ASSIGNMENT SERVLET_1

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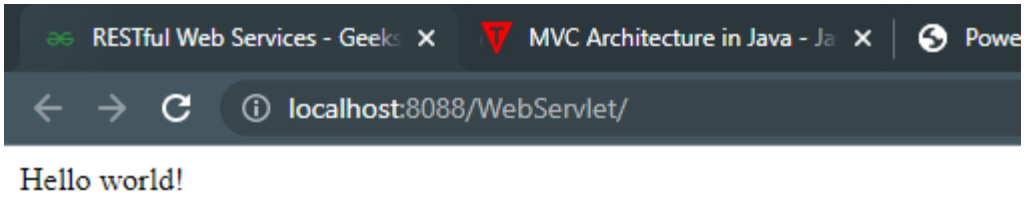
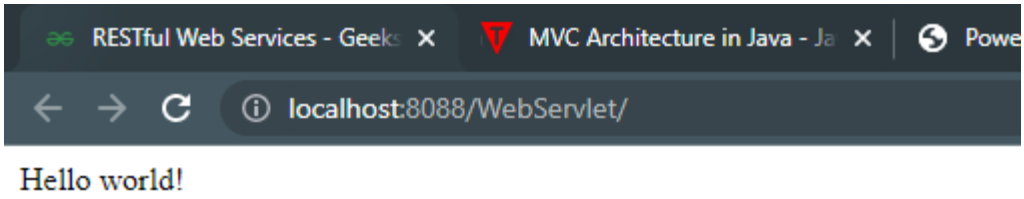
1. Write an application to print “Hello World” using Servlet API. Do servlet-mapping in web.xml and annotation both.

```
package com.servletassignment;

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

@WebServlet("/HelloWorld")

public class HelloWorld extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        PrintWriter out = response.getWriter();
        out.println("<html><body><h1>Hello <br> World</h1></body></html>");

    }
}
```




```
package com.servletassignment;

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

//@WebServlet("/HelloWorld")

public class HelloWorld extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse
```

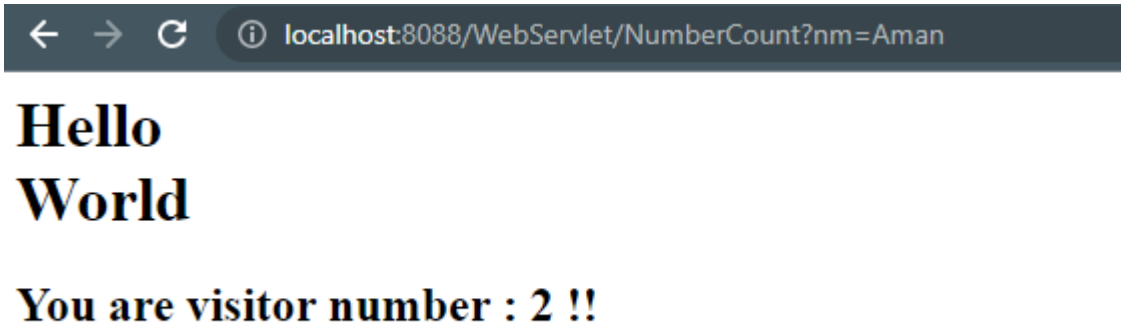
```
response) throws ServletException, IOException {
        PrintWriter out = response.getWriter();
        out.println("<html><body><h1>Hello <br> World</h1></body></html>");

    }
}
```



2. In the same application, create a servlet to count the total number of hits.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Title</title>
</head>
<body>
<form action="NumberCount">
  Enter Name: <input type="text" name="nm">
  <input type="submit">
</form>
</body>
</html>
```

```
package com.servletassignment;

import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;

@WebServlet("/NumberCount")
public class NumberCount extends HttpServlet {
     int count = 0;
protected void doGet(HttpServletRequest req, HttpServletResponse res)
throws IOException{

