Additional Experiments

Ex 1	Method Overriding

Aim

To implement method overriding in java.

Definitions

Method Overriding

Method overriding in Java is a feature of object-oriented programming that allows a subclass to provide a specific implementation for a method that is already defined in its superclass. This is a key aspect of runtime polymorphism, enabling different behavior for methods with the same signature based on the actual type of the object at runtime.

Procedure

Open NetBeans IDE.

To create a Project go to File Menu → choose New Project → choose Java from Categories →choose Java Application from Projects →click next →specify the project name as Main → click Finish.

Type the following codes in Main.java,

Main.java

```
class Animal {
    public void makeSound() {
        System.out.println("Animal makes a sound");
    }
}


class Dog extends Animal {
    @Override
    public void makeSound() {
        System.out.println("Dog barks");
    }
}
```

```
public class Main {
    public static void main(String[] args) {
        Animal myAnimal = new Animal();
        Animal myDog = new Dog(); // Polymorphism

        myAnimal.makeSound(); // Output: Animal makes a sound
        myDog.makeSound();    // Output: Dog barks (overridden method is called)
    }
}
```

Right click on Main.java → choose Run File.

Output

```
run:
Animal makes a sound
Dog barks
BUILD SUCCESSFUL (total time: 0 seconds)
```

Result

Thus, method overriding concept has been implemented in java.

Ex 2	Responsive Web Page using HTML

Aim

To develop a responsive web page using HTML.

Definitions

HTML

Hypertext Markup Language is the standard markup language for documents designed to be displayed in a web browser. It defines the content and structure of web content. It is often assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.

Responsive Web Page

A responsive web page is a web page designed and developed to adapt its layout and content dynamically to provide an optimal viewing experience across various devices and screen sizes. This ensures that the website remains visually appealing, functional, and user-friendly whether accessed on a desktop computer, tablet, or mobile phone.

Procedure

Open Notepad++.

Type the following codes and save the file as Responsive.html,

Responsive.html

```
<!DOCTYPE html>

<html>

<head>

<meta name="viewport" content="width=device-width, initial-scale=1.0">

</head>

<body>


<h1 style="font-size:10vw;">Responsive Text</h1>


<p style="font-size:5vw;">Resize the browser window to see how the text size scales.</p>


<p style="font-size:5vw;">Use the "vw" unit when sizing the text. 10vw will set the size to 10% of the viewport width.</p>
```

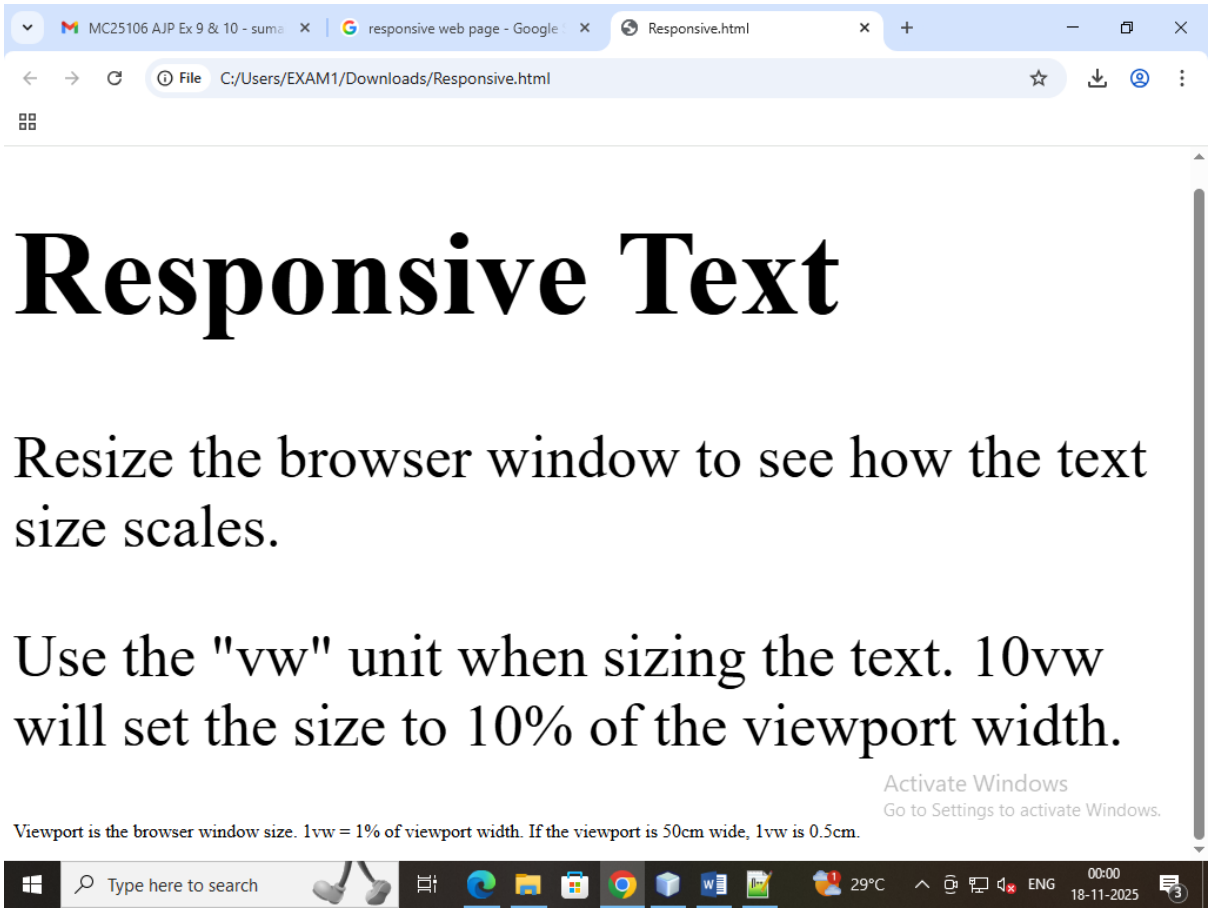
Viewport is the browser window size. 1vw = 1% of viewport width. If the viewport is 50cm wide, 1vw is 0.5cm.

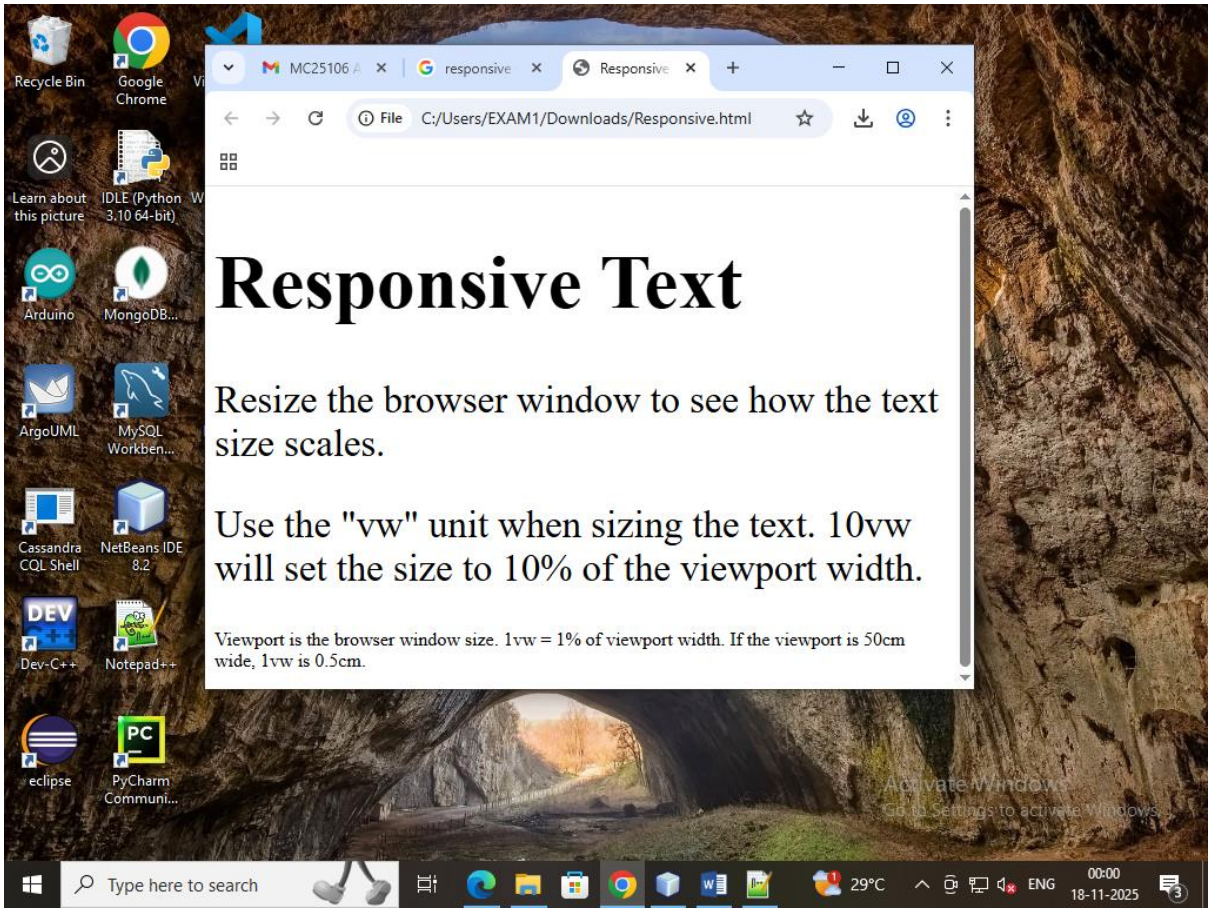
</body>

</html>

Right click on Responsive.html → choose open with → Google Chrome.

Output





Result

Thus, a responsive web page has been developed using HTML.

Ex 3	Session Management

Aim

To implement and manage sessions in servlet.

Definitions

Session

In Java web development, a "session" refers to a mechanism for maintaining stateful communication between a client (typically a web browser) and a server over the inherently stateless HTTP protocol. It allows the server to remember a user across multiple requests during a single visit to a web application.

Session Management

Session management in Java web applications addresses the stateless nature of HTTP by providing a mechanism to maintain user-specific data across multiple requests within a single user's interaction with the application. This "session" allows the server to remember a user and their activities, enabling features like user logins, shopping carts, and personalized content.

Procedure

Open NetBeans IDE.

To create a Project go to File Menu → choose New Project → choose Java Web from Categories →choose Web Application from Projects →click next →specify the project name as Session → Click Next → Click Next → click Finish.

Right Click on Web pages Folder → new → Jsp → specify the file name as login → click finish → type the following codes:

login.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Login Page</title>
</head>
<body>
```

```
<form action="login" method="post">

<h3>Enter Login details</h3>

<table>
<tr>
<td>User Name:</td>
<td><input type="text" name="usName" /></td>
</tr>
<tr>
<td>User Password:</td>
<td><input type="password" name="usPass" /></td>
</tr>

</table>

<input type="submit" value="Login" />

</form>
</body>
</html>
```

Right Click on Web pages Folder → new → Jsp → specify the file name as welcome → click finish → type the following codes:

welcome.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<html>
```

```
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Welcome Page</title>
</head>
<body>

   <form action="logout" method="get">

      <h2>
         Hello
         <%=request.getParameter("name")%>!
      </h2>
      <h3>Welcome..</h3>

      <br> <input type="submit" value="Logout" />
   </form>

</body>
</html>
```

Right Click on Source Packages Folder → new → Servlet → specify the class name as LoginServlet → click next → click finish → type the following codes:

LoginServlet.java

```
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
```

```
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

@WebServlet("/login")
public class LoginServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    public LoginServlet() {
        super();
    }

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

        // Set the content type of response to "text/html"
        response.setContentType("text/html");

        // Get the print writer object to write into the response
        PrintWriter out = response.getWriter();

        // Get the session object
        HttpSession session = request.getSession();

        // Get User entered details from the request using request parameter.
        String user = request.getParameter("usName");
        String password = request.getParameter("usPass");

        // set the user in this session and redirect to welcome page
        if (password.equals("geek")) {
```

```
            session.setAttribute("user", user);
            response.sendRedirect("welcome.jsp?name=" + user);
        }
        // If the password is wrong, display the error message on the login page.
        else {
            RequestDispatcher rd = request.getRequestDispatcher("login.jsp");
            out.println("<font color=red>Password is wrong.</font>");
            rd.include(request, response);
        }
        // Close the print writer object.
        out.close();
    }
}
```

Right Click on Source Packages Folder → new → Servlet → specify the class name as LogoutServlet → click next → click finish → type the following codes:

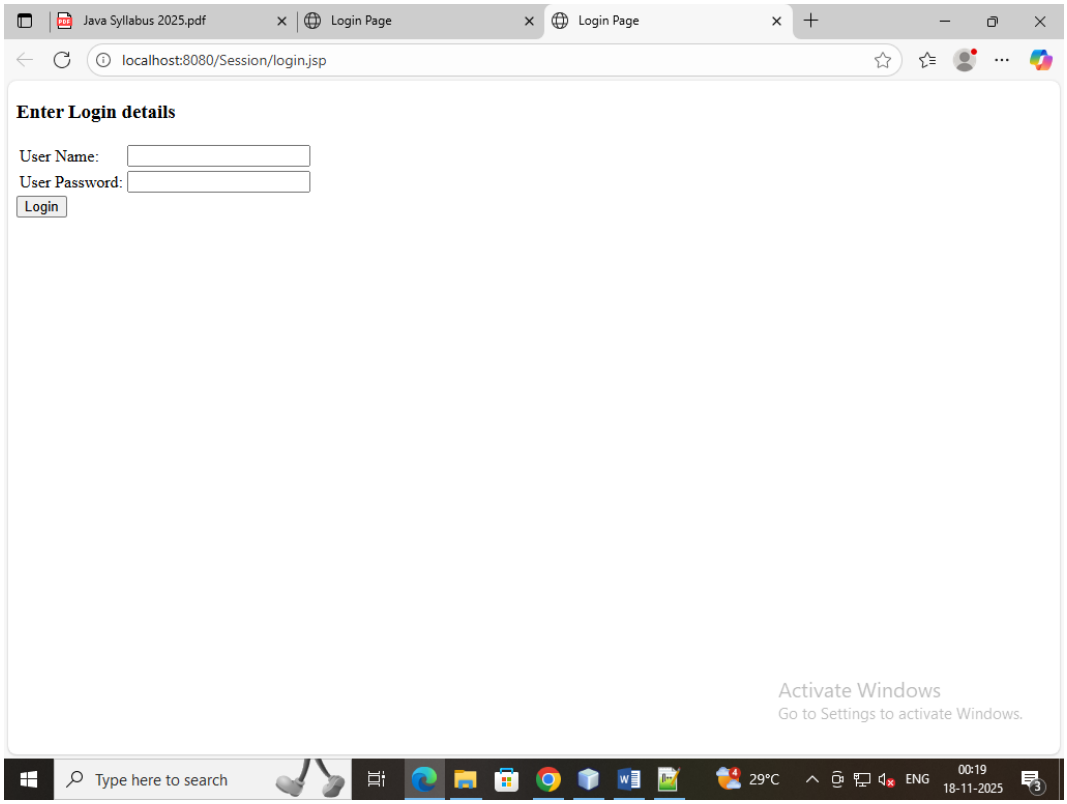
LogoutServlet.java

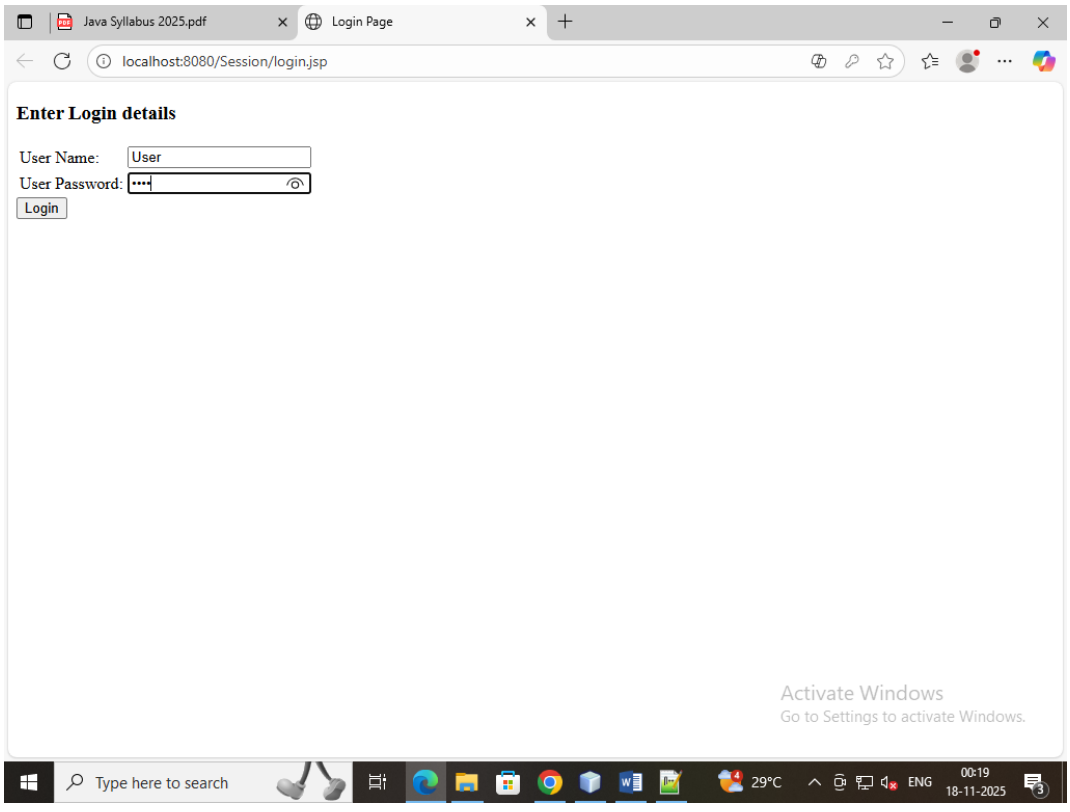
```
import java.io.IOException;
import java.io.PrintWriter;

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("/logout")
public class LogoutServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    public LogoutServlet() {
```

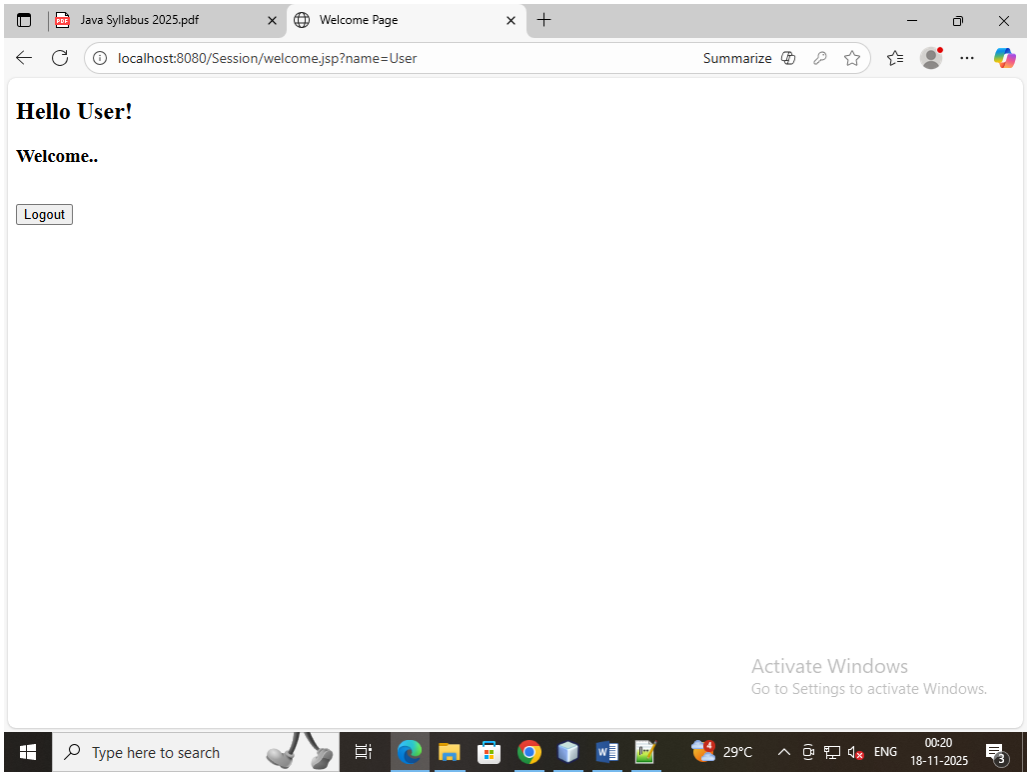
```
        super();
    }

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

        // Get the print writer object to write into the response
        PrintWriter out = response.getWriter();

        // Set the content type of response to "text/html"
        response.setContentType("text/html");

        // For understanding purpose, print the session object in the console before invalidating the session.
        System.out.println("Session before invalidate: "+ request.getSession(false));

        // Invalidate the session.
        request.getSession(false).invalidate();

        // Print the session object in the console after invalidating the session.
        System.out.println("Session after invalidate: "+ request.getSession(false));

        out.println("Thank you! You are successfully logged out.");
        out.close();
    }

}
```

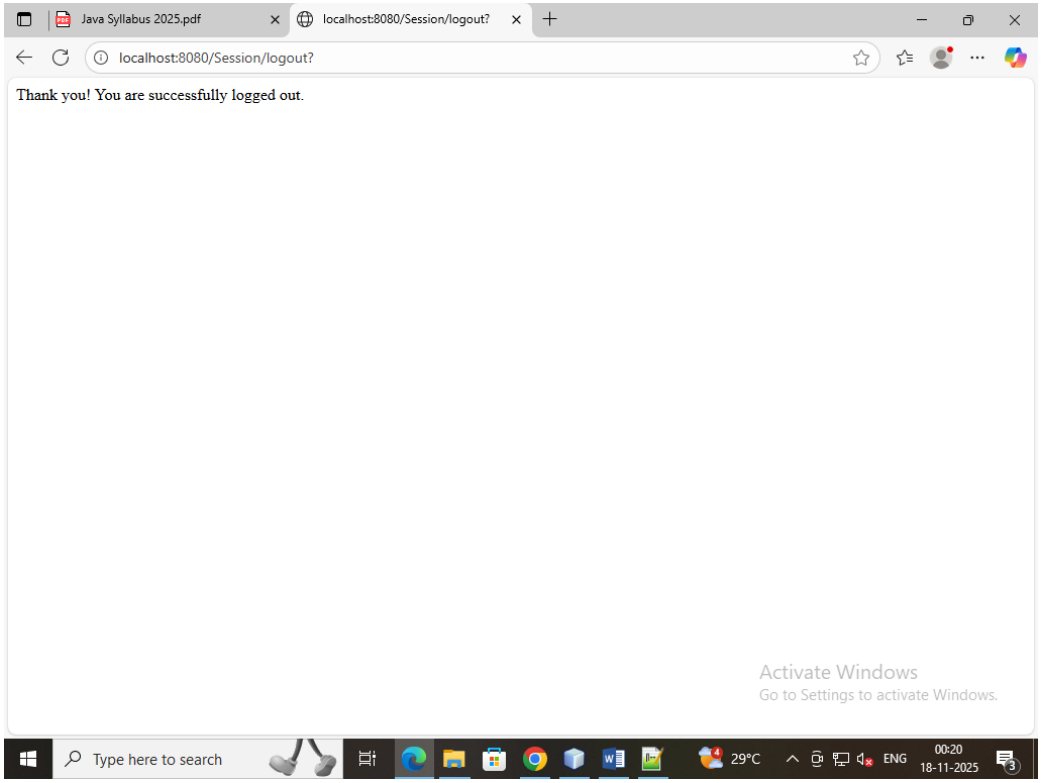
Right click on login.jsp → choose Run File.

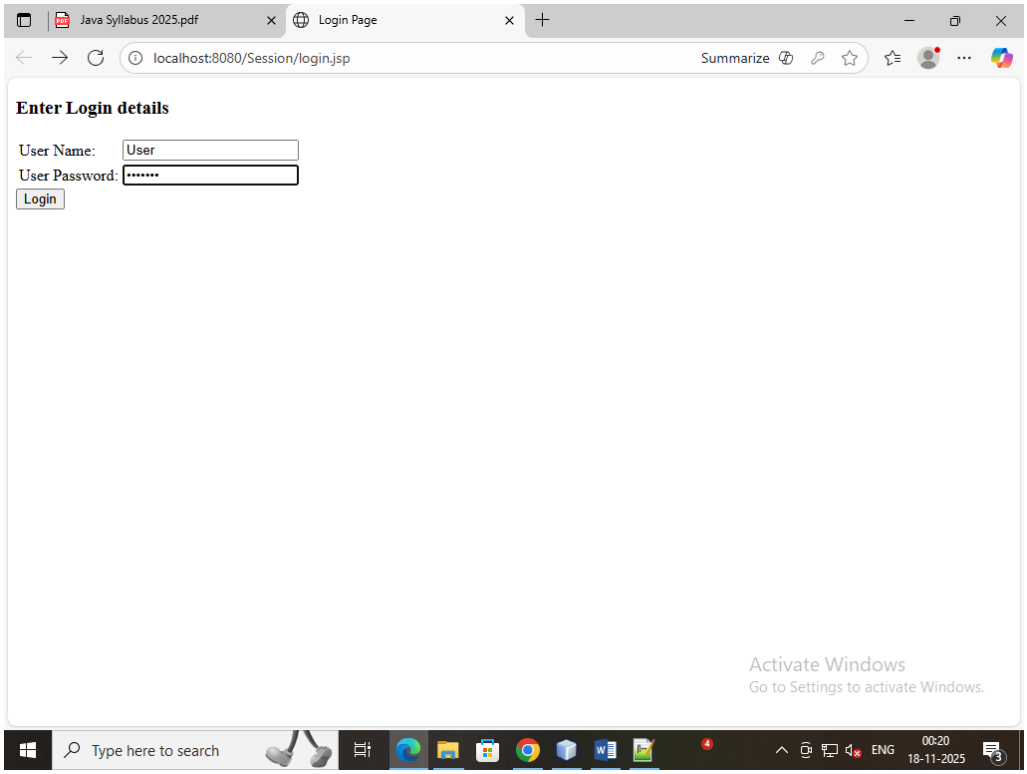
Output

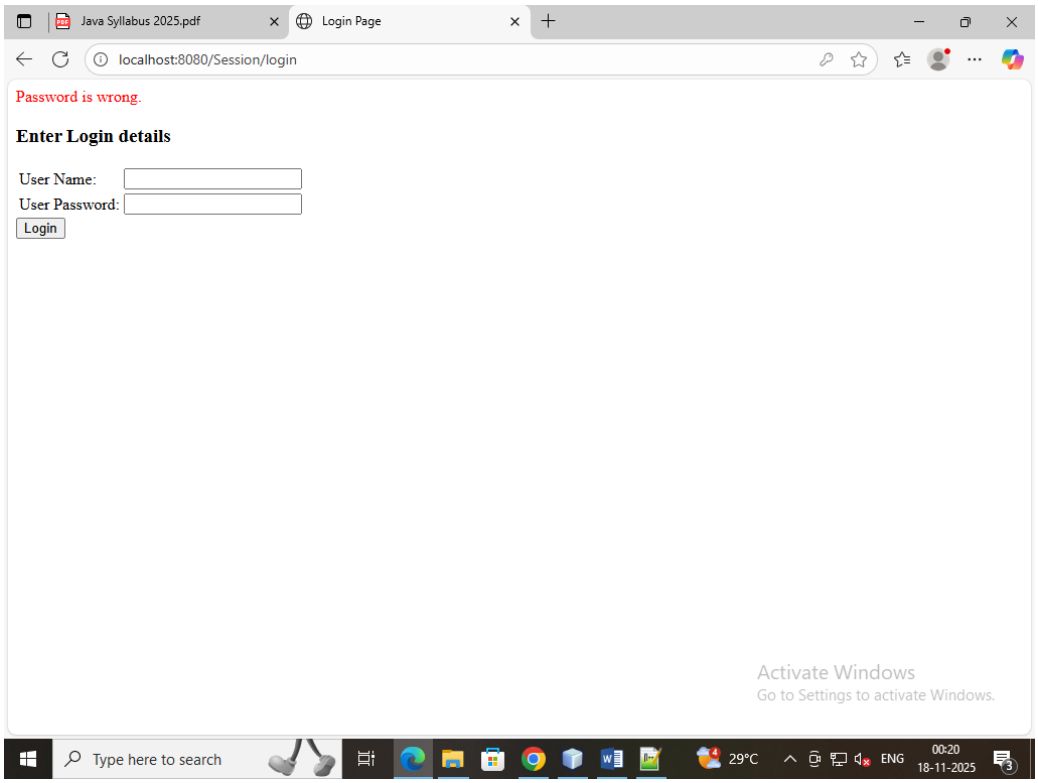

Java Syllabus 2025.pdf
Login Page
Login Page
localhost:8080/Session/login.jsp
Enter Login details
User Name:
User Password:
Login
Activate Windows
Go to Settings to activate Windows.
Type here to search
29°C
ENG
00:19
18-11-2025


Java Syllabus 2025.pdf
Login Page
localhost:8080/Session/login.jsp
Enter Login details
User Name:
User
User Password:
Login
Activate Windows
Go to Settings to activate Windows.
Type here to search
29°C
ENG
00:19
18-11-2025


Java Syllabus 2025.pdf
Welcome Page
localhost:8080/Session/welcome.jsp?name=User
Summarize
Hello User!
Welcome..
Logout
Activate Windows
Go to Settings to activate Windows.
Type here to search
29°C
ENG
00:20
18-11-2025


Java Syllabus 2025.pdf
localhost:8080/Session/logout?
localhost:8080/Session/logout?
Thank you! You are successfully logged out.
Activate Windows
Go to Settings to activate Windows.
Type here to search
29°C
ENG
00:20
18-11-2025





Result

Thus, a session management has been implemented using Java servlets.

Ex 4	Dynamic Web Application using JSP

Aim

To create a dynamic web application using JSP.

Definitions

Web Application

A web application is a software program that runs on a remote server and is accessed via a web browser over the internet, without needing to be installed on a user's device. It is designed for user interaction, allowing users to send and receive data to perform tasks like online shopping, managing documents, or using social media.

Dynamic Web Application

A dynamic web application is a web application that generates content and presentation in real-time, adapting to user input, server-side logic, and other variables. Unlike static web pages, which deliver pre-built content, dynamic applications offer interactivity and responsiveness by fetching data from a server and updating the page without requiring a full reload.

JSP

Jakarta Server Pages (JSP; formerly JavaServer Pages) is a collection of technologies that helps software developers create dynamically generated web pages based on HTML, XML, SOAP, or other document types.

Procedure

Open NetBeans IDE.

To create a Project go to File Menu → choose New Project → choose Java Web from Categories →choose Web Application from Projects →click next →specify the project name as DynamicWebAPP → Click Next → Click Next → click Finish.

Right Click on Web Pages Folder → new → Jsp → specify the file name as dynamic → click finish → type the following codes:

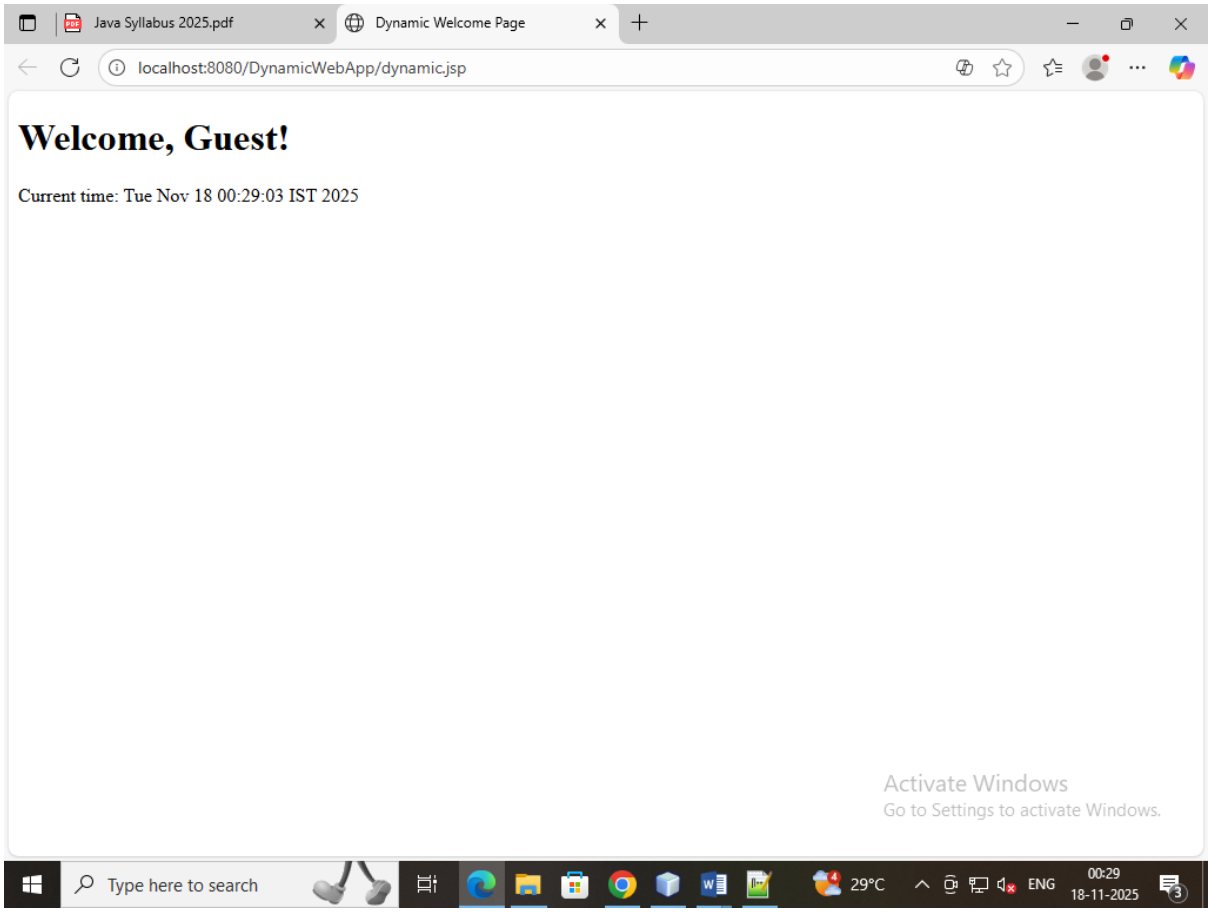
dynamic.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<!DOCTYPE html>

<html>

<head>

   <title>Dynamic Welcome Page</title>

</head>
```

```
<body>
    <h1>Welcome, <%= request.getParameter("username") != null ? request.getParameter("username") : "Guest" %>!</h1>
    <p>Current time: <%= new java.util.Date() %></p>
</body>
</html>
```

Right click on dynamic.jsp → choose Run File.

Output



Result

Thus, a dynamic web application has been developed using JSP.

Ex 5	Responsive Web Design using Bootstrap

Aim

To design a responsive web page using Bootstrap.

Definitions

Bootstrap

Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains HTML, CSS and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

Responsive Web Page

A responsive web page is a web page designed and developed to adapt its layout and content dynamically to provide an optimal viewing experience across various devices and screen sizes. This ensures that the website remains visually appealing, functional, and user-friendly whether accessed on a desktop computer, tablet, or mobile phone.

Procedure

Open Notepad++.

Type the following codes and save the file as bootstrap.html,

bootstrap.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <!-- Required meta tags -->
    <meta charset="utf-8" />
    <meta name="viewport"
        content="width=device-width,
                initial-scale=1" />

    <!-- Bootstrap CSS -->
    <link
      href=
"https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta2/dist/css/bootstrap.min.css"
      rel="stylesheet"
```

```
      integrity=
"sha384-BmbxuPwQa2lc/FVzBcNJ7UAyJxM6wuqIj61tLrc4wSX0szH/Ev+nYRRuWlolflfl"
      crossorigin="anonymous"
    />
    <link rel="stylesheet"
        href="style.css" />
    <link rel="preconnect"
        href="https://fonts.gstatic.com/" />
    <link
      href=
"https://fonts.googleapis.com/css2?family=Roboto+Condensed&display=swap"
      rel="stylesheet"
    />
    <title>GFG</title>
  </head>
  <body>
    <section id="navbar">
      <nav class="navbar navbar-expand-lg navbar-light">
        <div class="container-fluid">
          <a class="navbar-brand" href="#" href="www.google.com">
            click me
          </a>
          <button
            class="navbar-toggler"
            type="button"
            data-bs-toggle="collapse"
            data-bs-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent"
            aria-expanded="false"
            aria-label="Toggle navigation"
```

```
>
  <span class="navbar-toggler-icon"></span>
 </button>
 <div class="collapse navbar-collapse"
     id="navbarSupportedContent">
  <ul class="navbar-nav m-auto">
   <li class="nav-item">
    <a class="nav-link active"
      aria-current="page"
      href="#">Home</a>
   </li>
   <li class="nav-item">
    <a class="nav-link"
      href="#service">Services</a>
   </li>
   <li class="nav-item">
    <a class="nav-link"
      href="#about">About Us</a>
   </li>
   <li class="nav-item">
    <a class="nav-link"
      href="#product">Products</a>
   </li>
   <li class="nav-item">
    <a class="nav-link"
      href="#social">Contact Us</a>
   </li>
  </ul>
 </div>
</div>
```

```
    </nav>
  </section>

  <!-- banner -->
  <section id="banner">
    <div class="container-fluid" id="banner-container">
      <div class="row" id="banner-row">
        <div class="col-md-6" id="banner-col">
          <h3>
            BEST PROFESSIONAL WEBSITE DESIGN
            SOFTWARE DEVELOPMENT COMPANY
          </h3>

<p>
            The fastest way to grow your business with the leader in
            Technology
          </p>

          <div class="d-grid gap-2 d-md-flex justify-content-center">
            <a class="btn btn-primary"
              href="#"
              role="button">Contact Us</a>
          </div>
        </div>
        <div class="col-md-6" id="banner-col2">
          <img
            class="img-responsive rounded mx-auto d-block"
            src="images/gfg.png"
            alt=""
          />
```

```
        </div>
       </div>
      </div>
    </section>

    <!-- services -->
    <section id="service">
      <h1 class="text-center">SERVICES</h1>
      <div class="container-fluid" id="service-container">
        <div class="row" id="banner-row">
          <div class="col-md-4" id="service-col1">
            <img
              src="images/gfg.png"
              class="img-fluid rounded mx-auto d-block"
              alt="..."
            />
            <h3>Website Design</h3>

<p>
              User Experience Design.
              Website Content Strategy.
              Cross Browser
              and Platform Testing.
            </p>

          </div>
          <div class="col-md-4" id="service-col2">
            <img
              src="images/gfg.png"
              class="img-fluid rounded mx-auto d-block"
```

```
          alt="..."
         />
         <h3>Bulk SMS</h3>

<p>
          1.Toll Free Number
          2. IVR
          3. Virtual Number
          4. Political or any
          Voice Broadcasting
         </p>

        </div>
        <div class="col-md-4" id="service-col3">
         <img
          src="images/gfg.png"
          class="img-fluid rounded mx-auto d-block"
          alt="..."
         />
         <h3>Payment Gateways</h3>

<p>
          PayU India is the flagship company of
           Naspers group which is a $25
          Billion internet and media conglomerate
           listed on London and
          Johannesburg stock exchanges respectively.
         </p>

        </div>
```

```
    </div>
  </div>
</section>
<hr />

<!-- about Us -->
<section id="about">
  <h1 class="text-center">About Us</h1>
  <div class="container-fluid" id="about-container">
    <div class="row" id="banner-row">
      <div class="col-md-6" id="about-col">
        <h3>Why Us</h3>
        <ul>
          <li>
            Probuz is all about Delivering High
            Quality web design and development
            services, Cost effective and
            reliable solutions.
          </li>
          <li>SCHOOL/COLLEGE MANAGEMENT SOFTWARE
              (CAMPUS PRO)</li>
          <li>
            Let us take care of your Business needs.
             Customer Productivity is our Priority.
          </li>
          <li>Our expertise in Business includes</li>
        </ul>
      </div>
      <div class="col-md-6" id="banner-col2">
        <img
```

```
          class="img-responsive rounded mx-auto d-block"
          src="images/gfg.png"
          alt=""
        />
      </div>
    </div>
  </div>
</section>
<hr />
<!-- product -->

<section id="product">
  <h1 class="text-center">Our Products</h1>
  <div class="container-fluid" id="product-container">
    <div class="row" id="banner-row">
      <div class="col-md-6" id="about-col">
        <img
          class="img-responsive rounded mx-auto d-block"
          src="images/gfg.png"
          alt=""
        />
      </div>
      <div class="col-md-6" id="product-col2">
        <h3>Product List</h3>

        <ul>
          <li>CLINIC MANAGMENT SYSTEM</li>
          <li>SCHOOL/COLLEGE MANAGEMENT
              SOFTWARE (CAMPUS PRO)</li>
          <li>SERVICE MANAGEMENT SOFTWARE</li>
```

```
          <li>E-COMMERCE WEBSITE</li>
        </ul>
      </div>
    </div>
  </div>
</section>
<hr />
<!-- social -->
<section id="social">
  <h1 class="text-center">Get In Touch</h1>
  <div class="d-grid gap-2 d-md-flex justify-content-center">
    <div class="row align-items-center" id="social-row">
      <div class="col-md-4 social-col">
        <a href=""
          ><img
            class="img-responsive rounded mx-auto d-block"
            src="images/gfg.png"
            alt=""
        /></a>
      </div>
      <div class="col-md-4 social-col">
        <a href=""
          ><img
            class="img-responsive rounded mx-auto d-block"
            src="images/icons8-instagram-64.png"
            alt=""
        /></a>
      </div>
      <div class="col-md-4 social-col">
        <a href=""
```

```
            ><img
              class="img-responsive rounded mx-auto d-block"
              src="images/icons8-twitter-64.png"
              alt=""
            /></a>
          </div>
        </div>
      </div>
    </section>

    <!-- footer -->
    <section id="footer">
      <section id="banner">
        <div class="container-fluid" id="banner-container">
          <div class="row" id="banner-row">
            <div class="col-md-4" id="footer-col1">
              <h3>My Website</h3>

<p>
                At XYZ we believe that customers should
                always get easy-to-use, best in the kind
                 and fast services.xyz has achieved
                 standards which helps customer to
                 achieve satisfaction and realize
                  value for their hard earned money.
              </p>

            </div>
            <div class="col-md-4" id="footer-col2">
              <h3>Contact Us</h3>
```

```
<p>Call Us- 1800-121-6532</p>


<p>Email Us- support@xyz.com</p>

        </div>

        <div class="col-md-4" id="footer-col2">
          <h3>Subscribe To Newsletter</h3>
          <form>
            <div class="mb-3">
              <input
                type="email"
                placeholder="Enter Your Email"
                class="form-control"
                id="exampleInputEmail1"
                aria-describedby="emailHelp"
              />
              <div id="emailHelp"
                  class="form-text">
                We'll never share your email with anyone else.
              </div>
            </div>
            <button type="submit"
                  class="btn btn-primary">
                  Submit
            </button>
          </form>
        </div>
```

```
        </div>
      </div>
    </section>
  </section>

  <!-- Optional JavaScript; choose one of the two! -->

  <!-- Option 1: Bootstrap Bundle with Popper -->
  <script
    src=
"https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta2/dist/js/bootstrap.bundle.min.js"
    integrity=
"sha384-
b5kHyXgcpbZJO/tY9Ul7kGkf1S0CWuKcCD38l8YkeH8z8QjE0GmW1gYU5S9FOnJ0"
    crossorigin="anonymous"
  ></script>
 </body>
</html>
```

Open new file in Notepad++, type the following codes and save the file as style.css,

style.css

```
*{
  margin: 0;
  padding: 0;
  font-family: 'Roboto Condensed', sans-serif;
}

/* navbar */

.navbar-nav{
  margin-right: 0 !important;
```

```
    padding-right: 100px;
}

.navbar{
    background-color: #0a193d;
    color: white !important;
}

.nav-item a{
    color: white !important;
}

.nav-item{
    padding-left: 2px;
}

.navbar-brand{
    color: white !important;
    padding-left: 100px;
}

#navbar button{
    color: white !important;
}

/* banner */

#banner-container{
    background-color: #0a193d;
    color: white !important;
```

```
    padding-top: 80px;
    padding-bottom: 80px;

}

#banner-row img{
    max-width: 70%;
    height: auto;
    display: block;
    padding-left: 30px;
}

#banner-row h3, p{
    padding-left: 20px;
    padding-top: 20px;
    text-align: center;
}

#banner-row a{
    background-color: white !important;
    color: black !important;
    border: none;
    margin-left: 20px;
    margin-top: 20px;

}
#banner-col{
    padding-left: 20px;
}
/* service */
```

```
#service{
    padding-top: 80px;
    padding-bottom: 80px;
}

#service h1{
    padding-bottom: 70px;
}

/* about */

#about{
    padding-top: 80px;
    padding-bottom: 80px;
}

#about h1{
    padding-bottom: 70px;
}

#about-col ul{
    padding-top: 50px;
    padding-left: 50px;
}

#about-col ul li{
    padding-top: 15px;

}
```

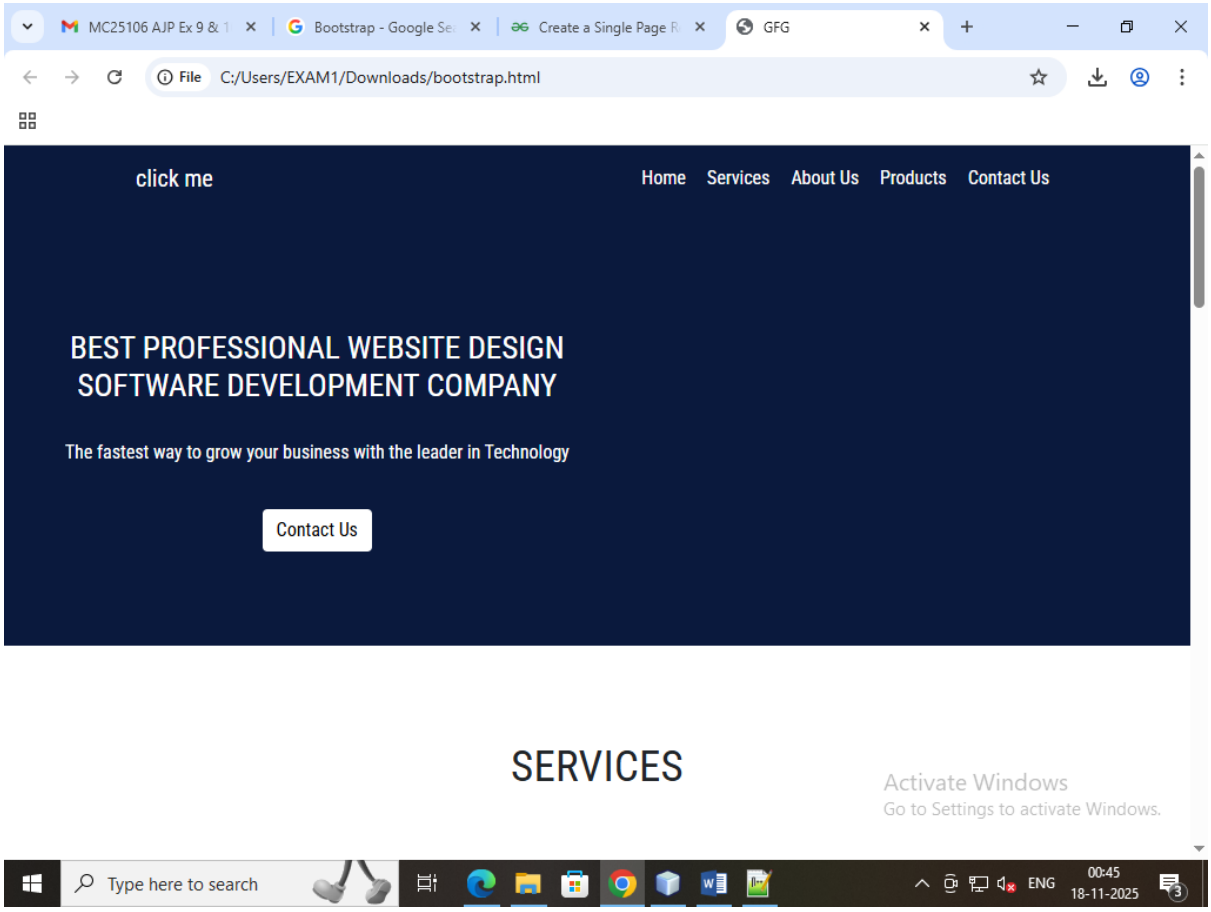
```
/* product */

#product{
    padding-top: 80px;
    padding-bottom: 80px;
}

#product h1{
    padding-bottom: 70px;
}

#product-col2 ul{
    padding-top: 90px;
}

#product-col2 ul li{
    padding-top: 15px;
}

/* social */

#social{
    padding-top: 80px;
    padding-bottom: 80px;
}

#social h1{
    padding-bottom: 70px;
}
```

```
.social-col a:hover img{
  transform: translateY(-10px);
}

#social-row{
   flex-direction: row;
}

/* footer */

.mb-3{
 padding-top: 10px;
}



/* media */
@media only screen and (max-width: 987px){
   .navbar-brand{
       padding-left: 0px;
   }
}

@media only screen and (max-width: 768px){
   #banner-row img{
       padding-top: 20px;
   }

  .social-col{
      width: 33%;
  }
```

}

Right click on bootstrap.html → choose open with → Google Chrome.

Output



Result

Thus, a responsive web page has been designed using Bootstrap.