for update and select operations, setting parameters, and executing them.
- Search Bar:** Search (Ctrl+F) at the top right.
- Status Bar:** Shows 5 matches and the Windows (CR/LF) operating system.

CourseRegistration - Apache NetBeans IDE 12.6

```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History <default config> RegisterCourses.java
Projects Files Services
CourseRegistration
  Web Pages
    META-INF
    WEB-INF
      web.xml
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginService.java
        RegisterCourses.java
        SignupServlet.java
        com.mycompany.courseregistration
      Test Packages
      Dependencies
      Java Dependencies
      Project Files
        pom.xml
      End password
      Search (Ctrl+F) 5 matches x
      Previous Next Select | A a S s F f C c L l R r I i
      1:1 INS Windows (CR/LF)
```

RegisterCourses.java

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while(rs.next()){
    String c = rs.getString("course");

    if(c.equals(course)){
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title>Course registered</title>"); out.println("<style type='text/css'>");
        out.println("body {background-color: #257ef2;}");
        out.println("font-family: Arial, Helvetica, sans-serif;}");
        out.println("</style>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>Welcome " + username + "</h1>");
        out.println("<h2>You have already registered for course " + course + "</h2>"); out.println("</body>");
        out.println("</html>"); return;
    }

    st = con.prepareStatement("Insert into registered_courses set roll=?, course=?");
    st.setString(1, roll);
    st.setString(2, course);

    st.executeUpdate();

    con.close();

    out.println("<!DOCTYPE html>"); out.println("<html>"); out.println("<head>"); out.println("<title>Course registered</title>"); out.println("<style type='text/css'>"); out.println("body {background-color: #257ef2;}");
    "font-family: Arial, Helvetica, sans-serif;}");
}

End password
```

CourseRegistration - Apache NetBeans IDE 12.6

```
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Source History <default config> RegisterCourses.java
Projects Files Services
CourseRegistration
  Web Pages
    META-INF
    WEB-INF
      web.xml
        courseRegistration.html
        index.html
        login.html
        signup.html
        styles.css
    Source Packages
      <default package>
        CourseRegister.java
        DBConnection.java
        HitCounter.java
        LoginService.java
        RegisterCourses.java
        SignupServlet.java
        com.mycompany.courseregistration
      Test Packages
      Dependencies
      Java Dependencies
      Project Files
        pom.xml
      End password
      Search (Ctrl+F) 5 matches x
      Previous Next Select | A a S s F f C c L l R r I i
      1:1 INS Windows (CR/LF)
```

RegisterCourses.java

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out.println("<!DOCTYPE html>"); out.println("<html>"); out.println("<head>"); out.println("<title>Course registered</title>"); out.println("<style type='text/css'>"); out.println("body {background-color: #257ef2;}");
"font-family: Arial, Helvetica, sans-serif;}");
out.println("</style>"); out.println("</head>"); out.println("<body>"); out.println("<h1>Welcome " + username + "</h1>"); out.println("<h2>" + roll + " registered for course " + course + "</h2>"); out.println("</body>"); out.println("</html>");

catch(ClassNotFoundException | SQLException e) {
    out.println(e);
}

}

// <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on the left to edit the code.>
/**
 * Handles the HTTP <code>GET</code> method.
 *
 * @param request servlet request
 * @param response servlet response
 * @throws ServletException if a servlet-specific error occurs
 * @throws IOException if an I/O error occurs
 */
@Override
protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
}

End password
```

CourseRegistration - Apache NetBeans IDE 12.6

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

Projects Services

RegisterCourses.java

```
187 * @throws IOException if an I/O error occurs
188 */
189 @Override
190 protected void doGet(HttpServletRequest request, HttpServletResponse response)
191     throws ServletException, IOException {
192     processRequest(request, response);
193 }
194
195 /**
196 * Handles the HTTP <code>POST</code> method.
197 *
198 * @param request servlet request
199 * @param response servlet response
200 * @throws ServletException if a servlet-specific error occurs
201 * @throws IOException if an I/O error occurs
202 */
203 @Override
204 protected void doPost(HttpServletRequest request, HttpServletResponse response)
205     throws ServletException, IOException {
206     processRequest(request, response);
207 }
208
209 /**
210 * Returns a short description of the servlet.
211 *
212 * @return a String containing servlet description
213 */
214 @Override
215 public String getServletInfo() {
216     return "Short description";
217 } // </editor-fold>
218
219 }
220
```