    PrintWriter out = res.getWriter();
    out.println("<html><body><h1>Hello <br> World</h1>");
    out.println("<h2>You are visitor number : " + (++count) + " !!</h2>");
    out.println("</body></html>");
}
}
```



3. In the same application, create a servlet to identify difference between Servlet instance variable and local variable.

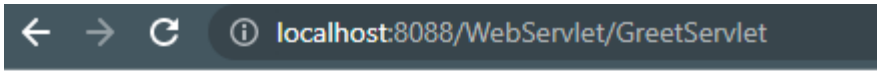
```
package com.servletassignment;

import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;

@WebServlet("/NumberCount")
public class NumberCount extends HttpServlet {
  private int instanceCount = 0; // instance variable


protected void doGet(HttpServletRequest req, HttpServletResponse res)
throws IOException{

    int localCount = 0; // local variable

    instanceCount++;
    localCount++;

    PrintWriter out = res.getWriter();
    out.println("<html><body><h1>Hello <br> World</h1>");
    out.println("<h2>Instance variable count : " + (instanceCount) + "
!!</h2>");
    out.println("<h2>local variable count: "+ (localCount)+" !!</h2>");
    out.println("</body></html>");
}
}
```

4. Provide the hyperlink to the servlet in HTML and pass the username in the link. On click of that hyperlink Servlet will get the username passed in the link and will greet(Good morning/afternoon/evening/night)the user with their name based on time of the day.

```
package com.servletassignment;
import java.io.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;
import java.util.*;

@WebServlet("/GreetServlet")
public class GreetServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse
response) throws IOException {

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        String username = request.getParameter("username");
        Calendar cal = Calendar.getInstance();
        int hour = cal.get(Calendar.HOUR_OF_DAY);

        String greeting = "";
        if (hour >= 5 && hour < 12) {
            greeting = "Good morning";
        } else if (hour >= 12 && hour < 18) {
            greeting = "Good afternoon";
        } else if (hour >= 18 && hour < 22) {
            greeting = "Good evening";
        } else {
```

```
            greeting = "Good night";
        }

        out.println("<html><body>");
        out.println("<h1>" + greeting + ", " + username + "!</h1>");
        out.println("</body></html>");
    }
}
```

```
<!DOCTYPE html>
<html>
<body>

<a
href="http://localhost:8080/com.servletassignment.GreetServlet?username=Joh
n">Click here to be greeted</a>

</body>
</html>
```



Good afternoon, null!

Click here to be greeted

5. In the same application create a demo of Servlet life cycle. Check for how many times init() and destroy() method have been called and at what time during the application execution. Record your finding in terms of comments.

```
package com.servletassignment;

import java.io.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;
import java.util.*;

@WebServlet("/LifecycleServlet")
public class LifecycleServlet extends HttpServlet {

    private int initCount = 0;
    private int destroyCount = 0;

    public void init() throws ServletException {
        // This method is called when the servlet is first created.
        // It is called only once during the life cycle of the servlet.

        initCount++;

        System.out.println("Servlet initialized at " + new Date());
    }
    public void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        // This method is called when a GET request is received.
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<html><body>");
        out.println("<h1>Servlet Life Cycle Demo</h1>");
        out.println("<p>Servlet initialized " + initCount + " times.</p>");
        out.println("<p>Servlet destroyed " + destroyCount + "
times.</p>");
        out.println("</body></html>");
    }

    public void destroy() {
        // This method is called when the servlet is being destroyed.
        // It is called only once during the life cycle of the servlet.
        destroyCount++;
        System.out.println("Servlet destroyed at " + new Date());
    }

}
```

Servlet Life Cycle Demo

Servlet initialized 1 times.

Servlet destroyed 0 times.

6. Create a Servlet to print the request headers.

```
package com.servletassignment;

import java.io.*;
import java.util.Enumeration;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;

@WebServlet("/HeaderServlet")
public class HeaderServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse
response)
            throws ServletException, IOException {

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        out.println("<html><body>");
        out.println("<h1>Request Headers</h1>");
        out.println("<ul>");

        Enumeration<String> headerNames = request.getHeaderNames();
        while (headerNames.hasMoreElements()) {
            String headerName = headerNames.nextElement();
            String headerValue = request.getHeader(headerName);
            out.println("<li><strong>" + headerName + ":</strong> " +
headerValue + "</li>");
        }

