

Program 1

What is Frontend? Write a note on HTML, CSS and JavaScript.

The frontend refers to the part of a website or web application that users interact with directly. It is everything the user experiences in their browser — the layout, design, buttons, text, animations, forms, and images. Frontend development involves building and optimizing these visible parts of a website or application to ensure usability, accessibility, and performance across devices and screen sizes.

Frontend development typically uses three core technologies: HTML, CSS, and JavaScript. Together, these tools allow developers to structure content, style it, and make it interactive.

HTML (HyperText Markup Language)

HTML is the backbone of any webpage. It provides the structure and content of the web. Every element you see on a page — headings, paragraphs, images, links, and lists — is defined using HTML tags. It uses a system of nested elements, with each element represented by tags such as `<h1>`, `<p>`, ``, and so on. HTML alone does not provide visual styling or behavior; its role is strictly to outline content and semantic meaning.

Example:

```
<h1>Welcome to My Website</h1>
```

```
<p>This is a sample paragraph of text.</p>
```

CSS (Cascading Style Sheets)

CSS is used for styling the HTML elements. It controls the layout, colors, fonts, margins, spacing, and responsive behavior of a website. By separating style from content, CSS enables a clean structure and better maintenance of code. CSS can be written inline (within HTML), internally (within `<style>` tags), or externally (in a separate `.css` file).

Example:

```
h1 {  
  color: blue;  
  font-size: 32px;  
}
```

CSS also supports media queries for responsive design, allowing websites to look good on all screen sizes, from phones to desktops.

JavaScript

JavaScript is a programming language that brings interactivity and dynamic behavior to web pages. It allows developers to update content in real-time, validate forms, create animations, control multimedia, and much more. JavaScript runs in the browser, making it possible to enhance user experience without constantly reloading pages.

Example:

```
document.getElementById("myBtn").addEventListener("click", function() {  
    alert("Button clicked!");  
});
```

JavaScript is also used with frontend frameworks and libraries like React, Vue.js, and Angular, which help build complex and fast user interfaces.

Together, HTML, CSS, and JavaScript form the foundation of frontend web development. HTML structures the content, CSS styles it, and JavaScript makes it interactive. A skilled frontend developer understands how to use all three efficiently to create responsive, accessible, and engaging websites and web apps.

Program 2

Using HTML tags, design your own curriculum vitae.

CODE :

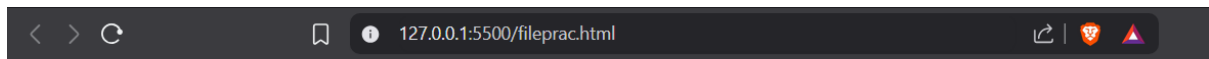
```
<!DOCTYPE html>
<html>
<head>
  <title>Kumar Gaurav - CV</title>
</head>
<body>
  <h1>Kumar Gaurav</h1>
  <p><strong>Email:</strong> kumar@example.com</p>
  <p><strong>Phone:</strong> +91-9876543210</p>

  <h2>Education</h2>
  <ul>
    <li>MCA (2024-2026), USICT, GGSIPU</li>
    <li>BCA, GGSIPU</li>
    <li>12th, Kendriya Vidyalaya</li>
  </ul>

  <h2>Skills</h2>
  <ul>
    <li>HTML, CSS, JavaScript</li>
    <li>React, Web3.js</li>
    <li>Java, Python</li>
  </ul>

  <h2>Projects</h2>
  <ul>
    <li>Secure File Storage using IPFS</li>
    <li>Ethereum Wallet Dashboard using Web3.js and React</li>
  </ul>
</body>
</html>
```

OUTPUT :



Kumar Gaurav

Email: kumar@example.com

Phone: +91-9876543210

Education

- MCA (2024–2026), USICT, GGSIPU
- BCA, GGSIPU
- 12th, Kendriya Vidyalaya

Skills

- HTML, CSS, JavaScript
- React, Web3.js
- Java, Python

Projects

- Secure File Storage using IPFS
- Ethereum Wallet Dashboard using Web3.js and React

Program 3

Using HTML Tags, redesign the homepage of GGSIP University.

CODE :

```
<> fileprac.html > ...
1  <!DOCTYPE html>
2  <html>
3  <head>
4  |   <title>GGSIPU University</title>
5  </head>
6  <body>
7  |   <h1>Guru Gobind Singh Indraprastha University</h1>
8  |   <nav>
9  |       <a href="#">Home</a> |
10 |       <a href="#">About Us</a> |
11 |       <a href="#">Departments</a> |
12 |       <a href="#">Contact</a>
13 |   </nav>
14 |   <h2>Welcome to GGSIPU</h2>
15 |   <p>Empowering students through high-quality education and research.</p>
16 |   <footer>
17 |       <p>© GGSIPU 2025</p>
18 |   </footer>
19 </body>
20 </html>
21
```

OUTPUT :



Program 4

Write an XML Program to display Student profile having age like student roll no, name, age, semester, email id, phone number, department name, apply and validate using DTD.