End password

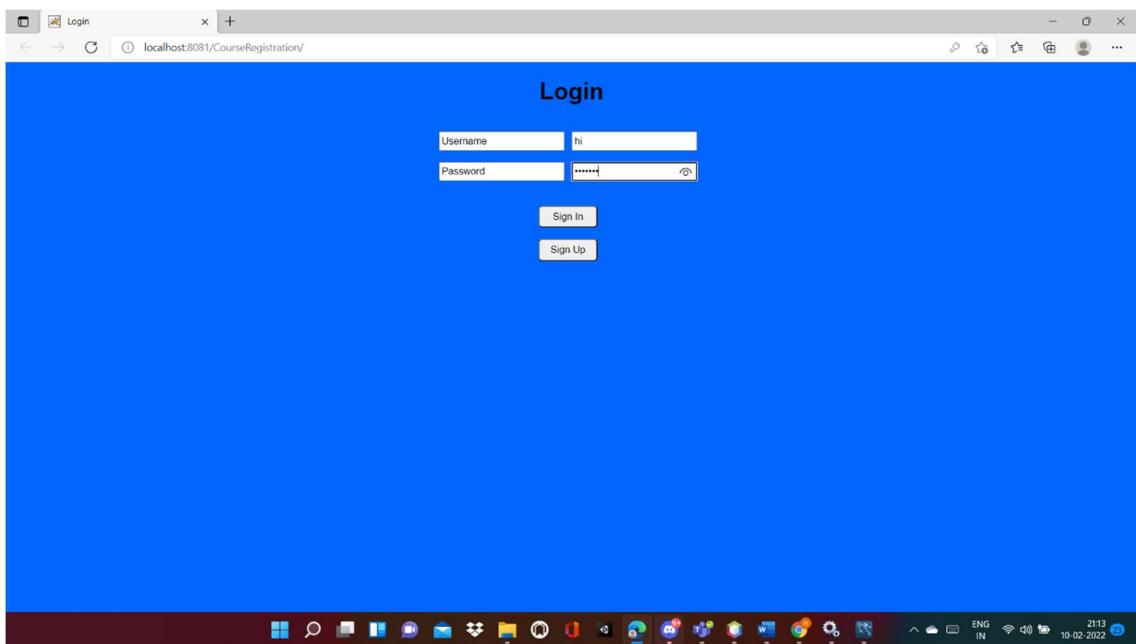
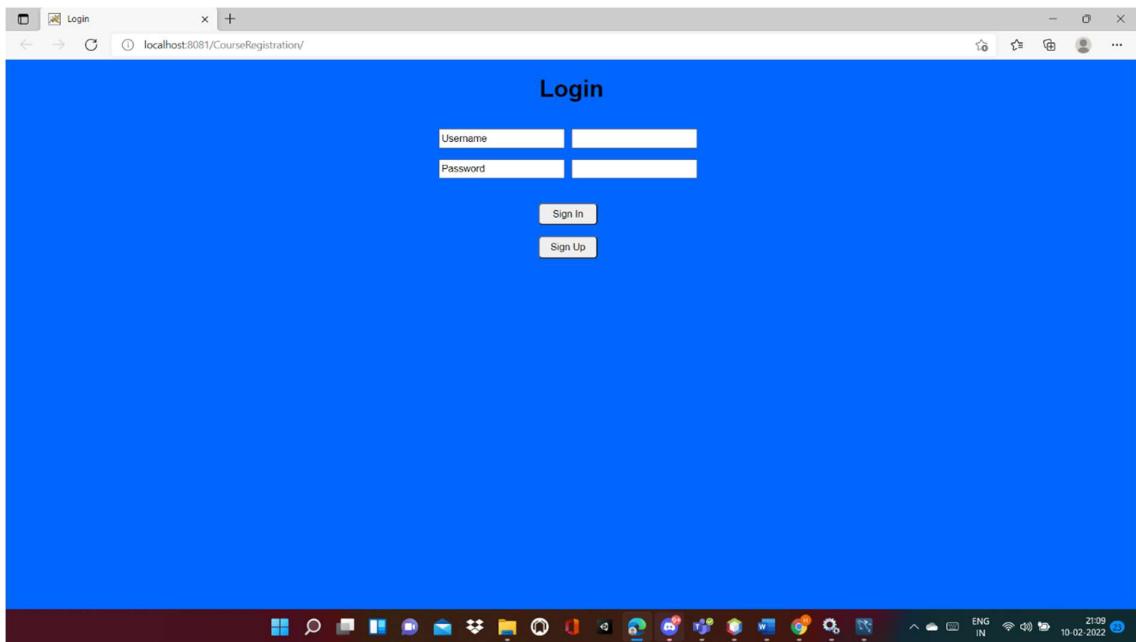
Search (Ctrl+F): 526.5600000000003