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

    }

}
```

Request Headers

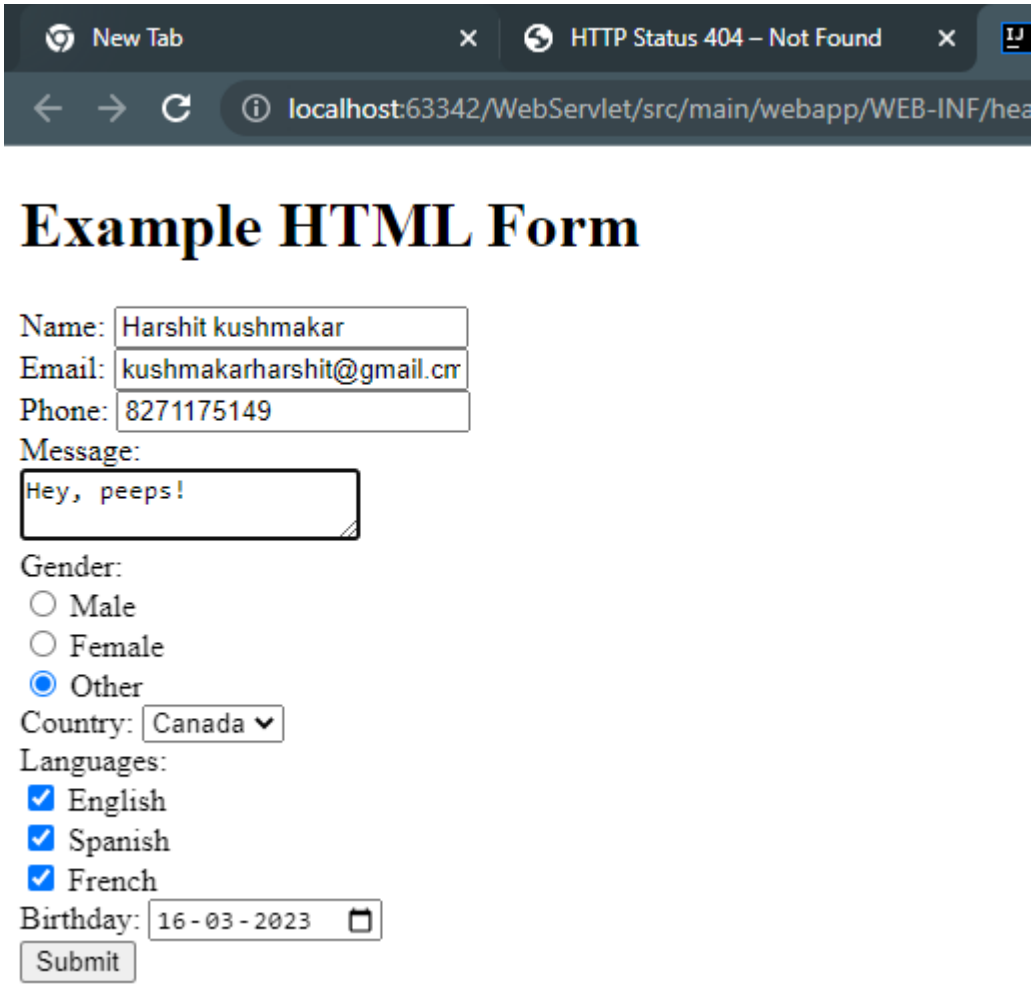
- **host:** localhost:8088
- **connection:** keep-alive
- **sec-ch-ua:** "Chromium";v="110", "Not A(Brand";v="24", "Google Chrome";v="110"
- **sec-ch-ua-mobile:** ?0
- **sec-ch-ua-platform:** "Windows"
- **upgrade-insecure-requests:** 1
- **user-agent:** Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/110.0.0.0 Safari/537.36
- **accept:** text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
- **sec-fetch-site:** none
- **sec-fetch-mode:** navigate
- **sec-fetch-user:** ?1
- **sec-fetch-dest:** document
- **accept-encoding:** gzip, deflate, br
- **accept-language:** en-US,en;q=0.9
- **cookie:** Idea-7b8c2cce=a6878d11-4464-4c57-a16b-eb40e335da82

7. Create an HTML form that contains text fields, text area, radio buttons, drop-down list, checkboxes, and date. Also, create two different servlets to display the values entered by the user using the GET and POST methods.