CODE :

student.xml :

```
student.xml
1  <?xml version="1.0"?>
2  <!DOCTYPE student SYSTEM "student.dtd">
3  <student>
4      <rollno>1</rollno>
5      <name>gaurav</name>
6      <age>20</age>
7      <semester>4</semester>
8      <email>Gaurav@example.com</email>
9      <phone>9876543210</phone>
10     <department>CSE</department>
11 </student>
12
```

student.dtd:

```
student.dtd
1  <!ELEMENT student (rollno, name, age, semester, email, phone, department)>
2  <!ELEMENT rollno (#PCDATA)>
3  <!ELEMENT name (#PCDATA)>
4  <!ELEMENT age (#PCDATA)>
5  <!ELEMENT semester (#PCDATA)>
6  <!ELEMENT email (#PCDATA)>
7  <!ELEMENT phone (#PCDATA)>
8  <!ELEMENT department (#PCDATA)>
9  |
```

OUTPUT :

< > ↻

File D:/web%20dev%20here/student.xml

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<student>
  <rollno>1</rollno>
  <name>gaurav</name>
  <age>20</age>
  <semester>4</semester>
  <email>Gaurav@example.com</email>
  <phone>9876543210</phone>
  <department>CSE</department>
</student>
```

Program 5

Write a JavaScript Program to check whether an input number is palindrome number or not.

CODE :

```
fileprac.html > ...
1  <!DOCTYPE html>
2  <html>
3  <head>
4  |   <title>Palindrome Checker</title>
5  </head>
6  <body>
7  |   <h1>Palindrome Number Checker</h1>
8  |   <input type="number" id="num">
9  |   <button onclick="checkPalindrome()">Check</button>
10 |   <p id="result"></p>
11 |
12 |   <script>
13 |       function checkPalindrome() {
14 |           let num = document.getElementById("num").value;
15 |           let rev = num.split("").reverse().join("");
16 |           if (num == rev) {
17 |               document.getElementById("result").innerText = num + " is a palindrome.";
18 |           } else {
19 |               document.getElementById("result").innerText = num + " is not a palindrome.";
20 |           }
21 |       }
22 |   </script>
23 </body>
24 </html>
25 |
```

OUTPUT :

232

Check

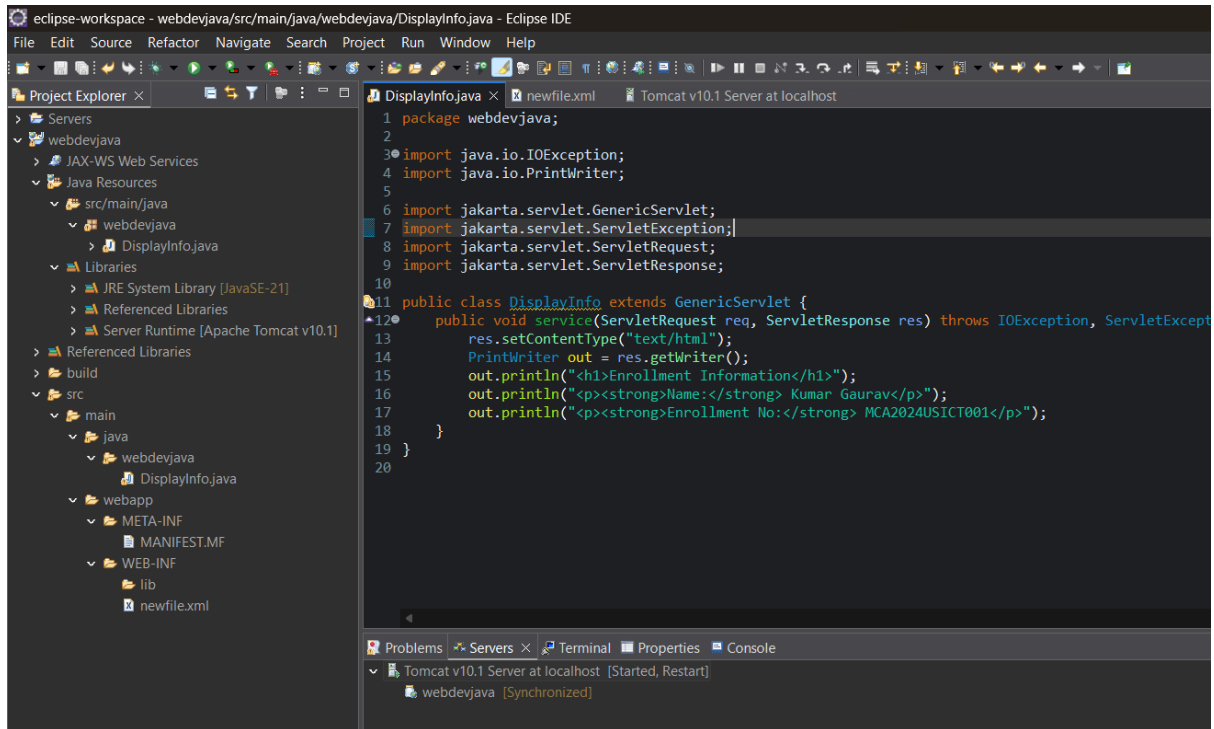
232 is a palindrome.

Program 6

Write a Generic Servlet program to display your own Enrollment number and Name using Apache Tomcat server.

CODE :

Java File



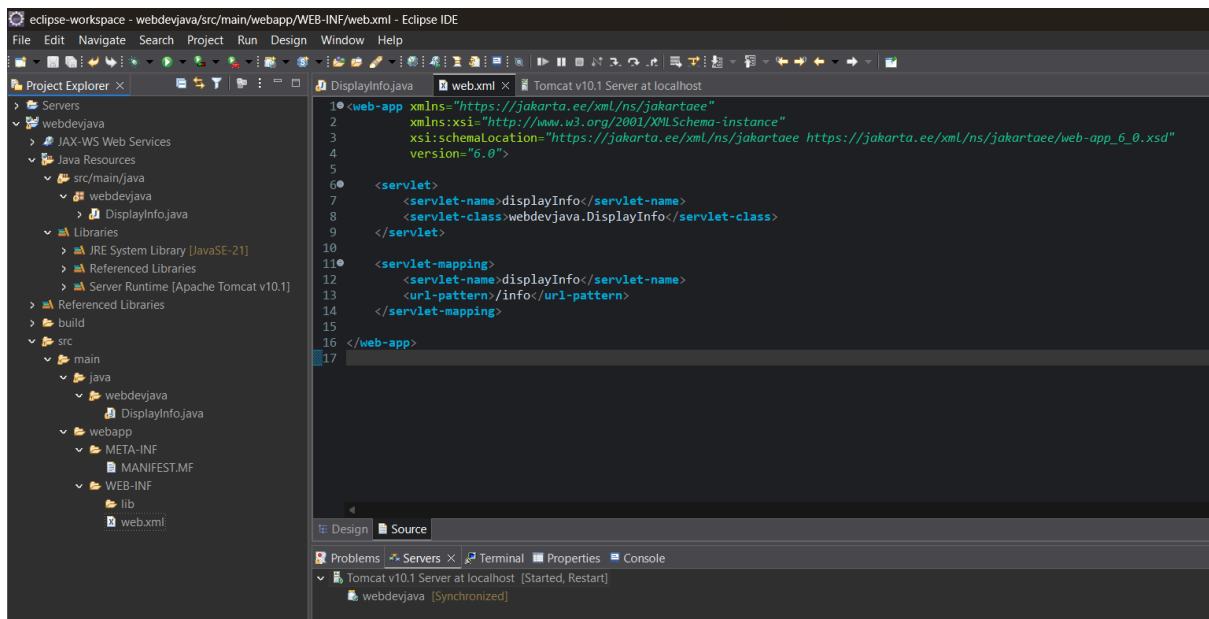
```
eclipse-workspace - webdevjava/src/main/java/webdevjava/DisplayInfo.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer
Servers
webdevjava
  JAX-WS Web Services
  Java Resources
  src/main/java
    webdevjava
      DisplayInfo.java
  Libraries
    JRE System Library [JavaSE-21]
    Referenced Libraries
    Server Runtime [Apache Tomcat v10.1]
  Referenced Libraries
  build
  src
    main
      java
        webdevjava
          DisplayInfo.java
      webapp
      META-INF
      MANIFEST.MF
      WEB-INF
        lib
        newfile.xml

DisplayInfo.java
1 package webdevjava;
2
3 import java.io.IOException;
4 import java.io.PrintWriter;
5
6 import jakarta.servlet.GenericServlet;
7 import jakarta.servlet.ServletException;
8 import jakarta.servlet.ServletRequest;
9 import jakarta.servlet.ServletResponse;
10
11 public class DisplayInfo extends GenericServlet {
12     public void service(ServletRequest req, ServletResponse res) throws IOException, ServletException {
13         res.setContentType("text/html");
14         PrintWriter out = res.getWriter();
15         out.println("<h1>Enrollment Information</h1>");
16         out.println("<p><strong>Name:</strong> Kumar Gaurav</p>");
17         out.println("<p><strong>Enrollment No:</strong> MCA2024USICT001</p>");
18     }
19 }
20

Problems Servers Terminal Properties Console
Tomcat v10.1 Server at localhost [Started, Restart]
webdevjava [Synchronized]
```

Web.xml



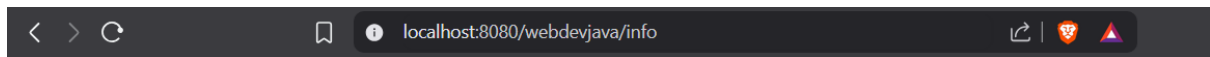
```
eclipse-workspace - webdevjava/src/main/webapp/WEB-INF/web.xml - Eclipse IDE
File Edit Navigate Search Project Run Design Window Help

Project Explorer
Servers
webdevjava
  JAX-WS Web Services
  Java Resources
  src/main/java
    webdevjava
      DisplayInfo.java
  Libraries
    JRE System Library [JavaSE-21]
    Referenced Libraries
    Server Runtime [Apache Tomcat v10.1]
  Referenced Libraries
  build
  src
    main
      java
        webdevjava
          DisplayInfo.java
      webapp
      META-INF
      MANIFEST.MF
      WEB-INF
        lib
        web.xml

web.xml
1 <web-app xmlns="https://jakarta.ee/xml/ns/jakartaee"
2     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3     xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd"
4     version="6.0">
5
6     <servlet>
7         <servlet-name>displayInfo</servlet-name>
8         <servlet-class>webdevjava.DisplayInfo</servlet-class>
9     </servlet>
10
11     <servlet-mapping>
12         <servlet-name>displayInfo</servlet-name>
13         <url-pattern>/info</url-pattern>
14     </servlet-mapping>
15
16 </web-app>
17

Design Source
Problems Servers Terminal Properties Console
Tomcat v10.1 Server at localhost [Started, Restart]
webdevjava [Synchronized]
```

OUTPUT :



Enrollment Information

Name: Kumar Gaurav

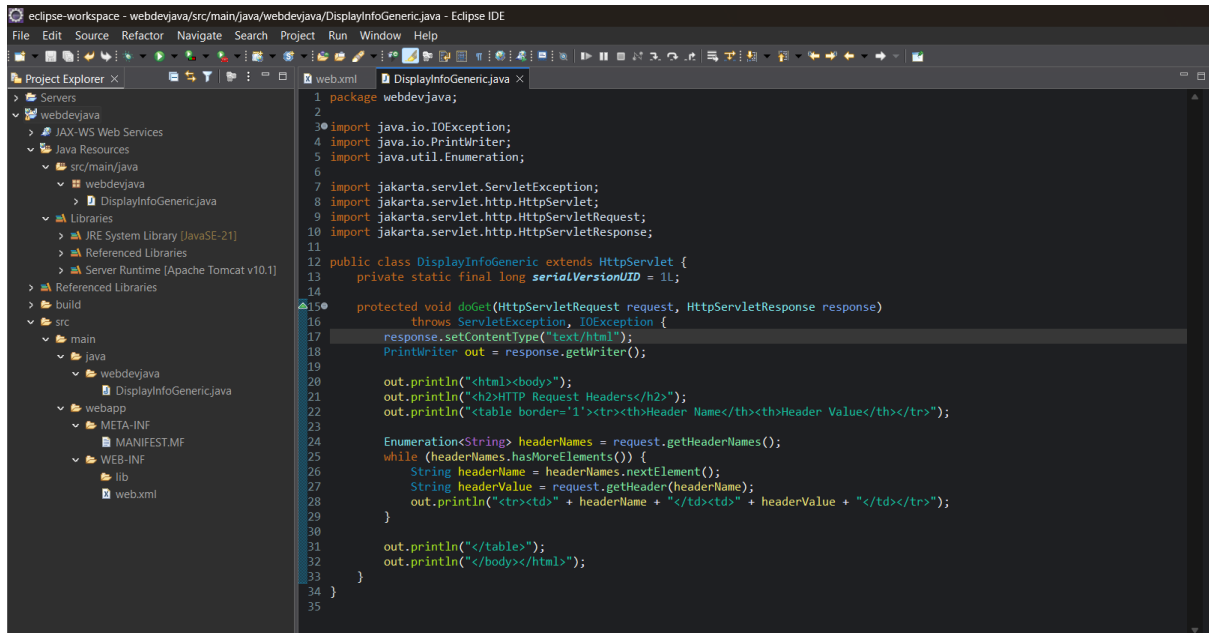
Enrollment No: MCA2024USICT001

Program 7

Write a HTTP Servlet program to display all the HTTP Request Header parameters.

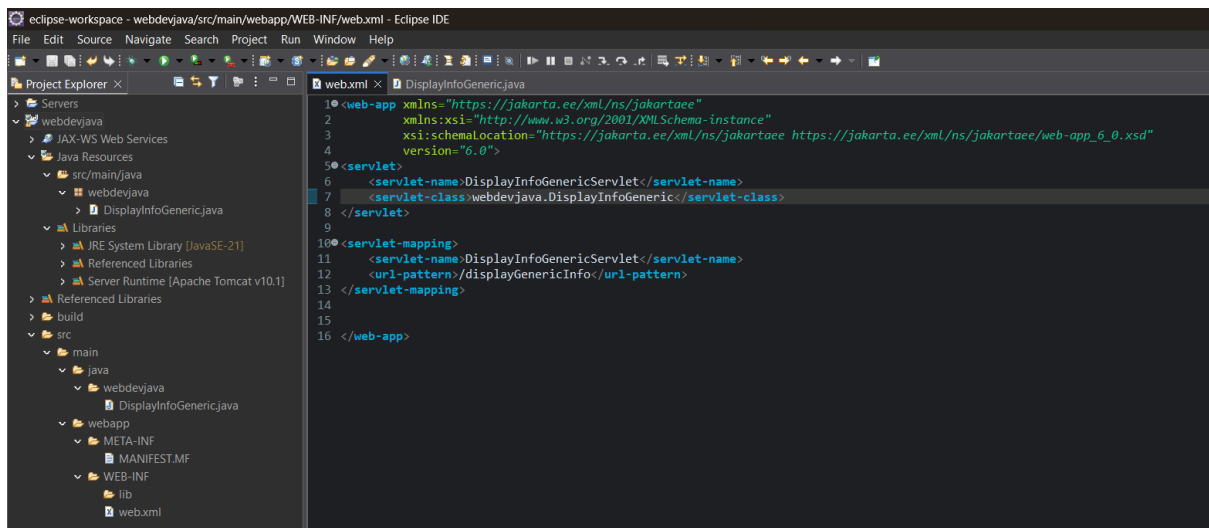
CODE :

Java file



```
1 package webdevjava;
2
3 import java.io.IOException;
4 import java.io.PrintWriter;
5 import java.util.Enumeration;
6
7 import jakarta.servlet.ServletException;
8 import jakarta.servlet.http.HttpServlet;
9 import jakarta.servlet.http.HttpServletRequest;
10 import jakarta.servlet.http.HttpServletResponse;
11
12 public class DisplayInfoGeneric extends HttpServlet {
13     private static final long serialVersionUID = 1L;
14
15     protected void doGet(HttpServletRequest request, HttpServletResponse response)
16         throws ServletException, IOException {
17         response.setContentType("text/html");
18         PrintWriter out = response.getWriter();
19
20         out.println("<html><body>");
21         out.println("<h2>HTTP Request Headers</h2>");
22         out.println("<table border='1'><tr><th>Header Name</th><th>Header Value</th></tr>");
23
24         Enumeration<String> headerNames = request.getHeaderNames();
25         while (headerNames.hasMoreElements()) {
26             String headerName = headerNames.nextElement();
27             String headerValue = request.getHeader(headerName);
28             out.println("<tr><td>" + headerName + "</td><td>" + headerValue + "</td></tr>");
29         }
30
31         out.println("</table>");
32         out.println("</body></html>");
33     }
34 }
35
```

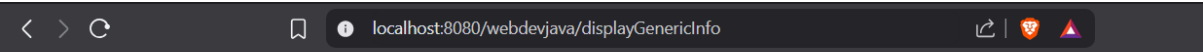
Web.xml file



```
1 <?xml version='1.0' encoding='UTF-8'?>
2 <web-app xmlns="https://jakarta.ee/xml/ns/jakartaee"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd"
5     version="6.0">
6     <servlet>
7         <servlet-name>DisplayInfoGenericServlet</servlet-name>
8         <servlet-class>webdevjava.DisplayInfoGeneric</servlet-class>
9     </servlet>
10    <servlet-mapping>
11        <servlet-name>DisplayInfoGenericServlet</servlet-name>
12        <url-pattern>/displayGenericInfo</url-pattern>
13    </servlet-mapping>
14
15
16 </web-app>

```

OUTPUT :



HTTP Request Headers

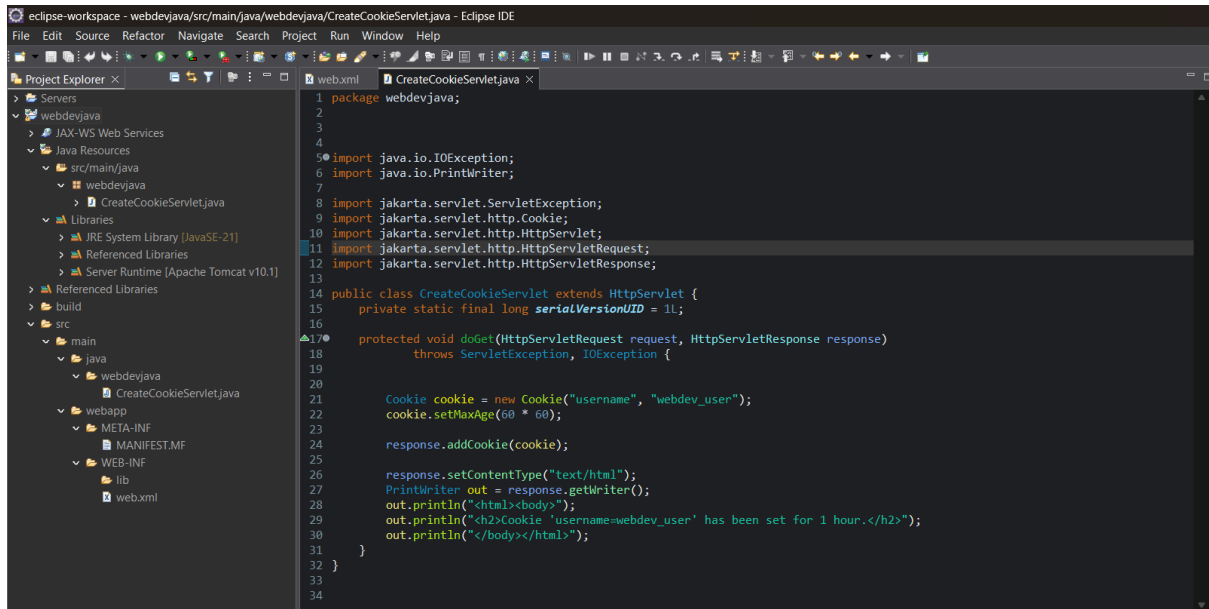
Header Name	Header Value
host	localhost:8080
connection	keep-alive
cache-control	max-age=0
sec-ch-ua	"Chromium";v="136", "Brave";v="136", "Not.A/Brand";v="99"
sec-ch-ua-mobile	?0
sec-ch-ua-platform	"Windows"
upgrade-insecure-requests	1
user-agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/136.0.0.0 Safari/537.36
accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8
sec-gpc	1
accept-language	en-US,en;q=0.9
sec-fetch-site	none
sec-fetch-mode	navigate
sec-fetch-user	?1
sec-fetch-dest	document
accept-encoding	gzip, deflate, br, zstd

Program 8

Write a HTTP Servlet program to create a Cookie.

CODE :

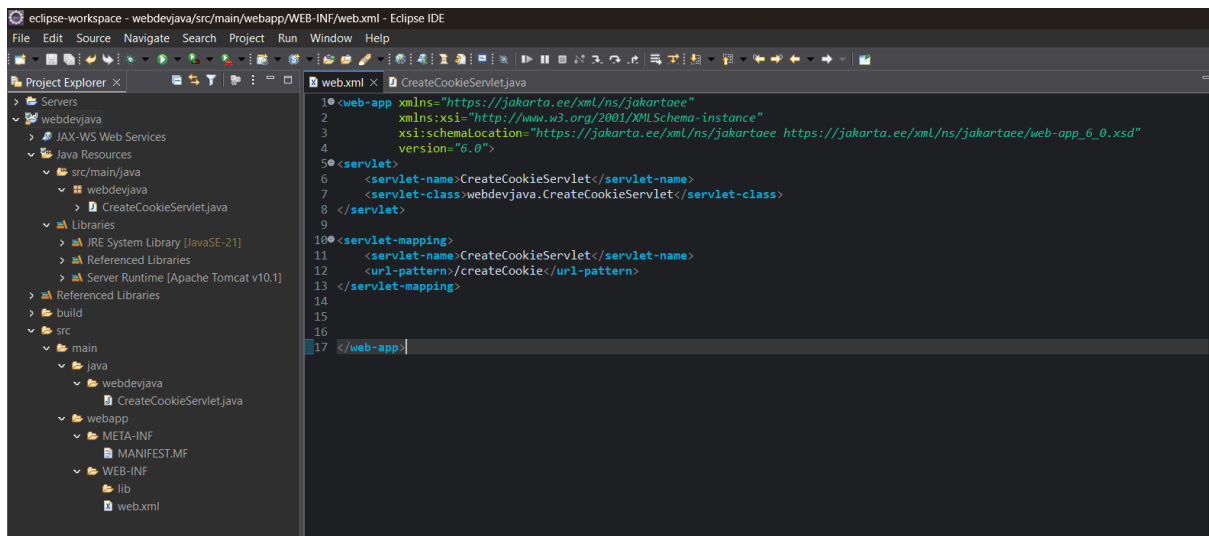
Java file



The screenshot shows the Eclipse IDE with the 'CreateCookieServlet.java' file open. The Project Explorer on the left shows the project structure: 'webdevjava' > 'src/main/java' > 'webdevjava' > 'CreateCookieServlet.java'. The main editor displays the following Java code:

```
1 package webdevjava;
2
3
4
5 import java.io.IOException;
6 import java.io.PrintWriter;
7
8 import jakarta.servlet.ServletException;
9 import jakarta.servlet.http.Cookie;
10 import jakarta.servlet.http.HttpServlet;
11 import jakarta.servlet.http.HttpServletRequest;
12 import jakarta.servlet.http.HttpServletResponse;
13
14 public class CreateCookieServlet extends HttpServlet {
15     private static final long serialVersionUID = 1L;
16
17     protected void doGet(HttpServletRequest request, HttpServletResponse response)
18         throws ServletException, IOException {
19
20
21         Cookie cookie = new Cookie("username", "webdev_user");
22         cookie.setMaxAge(60 * 60);
23
24         response.addCookie(cookie);
25
26         response.setContentType("text/html");
27         PrintWriter out = response.getWriter();
28         out.println("<html><body>");
29         out.println("<h2>Cookie 'username=webdev_user' has been set for 1 hour.</h2>");
30         out.println("</body></html>");
31     }
32 }
33
34
```

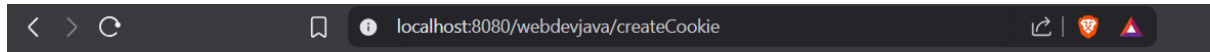
Web.xml file



The screenshot shows the Eclipse IDE with the 'web.xml' file open. The Project Explorer on the left shows the project structure: 'webdevjava' > 'src/main/webapp' > 'WEB-INF' > 'web.xml'. The main editor displays the following XML code:

```
1 <?xml version="1.0" encoding="UTF-8" ?>
2 <web-app xmlns="https://jakarta.ee/xml/ns/jakartaee"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd"
5     version="6.0">
6
7     <servlet>
8         <servlet-name>CreateCookieServlet</servlet-name>
9         <servlet-class>webdevjava.CreateCookieServlet</servlet-class>
10    </servlet>
11
12    <servlet-mapping>
13        <servlet-name>CreateCookieServlet</servlet-name>
14        <url-pattern>/createCookie</url-pattern>
15    </servlet-mapping>
16
17 </web-app>
```

OUTPUT :



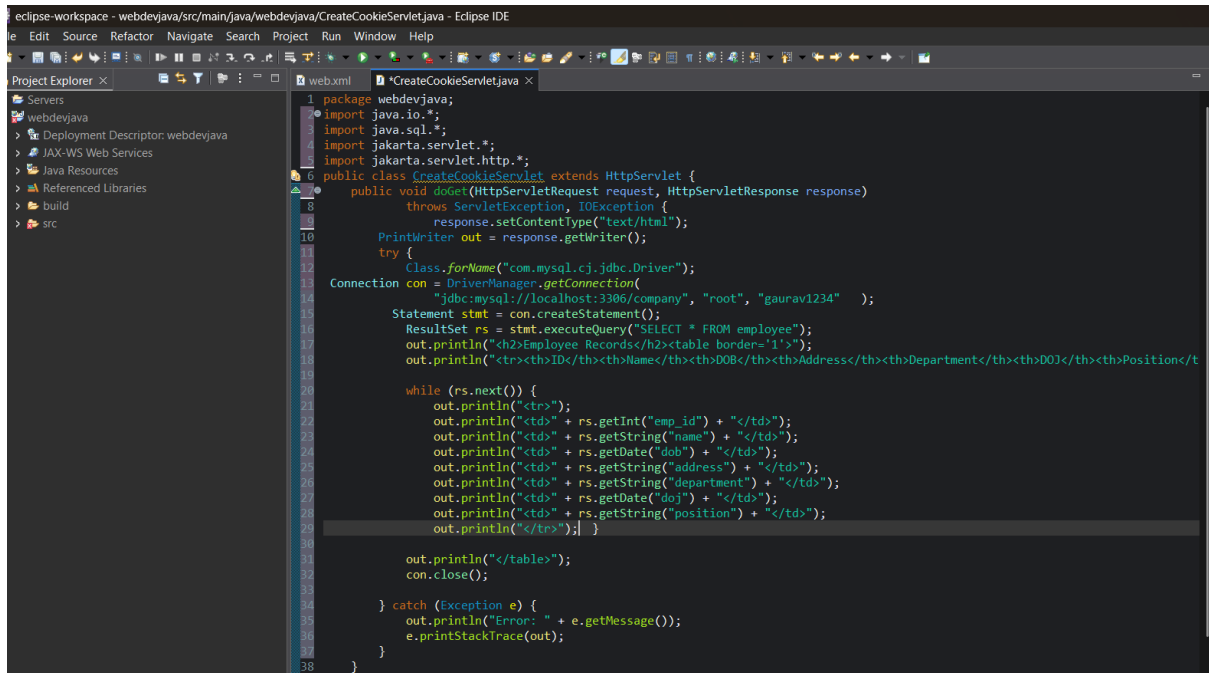
Cookie 'username=webdev_user' has been set for 1 hour.

Program 9

Write a JDBC Program to fetch the employees records from the Employee table designed in MySQL. The Table should have fields like : Employee ID, Name, DOB, Address, Department, DOJ, Position etc.

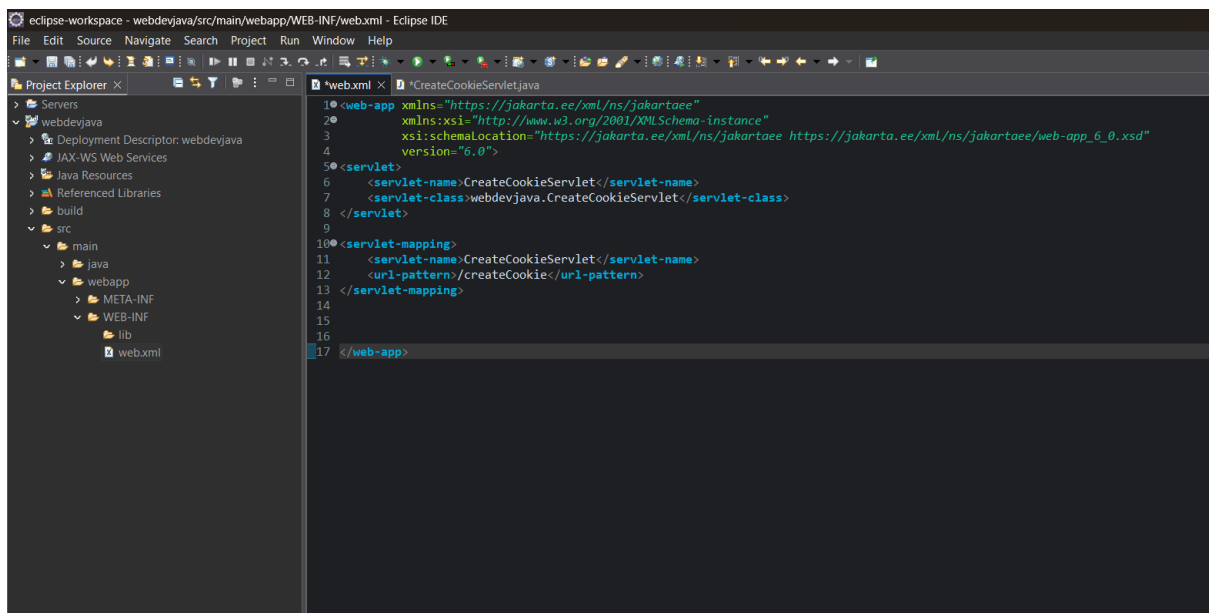
CODE :

Java file :



```
1 package webdevjava;
2 import java.io.*;
3 import java.sql.*;
4 import jakarta.servlet.*;
5 import jakarta.servlet.http.*;
6 public class CreateCookieServlet extends HttpServlet {
7     public void doGet(HttpServletRequest request, HttpServletResponse response)
8         throws ServletException, IOException {
9         response.setContentType("text/html");
10        PrintWriter out = response.getWriter();
11        try {
12            Class.forName("com.mysql.cj.jdbc.Driver");
13            Connection con = DriverManager.getConnection(
14                "jdbc:mysql://localhost:3306/company", "root", "gaurav1234" );
15            Statement stmt = con.createStatement();
16            ResultSet rs = stmt.executeQuery("SELECT * FROM employee");
17            out.println("<h2>Employee Records</h2><table border='1'>");
18            out.println("<tr><th>ID</th><th>Name</th><th>DOB</th><th>Address</th><th>Department</th><th>DOJ</th><th>Position</th>");
19
20            while (rs.next()) {
21                out.println("<tr>");
22                out.println("<td>" + rs.getInt("emp_id") + "</td>");
23                out.println("<td>" + rs.getString("name") + "</td>");
24                out.println("<td>" + rs.getDate("dob") + "</td>");
25                out.println("<td>" + rs.getString("address") + "</td>");
26                out.println("<td>" + rs.getString("department") + "</td>");
27                out.println("<td>" + rs.getDate("doj") + "</td>");
28                out.println("<td>" + rs.getString("position") + "</td>");
29                out.println("</tr>");
30            }
31            out.println("</table>");
32            con.close();
33        } catch (Exception e) {
34            out.println("Error: " + e.getMessage());
35            e.printStackTrace(out);
36        }
37    }
38 }
```

web.xml



```
1 <?xml version='1.0'?>
2 <web-app xmlns="https://jakarta.ee/xml/ns/jakartaee"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd"
5     version="6.0">
6     <servlet>
7         <servlet-name>CreateCookieServlet</servlet-name>
8         <servlet-class>webdevjava.CreateCookieServlet</servlet-class>
9     </servlet>
10    <servlet-mapping>
11        <servlet-name>CreateCookieServlet</servlet-name>
12        <url-pattern>/createCookie</url-pattern>
13    </servlet-mapping>
14
15
16
17 </web-app>
```

OUTPUT :

localhost:8080/CompanyServ...

localhost:8080/CompanyServlet/employees

YouTube Music mus...Inbox (41) - sanjnak...045_2020.pdfDBMS MCA - Googl...ChatGPTSem 1 - Google DriveSE - Google Drive11145224.pdfSanjnak (Sanjana Ku...Projects | GirtScript...

Employee Records

ID	Name	DOB	Address	Department	DOJ	Position
1	Sanjna	2000-08-10	Delhi	IT	2024-01-01	Developer
2	Akriti	1998-05-12	Noida	HR	2023-09-15	Manager

Program 10

Create your portfolio website.

CODE :

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Kumar Gaurav | Portfolio</title>
  <style>
    body {
      margin: 0;
      font-family: 'Segoe UI', sans-serif;
      background-color: #121212;
      color: #e0e0e0;
    }
    header {
      background-color: #1f1f1f;
      padding: 30px;
      text-align: center;
    }
    header h1 {
      margin: 0;
      font-size: 2.5em;
      color: #00ffd0;
    }
    header p {
      font-size: 1.2em;
      color: #aaa;
    }
    section {
      max-width: 800px;
      margin: 30px auto;
      padding: 20px;
    }
    .card {
      background-color: #1e1e1e;
      border: 1px solid #333;
      border-radius: 10px;
      padding: 20px;
      margin-bottom: 20px;
    }
    .card h2 {
      color: #00ffd0;
    }
    a {
      color: #00ffd0;
```

```
        text-decoration: none;
    }
    a:hover {
        text-decoration: underline;
    }
</style>
</head>
<body>

<header>
    <h1>Kumar Gaurav</h1>
    <p>MCA | USICT | 2024-2026 | Web3 Developer</p>
</header>

<section>
    <div class="card">
        <h2>About Me</h2>
        <p>I'm Kumar Gaurav, an MCA student at USICT (2024-2026) with a passion for full stack development and Web3 technologies. I enjoy building decentralized applications and exploring the future of the internet.</p>
    </div>

    <div class="card">
        <h2>Web3 Projects</h2>
        <ul>
            <li><strong>Decentralized Voting App</strong> - Built using Solidity & React, deployed on Ethereum testnet.</li>
            <li><strong>Crypto Portfolio Tracker</strong> - Tracks crypto assets using real-time API and Web3.js.</li>
            <li><strong>NFT Gallery</strong> - Allows users to mint and view NFTs using IPFS and smart contracts.</li>
        </ul>
    </div>

    <div class="card">
        <h2>Contact</h2>
        <p>Email: kumar.gaurav@example.com</p>
        <p>GitHub: <a href="https://github.com/kumargaurav" target="_blank">github.com/kumargaurav</a></p>
        <p>LinkedIn: <a href="https://linkedin.com/in/kumargaurav" target="_blank">linkedin.com/in/kumargaurav</a></p>
    </div>
</section>

</body>
</html>
```

Output :