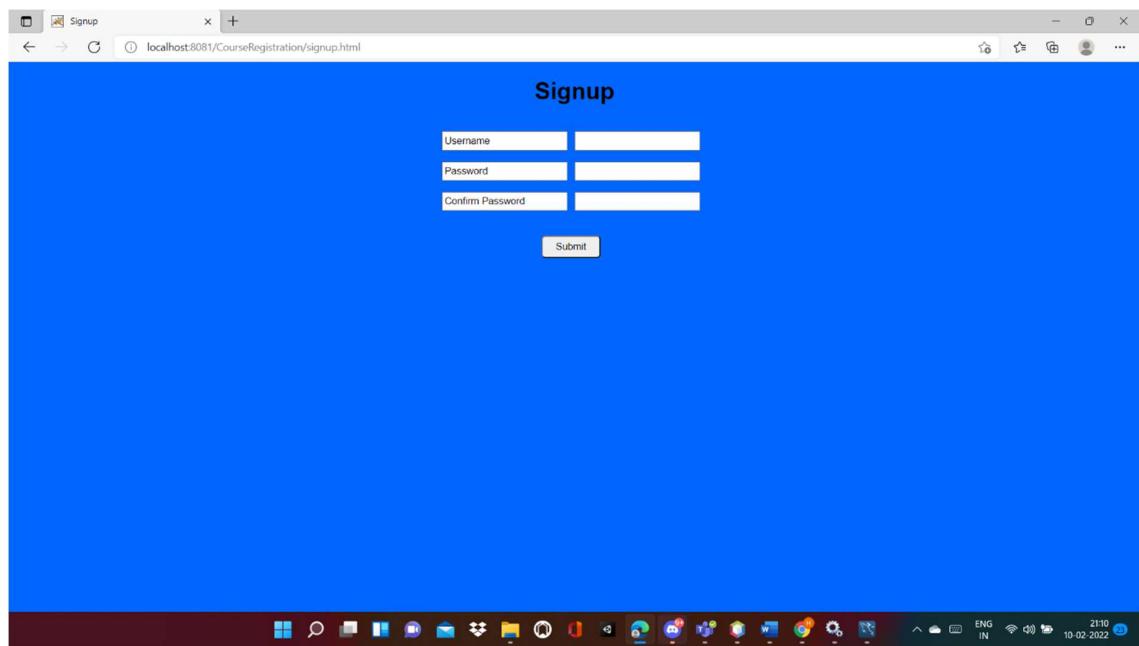
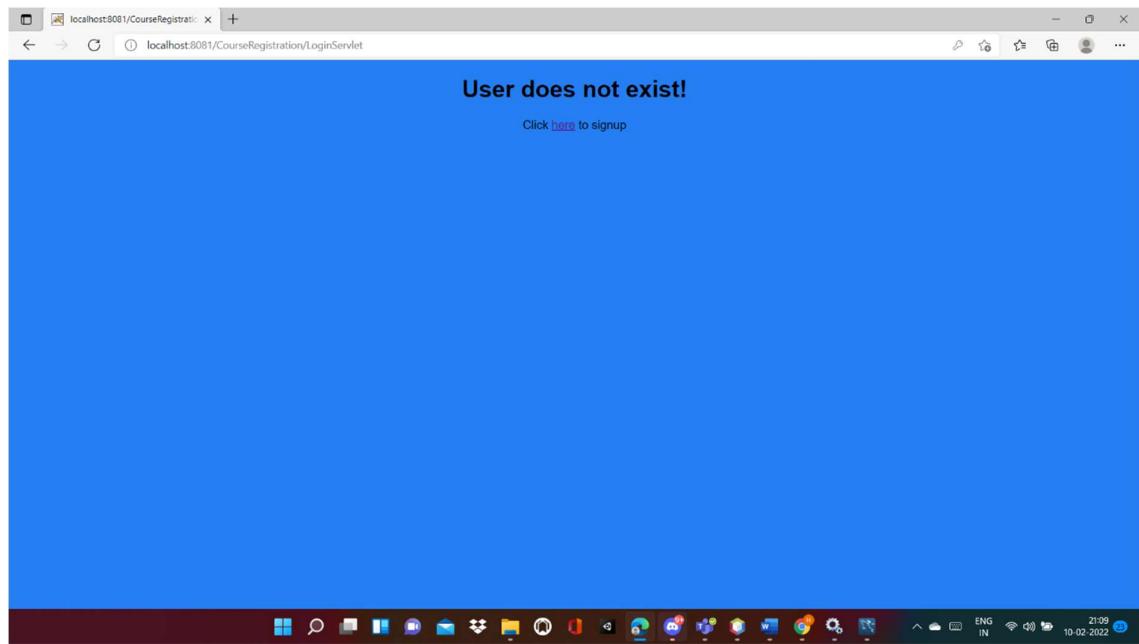
Source History