```
<!DOCTYPE html>
<html>
<head>
  <title>Example HTML Form</title>
</head>
<body>
<h1>Example HTML Form</h1>
<form action="GetFormServlet" method="get">
  <label for="name">Name:</label>
  <input type="text" id="name" name="name"><br>

  <label for="email">Email:</label>
  <input type="email" id="email" name="email"><br>

  <label for="phone">Phone:</label>
  <input type="tel" id="phone" name="phone"><br>

  <label for="message">Message:</label><br>
  <textarea id="message" name="message"></textarea><br>
```

```
  <label>Gender:</label><br>
  <input type="radio" id="male" name="gender" value="male">
  <label for="male">Male</label><br>
  <input type="radio" id="female" name="gender" value="female">
  <label for="female">Female</label><br>
  <input type="radio" id="other" name="gender" value="other">
  <label for="other">Other</label><br>

  <label for="country">Country:</label>
  <select id="country" name="country">
    <option value="usa">USA</option>
    <option value="canada">Canada</option>
    <option value="mexico">Mexico</option>
  </select><br>

  <label>Languages:</label><br>
  <input type="checkbox" id="english" name="languages" value="english">
  <label for="english">English</label><br>
  <input type="checkbox" id="spanish" name="languages" value="spanish">
  <label for="spanish">Spanish</label><br>
  <input type="checkbox" id="french" name="languages" value="french">
  <label for="french">French</label><br>

  <label for="birthday">Birthday:</label>
  <input type="date" id="birthday" name="birthday"><br>

  <input type="submit" value="Submit">
</form>
</body>
</html>
```

```
package com.servletassignment;

import java.io.*;

import javax.servlet.http.*;

public class GetFormServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse
response) throws IOException {

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();
        out.println("<html><body>");
        out.println("<h1>Form Data (GET)</h1>");

        String name = request.getParameter("name");
        String email = request.getParameter("email");
        String phone = request.getParameter("phone");
        String message = request.getParameter("message");
        String gender = request.getParameter("gender");
        String country = request.getParameter("country");

    }
}
```



8. Use user-agent header to identify the browser being used by the user. If it is Chrome, allow the page to be displayed printing all request headers, if not, it prints an error message stating that the application is best suited for Google Chrome.

```
package com.servletassignment;

import java.io.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;
```

```
@WebServlet("/BrowserCheckServlet")
public class BrowserCheckServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse
response)
            throws ServletException, IOException {

        String userAgent = request.getHeader("User-Agent");

        if (userAgent.contains("Chrome")) {
            response.setContentType("text/html");

            PrintWriter out = response.getWriter();
            out.println("<html><body>");
            out.println("<h1>Request Headers</h1>");
            out.println("<ul>");

            for (String header : request.getHeaderNames())
            {
                out.println("<li>" + header + ": " +
request.getHeader(header) + "</li>");
            }
            out.println("</ul>");
            out.println("</body></html>");
        } else {
            response.setContentType("text/plain");
            PrintWriter out = response.getWriter();
            out.println("This application is best suited for Google
Chrome.");
        }

    }
}
```

9. Create a servlet so that it gets auto refreshed every 5 seconds and print the updated time.

```
package com.servletassignment;

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

@WebServlet("/WishApp")

public class WishApp extends HttpServlet {

    public void service(HttpServletRequest req, HttpServletResponse res)
throws IOException, ServletException
    {

        //set response content type
```

```
        res.setContentType("text/html");
        //get printWrite obj
        PrintWriter pw = res.getWriter();

        Calendar cal = Calendar.getInstance();
        //get current hours of the day
        int hour = cal.get(Calendar.HOUR_OF_DAY);//24 hrs format
        //generate wish message
        if(hour<12)
            pw.println("Good Morning!!");
        else if (hour < 16)
            pw.println("Good afternoon");
        else if(hour<20)
            pw.println("Good evening");
        else
            pw.println("Good night");
   pw.println();

        pw.close();
    }
}
```

OUTPUT: