

# Lab 2 App Dev

106119029 Dipesh Kafle

Date: 2022-02-10

## Contents

<b>Ex No: 2</b>	<b>1</b>
Problem Statement . . . . .	1
Design . . . . .	2
Tools Used . . . . .	2
Code . . . . .	2
Screenshots of the Application . . . . .	9

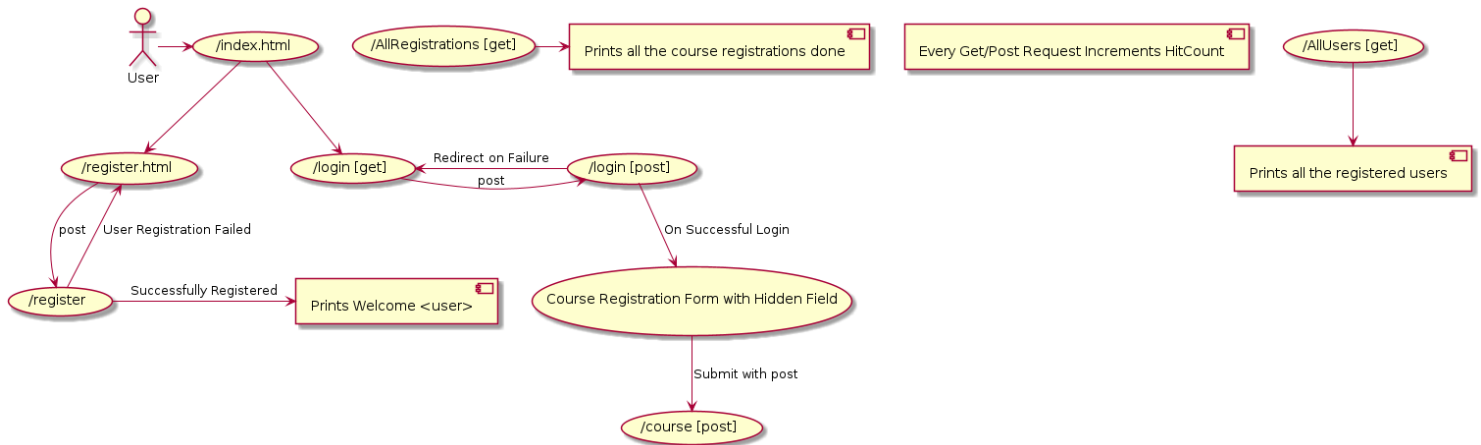
## Ex No: 2

### Problem Statement

Course Registration App

1. Create a Login HTML file with given field :
  - Username
  - Password
  - Sign Up Button
  - Sign In Button
- i. Sign Up Procedure
  - a. Write a java program to invoke servlets from the Sign Up HTML file
  - b. At the click of Submit button, the below dialog box should be displayed and data should be stored in the database.  
Welcome Username
- 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.
  - 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. **Welcome Username**
  - c. Create a dialog box that takes username from the course registration form and displays it. **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



## Tools Used

- Java
- Maven for package management and building code
- Apache Tomcat
- HTML
- Visual Studio Code for code editing

## Code

File: ./src/main/java/com/Lab2/Users.java

```
package com.Lab2;

import java.util.ArrayList;
import java.util.HashMap;

public class Users {

    public static class RegInfo {
        String coursename;
        String sem;
        String year;

        public RegInfo(String coursename, String sem, String year) {
            this.coursename = coursename;
            this.sem = sem;
            this.year = year;
        }

        @Override
        public String toString() {
            return "RegInfo [coursename=" + coursename + ", sem=" + sem
                + ", year=" + year + "]";
        }
    }

    // Usernames are mapped to values
    public static HashMap<String, String> all_users = new HashMap<>();
    // Hash of strings are mapped to strings
    public static HashMap<String, String> sessionMap = new HashMap<>();

    // HashMap of all the registrations of a user
    public static HashMap<String, ArrayList<RegInfo>> regMap = new HashMap<>();
}
```

```

package com.Lab2;

import java.io.IOException;
import java.io.PrintWriter;
import java.util.ArrayList;

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 com.Lab2.Users.RegInfo;

@WebServlet("/course")
public class Course extends HttpServlet {
    public void init() {
        if (HitCounter.hitCount == -1) {
            HitCounter.hitCount = 0;
        }
    }

    public void processRequest(HttpServletRequest request,
        HttpServletResponse response) throws IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        try {
            String userNameHash = request.getParameter("username");
            String user = Users.sessionMap.get(userNameHash);
            Users.sessionMap.remove(userNameHash);

            if (user == null) {
                out.println("<h1>You are not logged in!</h1>");
                out.println("<a href=\"login.html\">Login</a>");
                return;
            }
            String course = request.getParameter("course");
            String sem = request.getParameter("semester");
            String year = request.getParameter("year");
            RegInfo regInfo = new RegInfo(course, sem, year);
            if (Users.regMap.containsKey(user)) {
                Users.regMap.get(user).add(regInfo);
            } else {
                ArrayList<RegInfo> regInfoList = new ArrayList<RegInfo>();
                regInfoList.add(regInfo);
                Users.regMap.put(user, regInfoList);
            }

            out.println("<html lang=\"en\">");
            out.println("    <head>");
            out.println("        <meta name=\"viewport\" content=\"width=device-width, initial-scale=1.0\" />");
            out.println("        <title>Online Registration</title>");
            out.println("        <link rel=\"stylesheet\" href=\"css/main.css\" />");
            out.println("    </head>");
            out.println("    <body>");
            out.println("        <div class=\"wrapper\">");
            out.println("            <div class=\"form\">");
            out.println("                <div class=\"heading\">");

```

```

        out.println("        <h1>Welcome " + user + " </h1>");
        out.println("        <h3>Course Registered Sucessfully</h3>");
        out.println("        </div>");
        out.println("    </div>");
        out.println("    </div>");
        out.println("    </body>");
        out.println("</html>");
    } catch (Exception e) {
        System.out.println(e);
    } finally {
        out.close();
    }
}

@Override
public void doPost(HttpServletRequest req, HttpServletResponse resp)
    throws ServletException, IOException {
    HitCounter.hitCount++;
    processRequest(req, resp);
}
}
}

```

File: ./src/main/java/com/Lab2/HitCounter.java

```

package com.Lab2;

import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;

@WebServlet("/HitCounter")
public class HitCounter extends HttpServlet {
    static int hitCount = -1;

    public void init() {
        if (hitCount == -1) {
            hitCount = 0;
        }
    }

    @Override
    public void doGet(javax.servlet.http.HttpServletRequest request,
        javax.servlet.http.HttpServletResponse response)
        throws javax.servlet.ServletException, java.io.IOException {
        hitCount++;
        response.getWriter()
            .println(String.format("Number of hits: %d", hitCount));
    }
}
}

```

>File: ./src/main/java/com/Lab2/GetAllRegistrations.java

```

```java
package com.Lab2;

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;

```

```

import com.Lab2.Users.RegInfo;

@WebServlet("/AllRegistrations")
public class GetAllRegistrations extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp)
        throws ServletException, IOException {

        PrintWriter out = resp.getWriter();
        out.println("All Registrations as of now:");
        for (String uname : Users.regMap.keySet()) {
            out.println("For User:" + uname);
            for (RegInfo regInfo : Users.regMap.get(uname)) {
                out.println("\t-" + regInfo.toString());
            }
        }
    }
}

```

File: ./src/main/java/com/Lab2/AllUsers.java

```

package com.Lab2;

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;

@WebServlet("/AllUsers")
public class AllUsers extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp)
        throws ServletException, IOException {
        PrintWriter out = resp.getWriter();
        // iterate through all_users and print keys
        out.println("All Users as of now:");
        for (String key : Users.all_users.keySet()) {
            out.println(key);
        }
    }
}

```

File: ./src/main/java/com/Lab2/Login.java

```

package com.Lab2;

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;

@WebServlet("/login")

```

```

public class Login extends HttpServlet {
    public void init() {
        if (HitCounter.hitCount == -1) {
            HitCounter.hitCount = 0;
        }
    }

    public void processRequest(HttpServletRequest request,
        HttpServletResponse response) throws IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        try {
            String user = request.getParameter("username");
            String password = request.getParameter("password");
            if (Users.all_users.containsKey(user)) {
                if (Users.all_users.get(user).equals(password)) {
                    Users.sessionMap.put(Integer.toString(user.hashCode()),
                        user);
                    out.println("<html lang=\"en\">");
                    out.println("  <head>");
                    out.println(
                        "    <meta name=\"viewport\" content=\"width=device-width, initial-scale=1.0\" />");
                    out.println("    <title>Online Registration</title>");
                    out.println(
                        "    <link rel=\"stylesheet\" href=\"css/main.css\" />");
                    out.println("  </head>");
                    out.println("  <body>");
                    out.println("    <div class=\"wrapper\">");
                    out.println("      <div class=\"form\">");
                    out.println("        <div class=\"heading\">");
                    out.println("          <h1>Course Form</h1>");
                    out.println("          <h3>Welcome " + user + "</h3>");
                    out.println("        </div>");
                    out.println(
                        "        <form action=\"./course\" method=\"post\">");
                    out.println(
                        "          <label class=\"input-label hidden\"> Username </label>");
                    out.println(
                        "          <input type=\"text\" name=\"username\" class=\"input-field hidden\" value="
                        + Integer.toString(user.hashCode())
                        + "\"/>");
                    out.println(
                        "          <label class=\"input-label\"> Roll No </label>");
                    out.println(
                        "          <input type=\"text\" name=\"rollno\" class=\"input-field\" />");
                    out.println(
                        "          <label class=\"input-label\"> Year </label>");
                    out.println(
                        "          <input type=\"text\" name=\"year\" class=\"input-field\" />");
                    out.println(
                        "          <label class=\"input-label\"> Semester </label>");
                    out.println(
                        "          <input type=\"text\" name=\"semester\" class=\"input-field\" />");
                    out.println(
                        "          <label class=\"input-label\"> Course </label>");
                    out.println(
                        "          <input type=\"text\" name=\"course\" class=\"input-field\" />");
                    out.println("          <div class=\"btn-container\">");
                    out.println(
                        "            <button type=\"submit\" class=\"btn submit\">Submit</button>");
                    out.println("          </div>");

```

```

        out.println("        </form>");
        out.println("    </div>");
        out.println("</div>");
        out.println("</body>");
        out.println("</html>");
    } else {
        response.sendRedirect("login");
    }
} else {
    response.sendRedirect("login");
}
} catch (Exception e) {
    System.out.println(e);
} finally {
    out.close();
}
}

@Override
public void doPost(HttpServletRequest req, HttpServletResponse resp)
    throws ServletException, IOException {
    HitCounter.hitCount++;
    processRequest(req, resp);
}

public void doGet(HttpServletRequest req, HttpServletResponse resp)
    throws ServletException, IOException {
    HitCounter.hitCount++;
    PrintWriter out = resp.getWriter();
    out.println("<html lang=\"en\">");
    out.println("    <head>");
    out.println("        <meta name=\"viewport\" content=\"width=device-width, initial-scale=1.0\" />");
    out.println("        <title>Online Registration</title>");
    out.println("        <link rel=\"stylesheet\" href=\"css/main.css\" />");
    out.println("    </head>");
    out.println("    <body>");
    out.println("        <div class=\"wrapper\">");
    out.println("            <div class=\"form\">");
    out.println("                <div class=\"heading\">");
    out.println("                    <h1>Login</h1>");
    out.println("                    <h3> Number of Total Hits : "
        + HitCounter.hitCount + "</h3>");
    out.println("                </div>");
    out.println("                <form action=\"./login\" method=\"post\">");
    out.println("                    <label class=\"input-label\"> Username </label>");
    out.println("                    <input type=\"text\" name=\"username\" class=\"input-field\" />");
    out.println("                    <label class=\"input-label\"> Password </label>");
    out.println("                    <input type=\"password\" name=\"password\" class=\"input-field\" />");
    out.println("                    <div class=\"btn-container\">");
    out.println("                        <button type=\"submit\" class=\"btn submit\">Sign In</button>");
    out.println("                        <a href=\"./register.html\" class=\"btn\">Sign Up</a>");
    out.println("                    </div>");
    out.println("                </form>");
    out.println("            </div>");

```

```

        out.println("    </div>");
        out.println(" </body>");
        out.println("</html>");
    }
}

```

File: ./src/main/java/com/Lab2/Register.java

```

package com.Lab2;

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;

@WebServlet("/register")
public class Register extends HttpServlet {

    public void init() {
        if (HitCounter.hitCount == -1) {
            HitCounter.hitCount = 0;
        }
    }

    // stores all the users
    // public static HashMap<String, String> users = new HashMap<String,
    // String>();

    public void processRequest(HttpServletRequest request,
        HttpServletResponse response) throws IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        try {
            String user = request.getParameter("username");
            String password = request.getParameter("password");
            String confirmPassword = request.getParameter("confirm-password");
            if (Users.all_users.containsKey(user)) {
                response.sendRedirect("register.html");
            } else {
                if (password.equals(confirmPassword)) {
                    Users.all_users.put(user, password);
                    out.println("<html lang=\"en\">");
                    out.println("    <head>");
                    out.println(
                        "        <meta name=\"viewport\" content=\"width=device-width, initial-scale=1.0\" />");
                    out.println("        <title>Online Registration</title>");
                    out.println(
                        "        <link rel=\"stylesheet\" href=\"css/main.css\" />");
                    out.println("    </head>");
                    out.println("    <body>");
                    out.println("        <div class=\"wrapper\">");
                    out.println("            <div class=\"form\">");
                    out.println("                <div class=\"heading\">");
                    out.println("                    <h1>Welcome " + user + " </h1>");
                    out.println("                </div>");
                    out.println("                <div class=\"btn-container\">");
                    out.println(

```



```

        "        <a href=\"../login\" class=\"btn\">Sign In</a>");
        out.println("        </div>");
        out.println("    </div>");
        out.println(" </body>");
        out.println("</html>");
    } else {
        response.sendRedirect("register.html");
    }
}

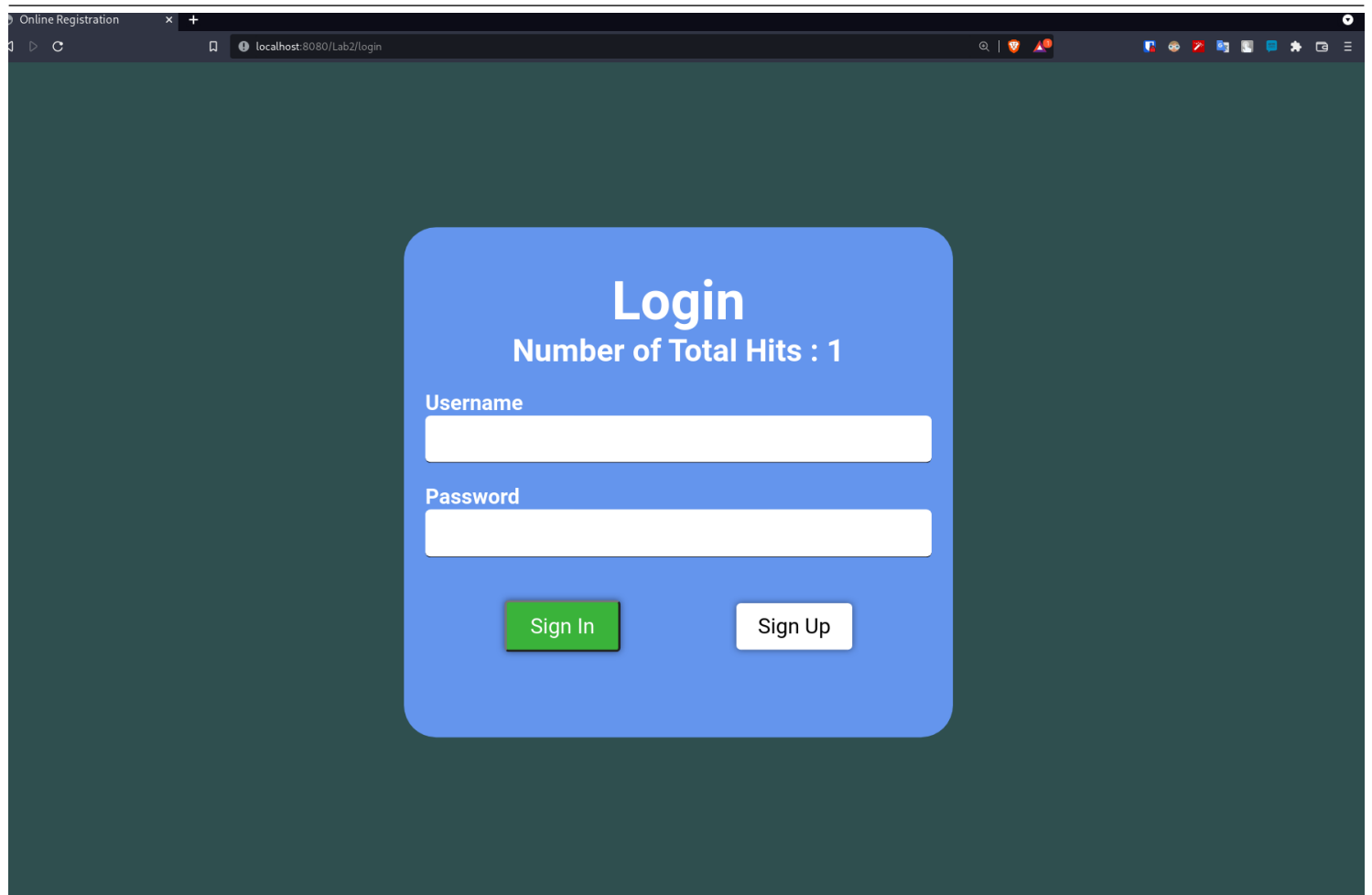
} catch (Exception e) {
    System.out.println(e);
} finally {
    out.close();
}
}

@Override
public void doPost(HttpServletRequest req, HttpServletResponse resp)
    throws ServletException, IOException {
    HitCounter.hitCount++;
    processRequest(req, resp);
}
}
}

```

## Screenshots of the Application

index.html



Online Registration x +

localhost:8080/Lab2/register.html

## Register

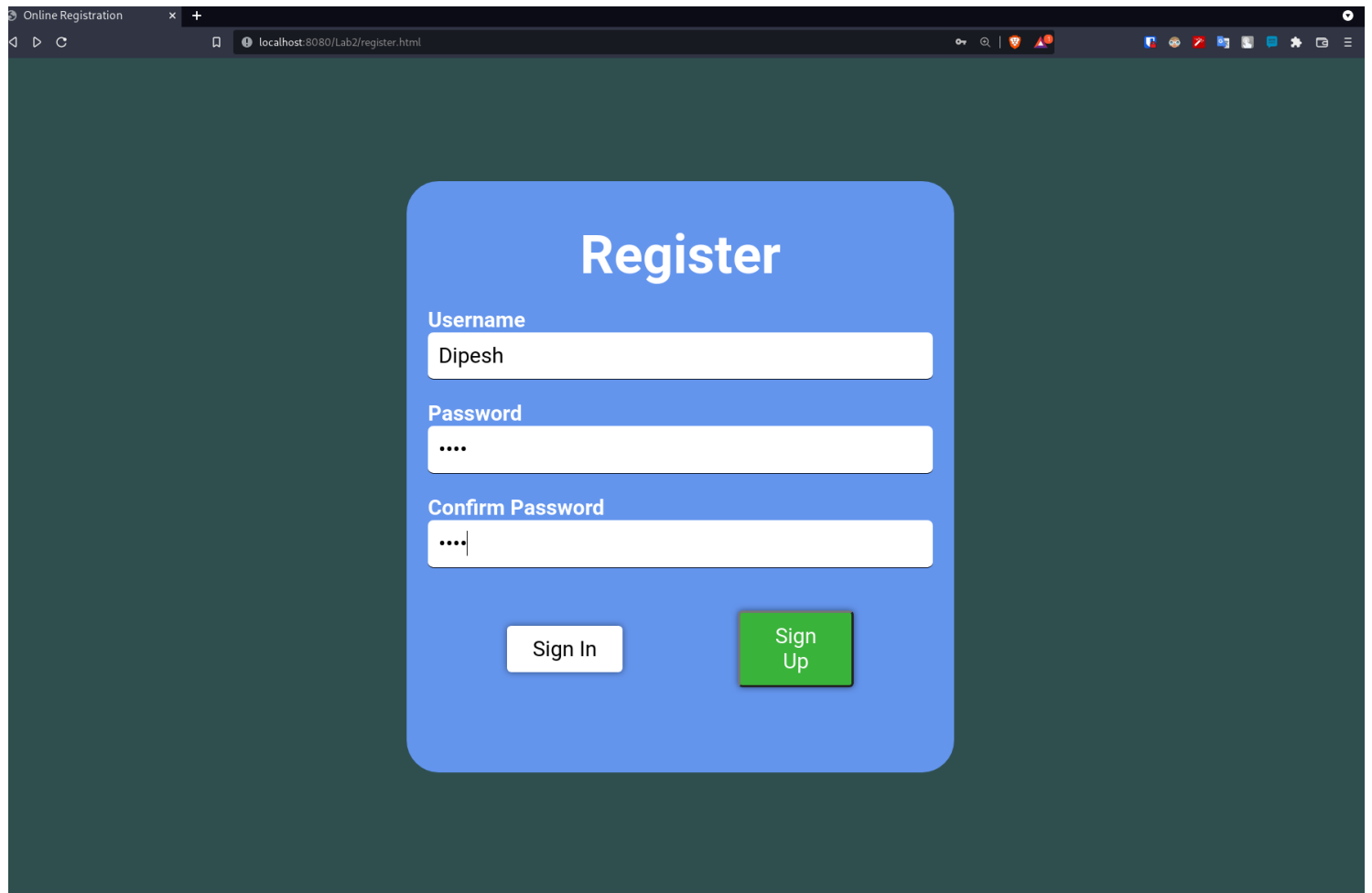
Username

Password

Confirm Password

Sign In Sign Up

## Registering User Dipesh



The screenshot shows a web browser window with a single tab titled "Online Registration". The address bar displays "localhost:8080/Lab2/register.html". The main content area features a dark teal background with a central blue rounded rectangle containing the registration form. The form is titled "Register" in large white text. It includes three input fields: "Username" with the text "Dipesh", "Password" with four dots, and "Confirm Password" with four dots and a cursor. At the bottom of the form are two buttons: a white "Sign In" button and a green "Sign Up" button.

Online Registration

localhost:8080/Lab2/register.html

# Register

Username

Dipesh

Password

....

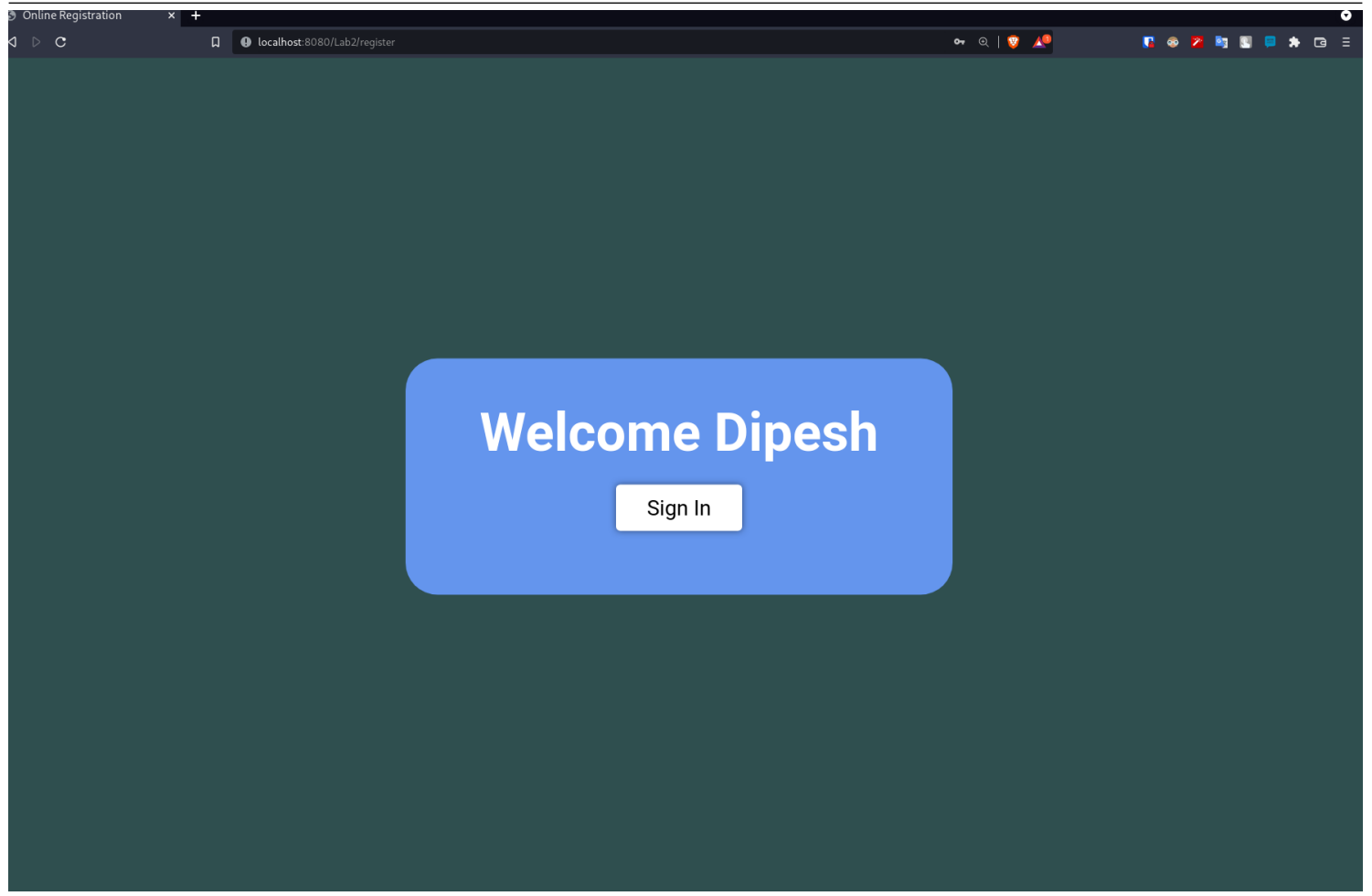
Confirm Password

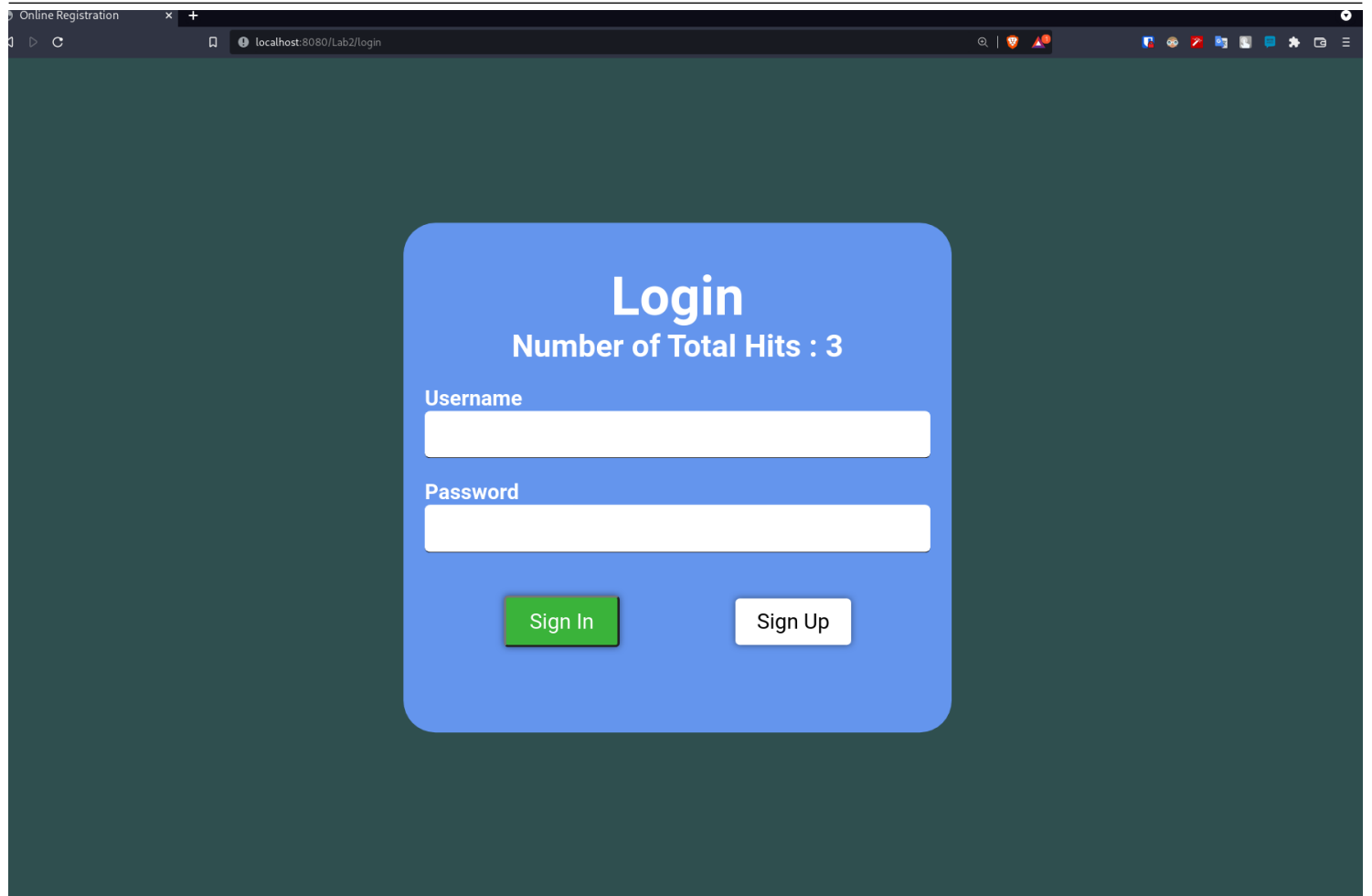
....

Sign In

Sign Up

## On Successful Registration





Online Registration x +

localhost:8080/Lab2/login

# Login

Number of Total Hits : 3

Username

Password

Sign In Sign Up

Online Registration x +

localhost:8080/Lab2/login

# Login

Number of Total Hits : 3

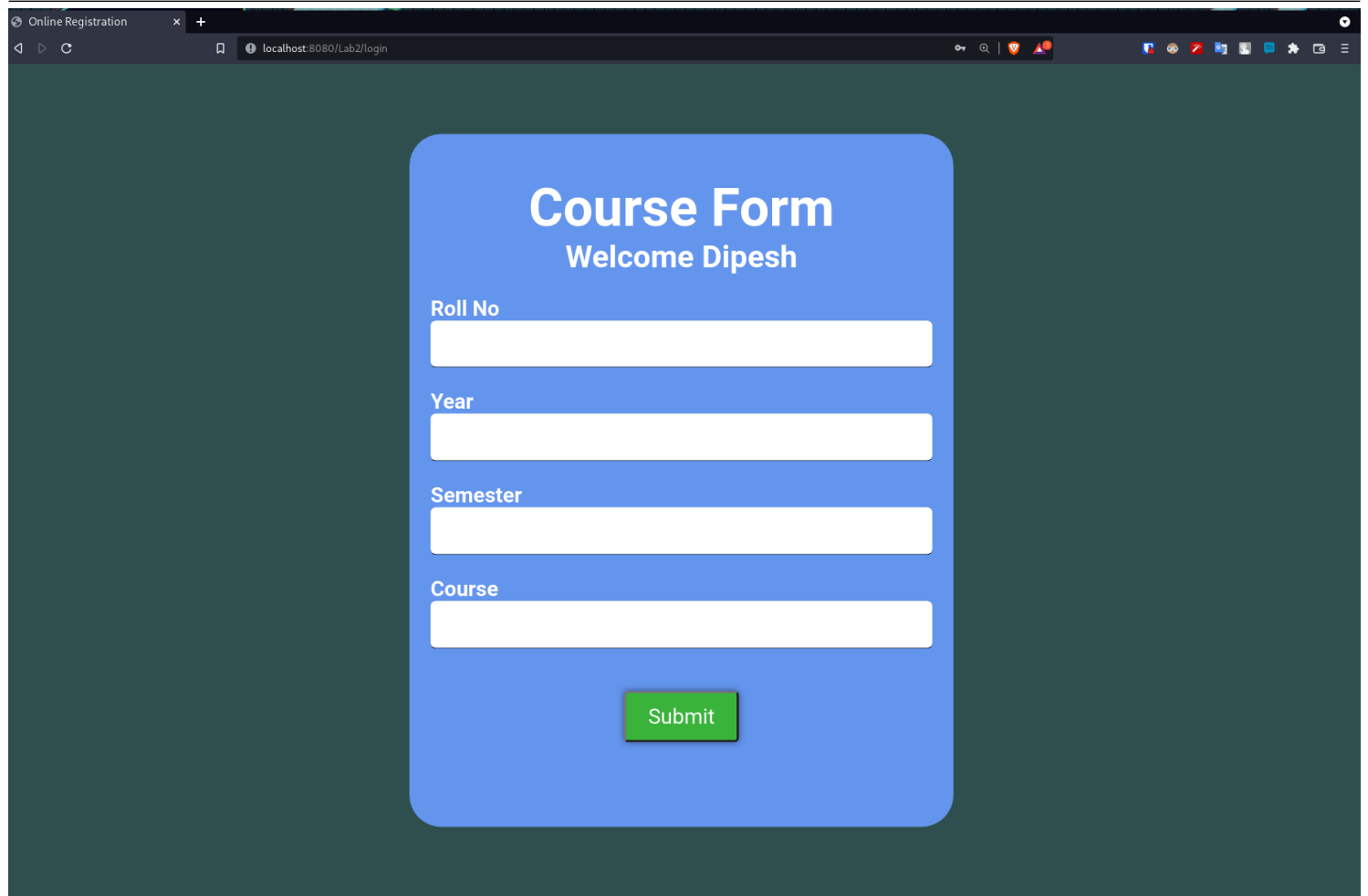
Username

Dipesh

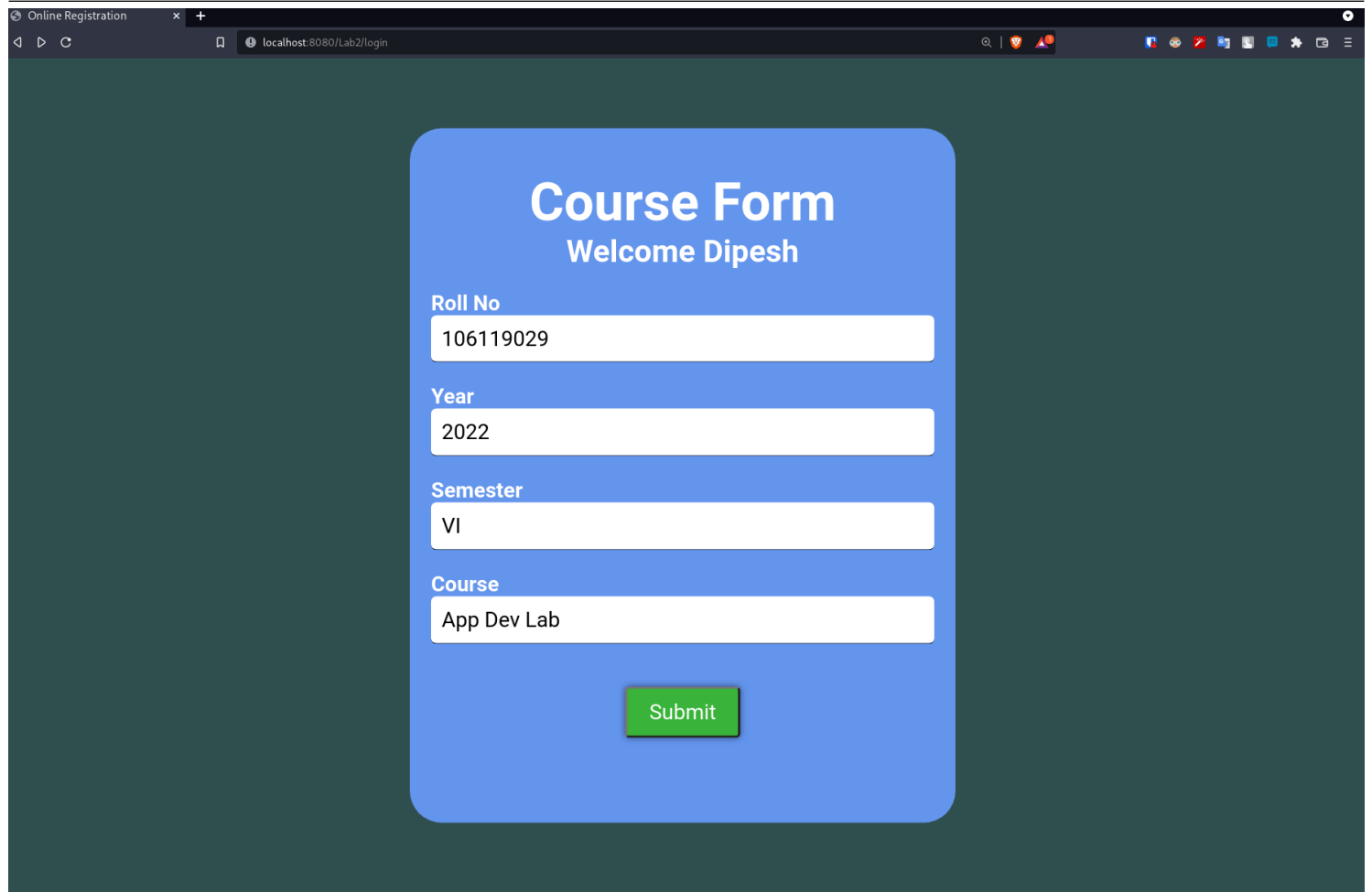
Password

....

Sign In Sign Up



The screenshot shows a web browser window with the title "Online Registration". The address bar displays "localhost:8080/Lab2/login". The main content area features a blue rounded rectangle centered on a dark teal background. Inside the rectangle, the text "Course Form" is displayed in a large, bold, white font, followed by "Welcome Dipesh" in a smaller, regular white font. Below this, there are four white input fields stacked vertically, each with a label in white text: "Roll No", "Year", "Semester", and "Course". At the bottom of the blue rectangle is a green rectangular button with the word "Submit" in white text.



Online Registration x +

localhost:8080/Lab2/login

# Course Form

Welcome Dipesh

Roll No

Year

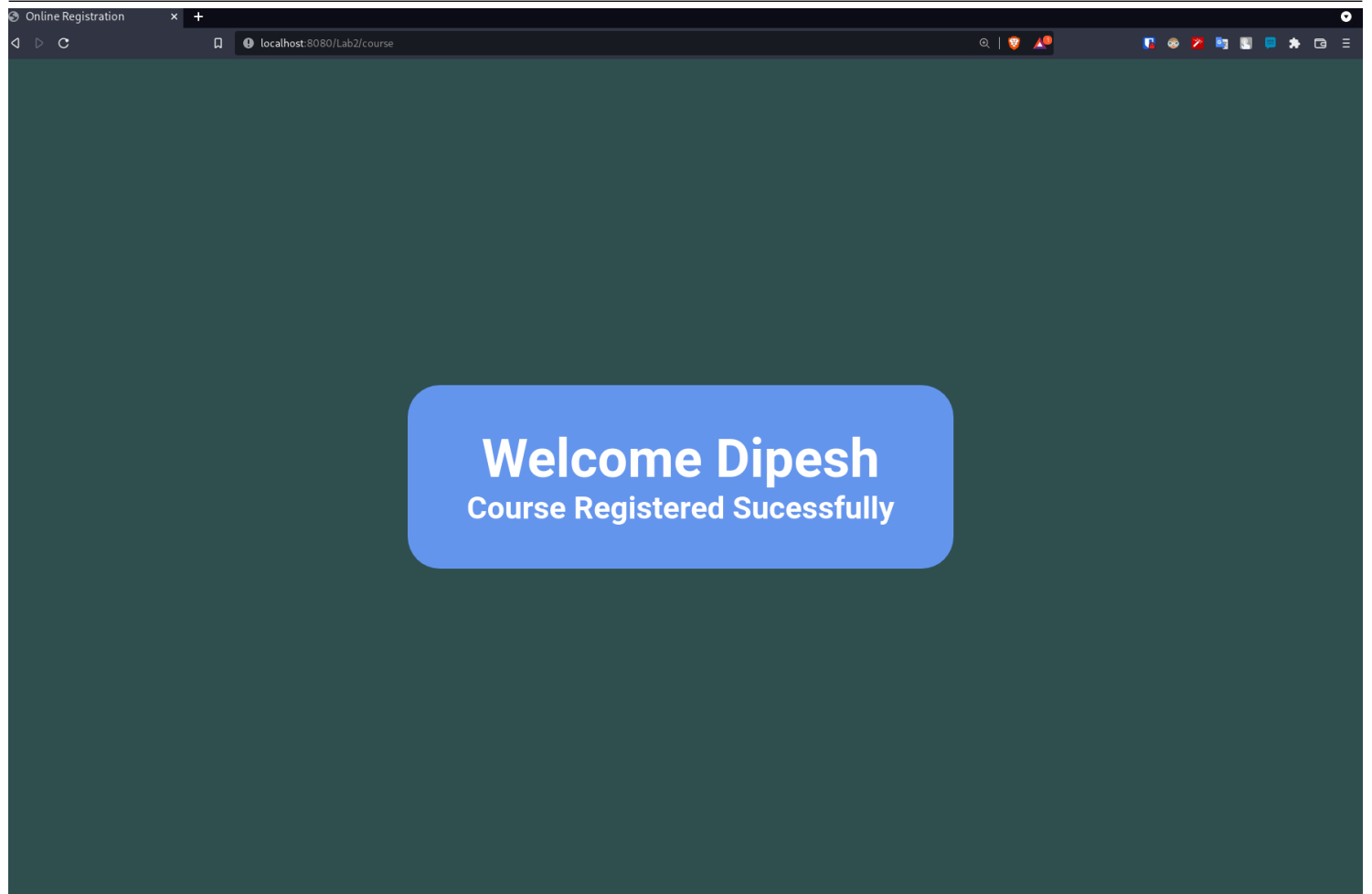
Semester

Course

Submit



## Successful Registration



---

A get route to see all the registered users

---



All Users as of now:  
Dipesh

---

A get route to see all the courses registered

---



All Registrations as of now:  
For User:Dipesh  
-RegInfo [coursename=App Dev Lab, sem=VI, year=2022]