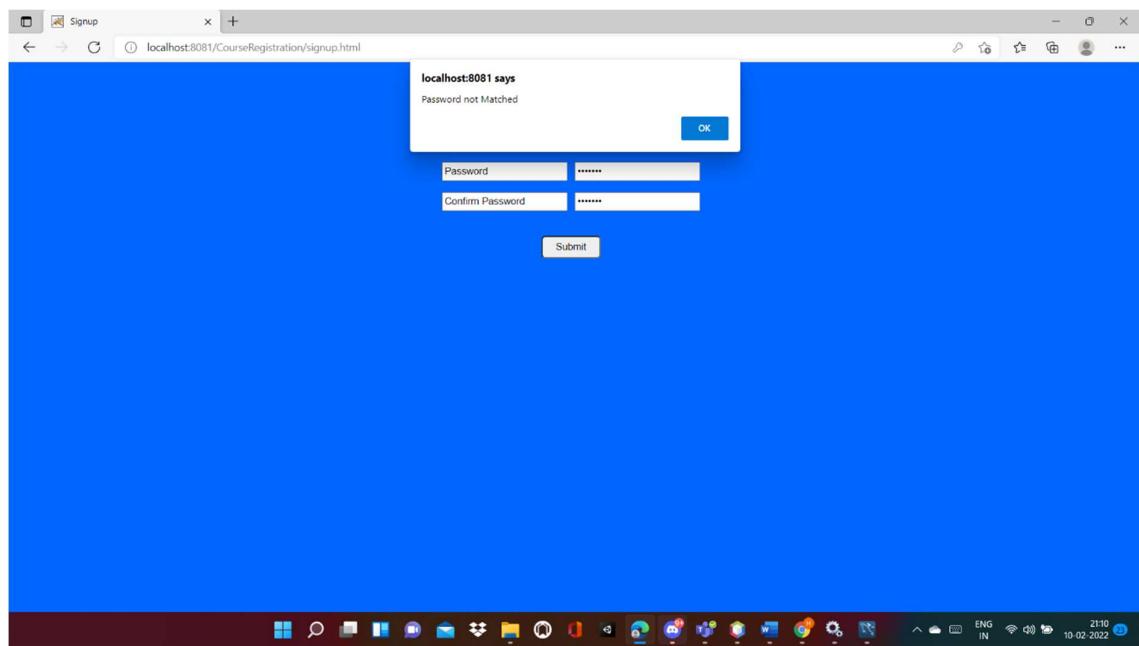
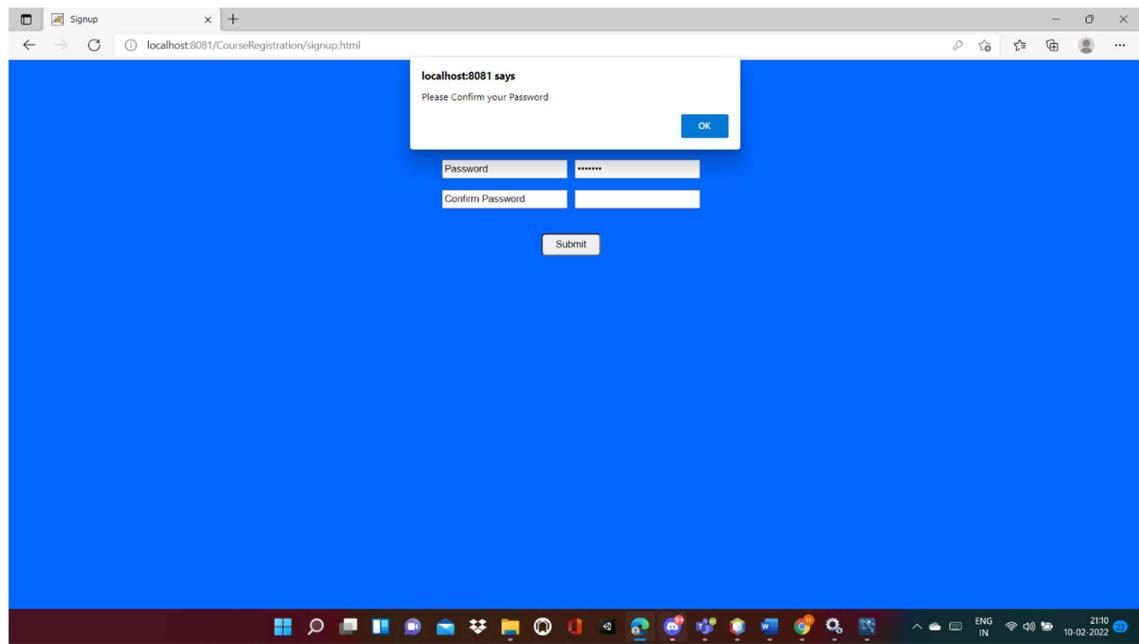
5 matches

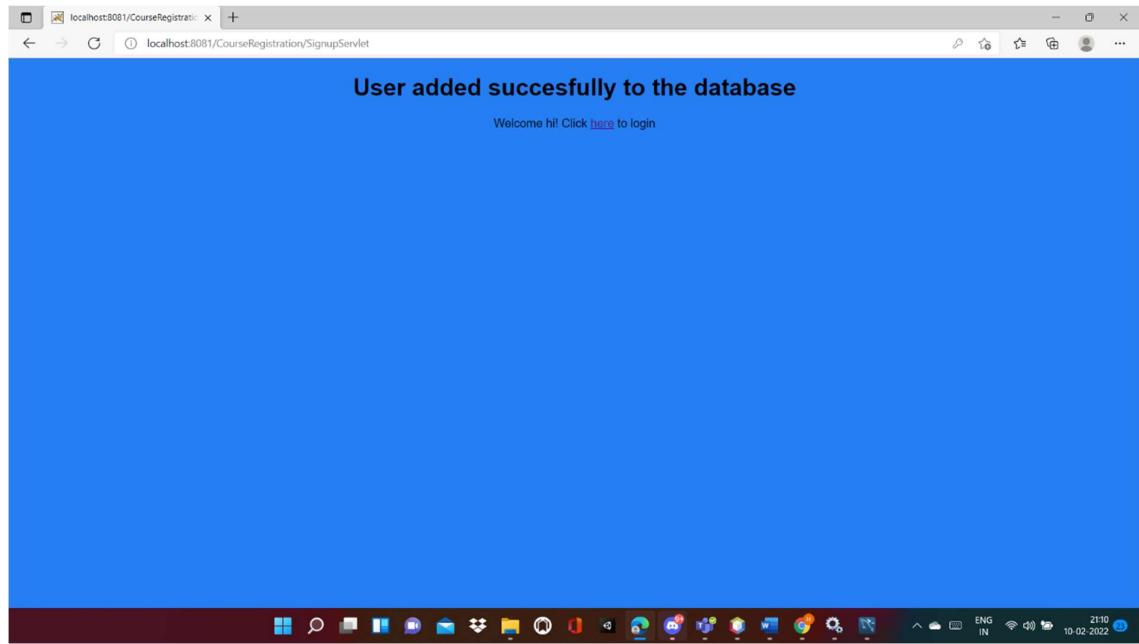
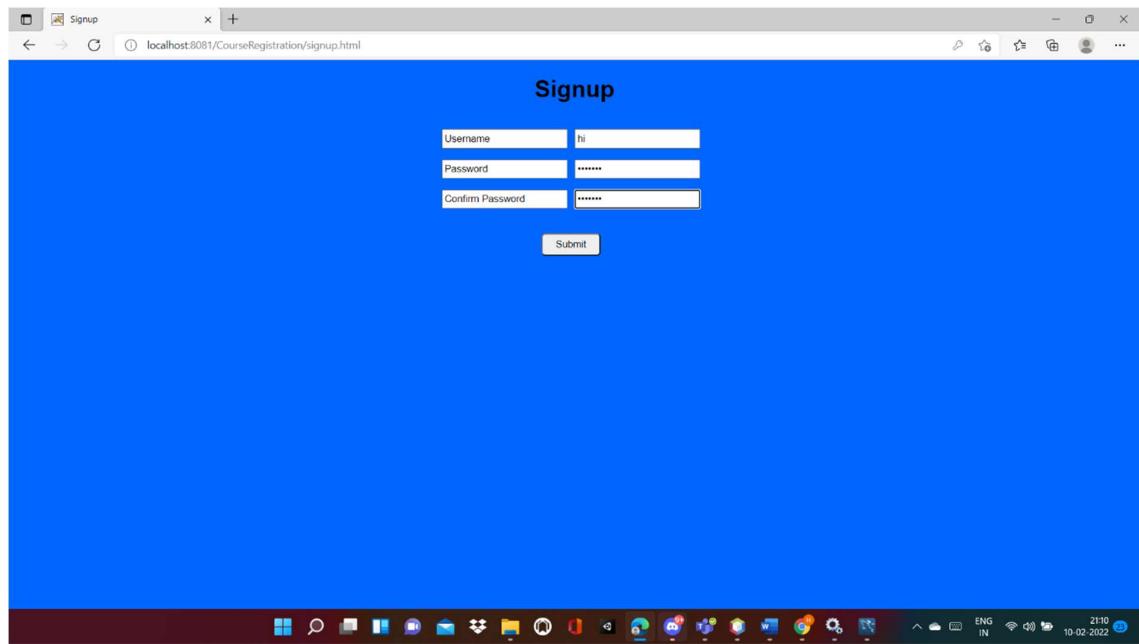
1:1 INS Windows (CRLF)

Screenshots of the Application:

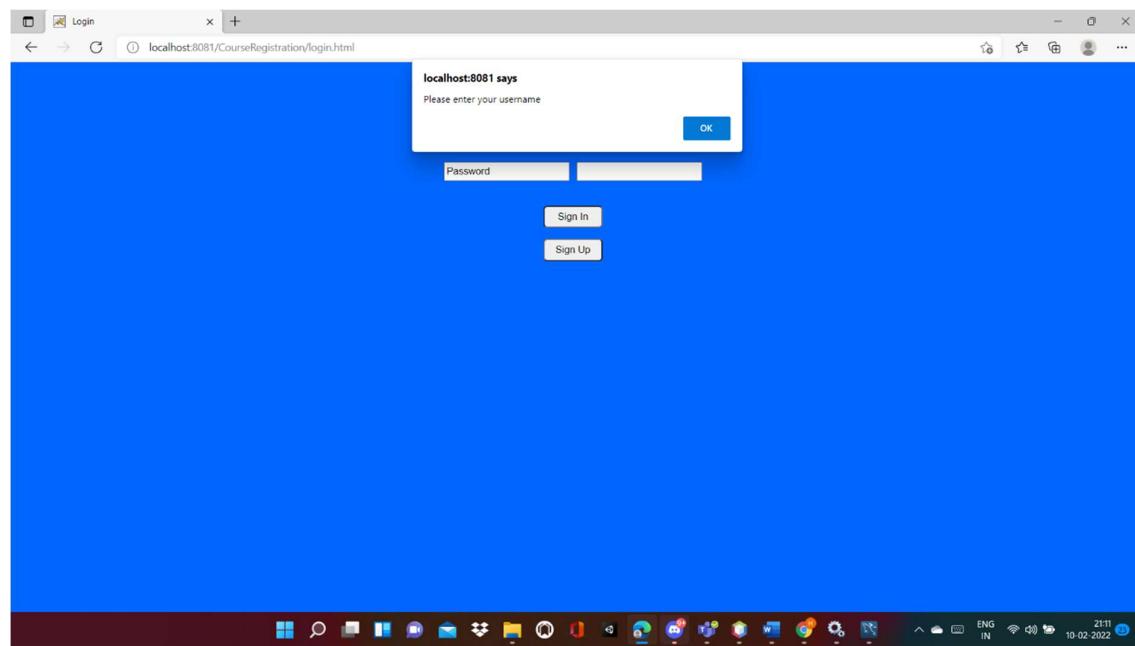


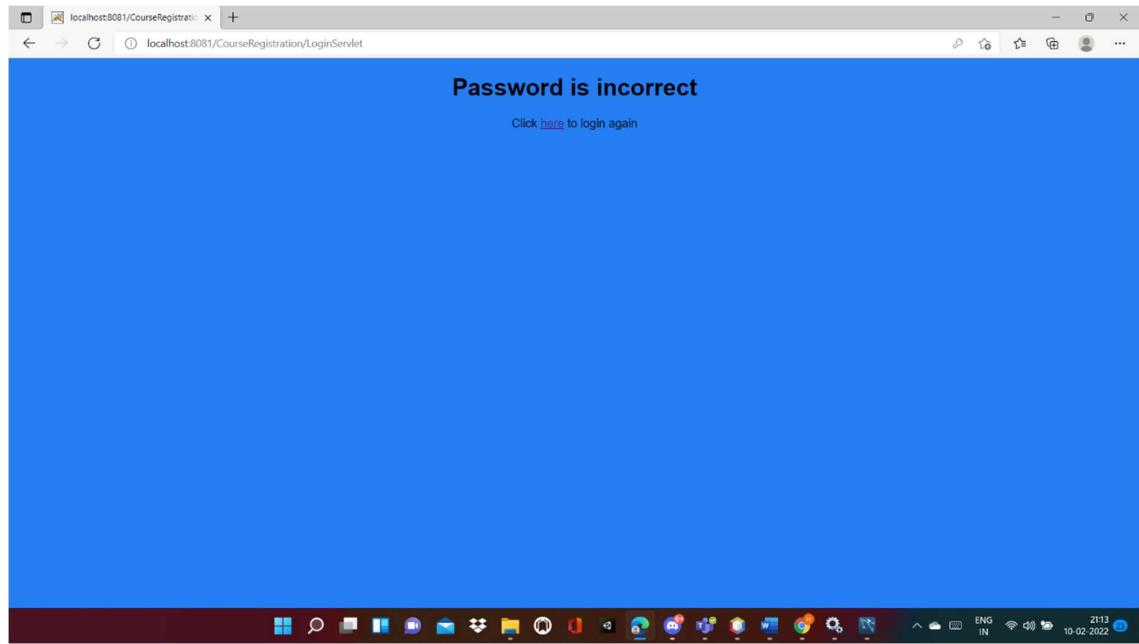
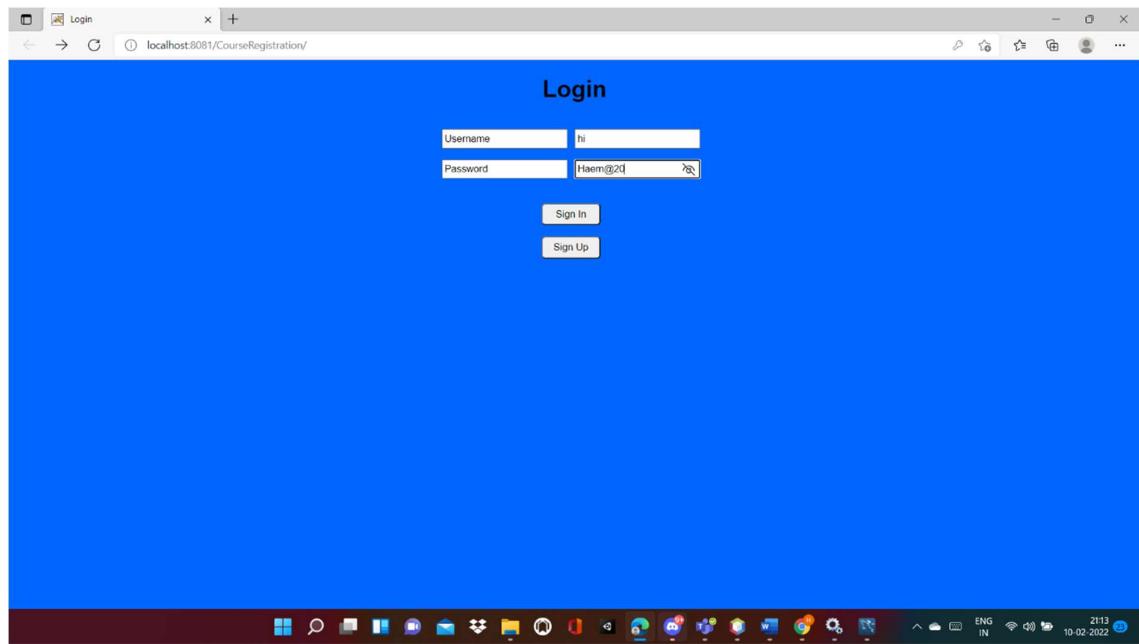


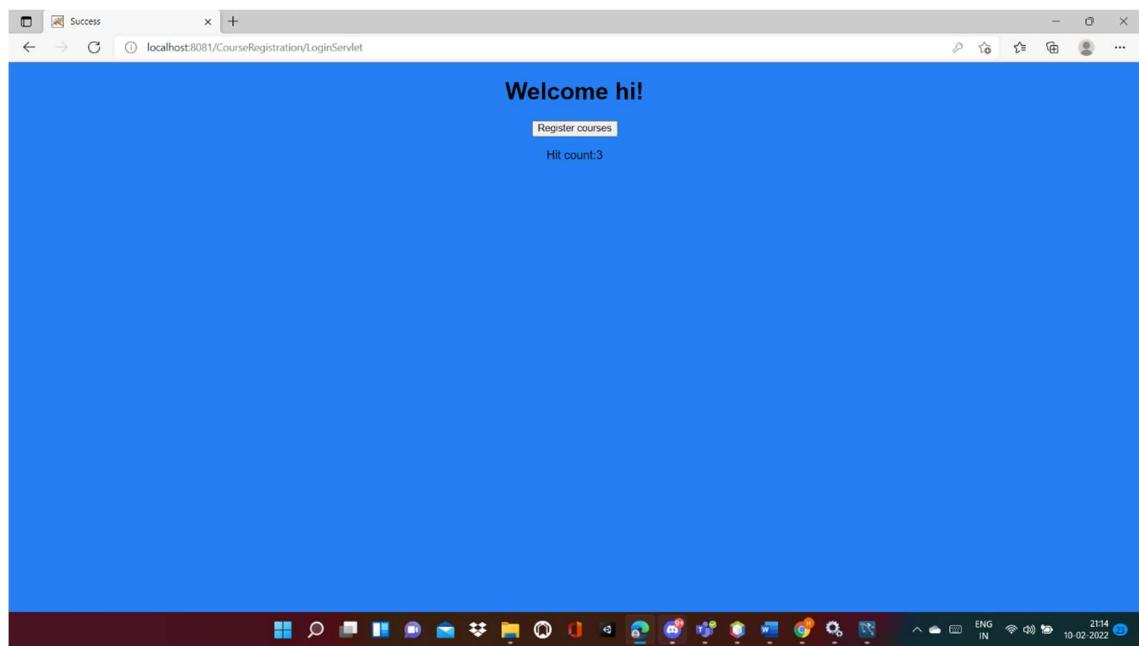
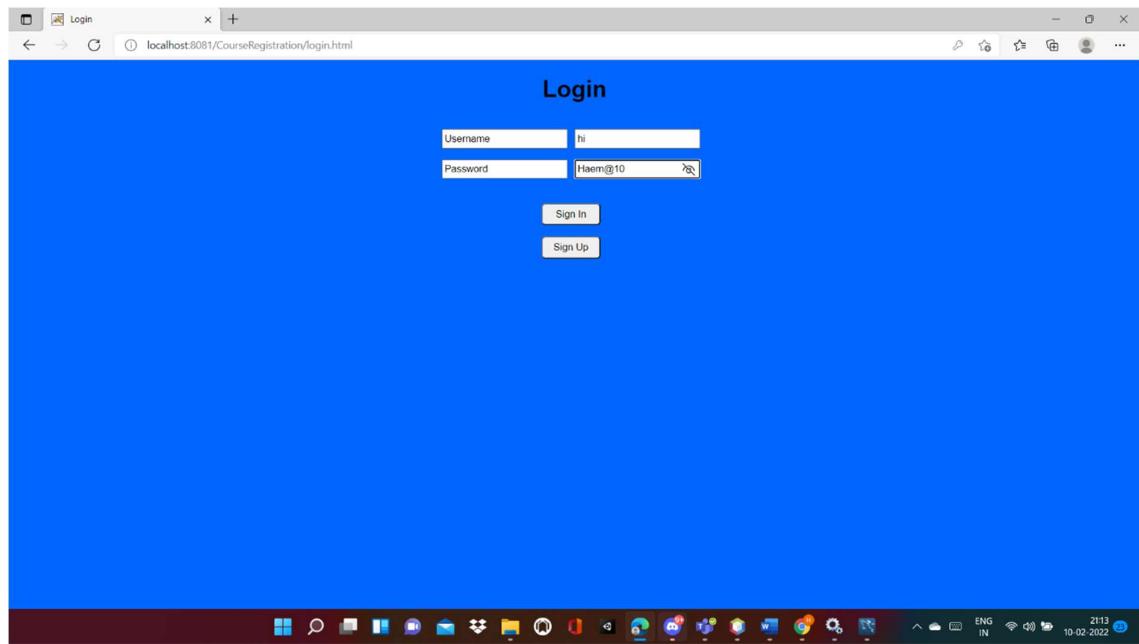


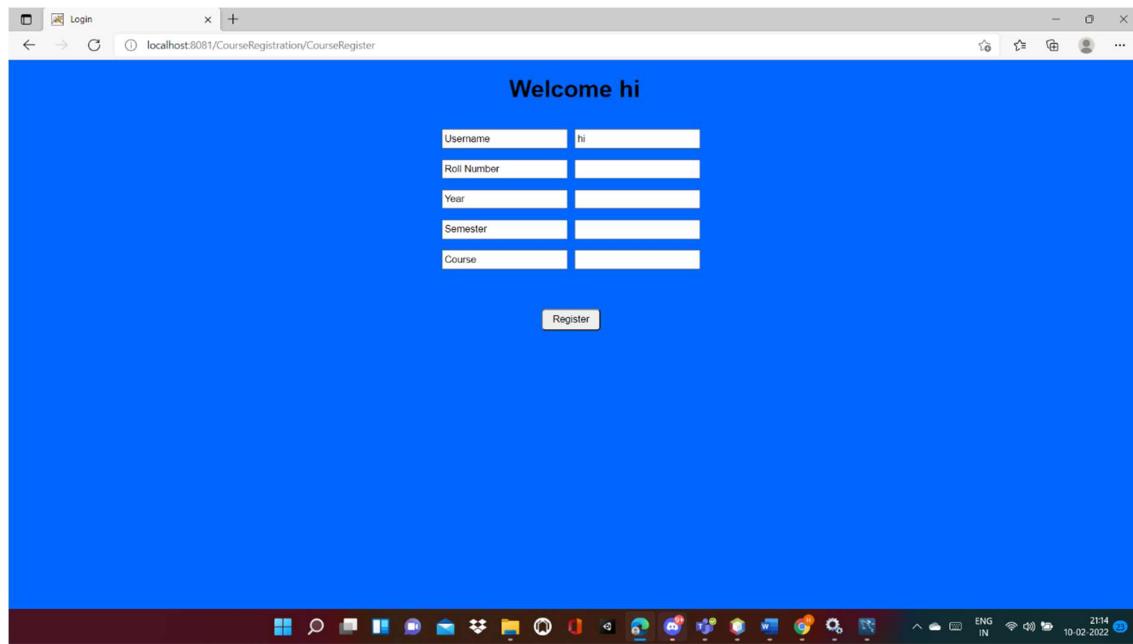


```
MySQL Shell
MySQL [localhost:33060+ ssl | students] SQL >
MySQL [localhost:33060+ ssl | students] SQL > CREATE DATABASE students;
Query OK, 0 rows affected (0.000 sec)
MySQL [localhost:33060+ ssl | students] SQL > USE students;
Default schema set to "students".
Fetching table and column names from "students" for auto-completion... Press ^C to stop.
MySQL [localhost:33060+ ssl | students] SQL > CREATE TABLE users(username VARCHAR(100) PRIMARY KEY, password VARCHAR(20));
Query OK, 0 rows affected (0.0219 sec)
MySQL [localhost:33060+ ssl | students] SQL > CREATE TABLE Student_details(username VARCHAR(100) NOT NULL, roll INT PRIMARY KEY, year INT, semester INT, FOREIGN KEY(username) REFERENCES users(username));
Query OK, 0 rows affected (0.0580 sec)
MySQL [localhost:33060+ ssl | students] SQL > CREATE TABLE registered_courses(roll INT NOT NULL, course VARCHAR(100) NOT NULL, FOREIGN KEY(roll) REFERENCES Student_details(roll));
Query OK, 0 rows affected (0.0371 sec)
MySQL [localhost:33060+ ssl | students] SQL > SHOW TABLES;
+-----+
| Tables_in_students |
+-----+
| registered_courses |
| student_details |
| users |
+-----+
1 row in set (0.0066 sec)
MySQL [localhost:33060+ ssl | students] SQL > SELECT * FROM users;
Empty set (0.0079 sec)
MySQL [localhost:33060+ ssl | students] SQL > SELECT * FROM users;
+-----+
| username | password |
+-----+
| hi       | Haee@10 |
+-----+
1 row in set (0.0030 sec)
MySQL [localhost:33060+ ssl | students] SQL >
```









```
3 rows in set (0.0066 sec)
MySQL [localhost:3306+ ssl] students SQL> SELECT * FROM users;
Empty set (0.0079 sec)
MySQL [localhost:3306+ ssl] students SQL> SELECT * FROM users;
+-----+-----+
| username | password |
+-----+-----+
| hi       | Haem@10 |
1 row in set (0.0039 sec)
MySQL [localhost:3306+ ssl] students SQL> SELECT * FROM student_details;
Empty set (0.0159 sec)
MySQL [localhost:3306+ ssl] students SQL>
```

