Title	4 : Flask Application using GET and POST
Name of Student	Himesh Pathai
Class Roll No	34
D.O.P.	
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AIM : To design a Flask application that showcases URL building and demonstrates the use of HTTP methods (GET and POST) for handling user input and processing data.

PROBLEM STATEMENT :

Create a Flask application with the following requirements:

1. **A homepage (/) with links to a "Profile" page and a "Submit" page using the url_for() function.**
2. **The "Profile" page (/profile/<username>) dynamically displays a user's name passed in the URL.**
3. **A "Submit" page (/submit) displays a form to collect the user's name and age. The form uses the POST method to send the data, and the server displays a confirmation message with the input.**

Theory:

1. What is a route in Flask, and how is it defined?

In Flask, a **route** is a way to map a URL to a specific function that handles the request. Whenever a user accesses a particular URL in the browser, Flask uses the route to identify which function should handle that request.

How to Define a Route:

- Use the @app.route() decorator above a function to define a route.

```
from flask import Flask
app = Flask(__name__)
@app.route('/')  # This is
the route for the homepage
def home():
    return "Welcome to the Home Page!"

if __name__ == '__main__':
    app.run(debug=True)
```

Explanation:

- The / route maps to the home() function.
- Accessing **http://127.0.0.1:5000/** will show "Welcome to the Home Page!"

2. How can you pass parameters in a URL route?

Flask allows you to define **dynamic routes** that accept parameters. These parameters are passed through the URL and can be captured in the function. **Example:**

```
@app.route('/user/<username>') def
greet_user(username):
    return f"Hello, {username}!"
```

Explanation:

- <username> is a dynamic parameter.
- If you access **http://127.0.0.1:5000/user/John**, the output will be "Hello, John!"

Parameter Types:

You can specify the data type like this:

- <int:id> — Integer parameter
- <float:price> — Floating-point parameter
- <string:name> — String parameter (default)

3. What happens if two routes in a Flask application have the same URL pattern?

If two routes have the same URL pattern in a Flask application, only the last defined route will take effect, and the previous one will be overridden. Flask does not allow duplicate routes with the same URL pattern, as it would cause ambiguity.

Example of conflicting routes:

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```
@app.route('/hello') def
hello1():
        return "Hello from function 1"

@app.route('/hello') def
hello2():
        return "Hello from function 2"
```

In this case, when a user visits /hello, Flask will only execute hello2(), and hello1() will be ignored.

4. What are the commonly used HTTP methods in web applications?

The most commonly used HTTP methods in web applications are:

1. **GET** – Requests data from the server (e.g., retrieving a webpage).
2. **POST** – Sends data to the server (e.g., submitting a form).
3. **PUT** – Updates existing data on the server.
4. **DELETE** – Removes a resource from the server.
5. **PATCH** – Partially updates a resource.

```
  return "Form submitted!"
```

5. What is a dynamic route in Flask?

A **dynamic route** in Flask is a route that contains variables, allowing it to handle multiple different URLs with a single function. Dynamic routes make the web application more flexible by enabling the use of parameters within the URL.
Example:

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```
@app.route('/user/<username>') def profile(username):
return f"User Profile: {username}"
```

If a user visits /user/Sanket, the function receives "Sanket" as a parameter and responds accordingly.

6. Write an example of a dynamic route that accepts a username as a parameter.

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```
from flask import Flask app

= Flask(_ name ____)
```

```
@app.route('/user/<username>') def
show_user(username):
        return f"Welcome, {username}!"

if ___name_____== ' ___main______
        app.run(debug=True)
```

In this example, the route /user/<username> accepts a username parameter from the URL and returns a personalized welcome message.

7. What is the purpose of enabling debug mode in Flask?

Enabling **debug mode** in Flask is useful for development because it provides:

1. **Automatic Code Reloading** – The server automatically restarts when changes are made to the code.
2. **Detailed Error Messages** – Flask displays an interactive debugger when an error occurs, making it easier to identify and fix issues.

However, debug mode should **not** be enabled in a production environment due to security risks.

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8. How do you enable debug mode in a Flask application?

Debug mode can be enabled in two ways:

1. **Setting debug=True in app.run()**

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```
if ___name___== ' ___main___
        ':
        app.run(debug=True)
```

.

Code :- App.py

```
from flask import Flask, render_template, request, redirect, url_for

app = Flask(__name__)

@app.route('/')
def index():
    return render_template('index.html')

@app.route('/process', methods=['POST'])
def process():
    if request.method == 'POST':
        name = request.form['name']
        age = request.form['age']
        return redirect(url_for('result', name=name, age=age))

@app.route('/result')
def result():
    name = request.args.get('name')
    age = request.args.get('age')
    return render_template('result.html', name=name, age=age)

if __name__ == '__main__':
    app.run(debug=True)
```

Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Flask App - URL Building</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
</head>
<body>
    <div class="container">
        <h1>Enter Your Details</h1>
        <p>Please fill in the form below:</p>
        <form action="{{ url_for('process') }}" method="post">
```

```
            <input type="text" name="name" placeholder="Enter your name" required>            <input type="number"
    name="age" placeholder="Enter your age" required>
            <button type="submit">Submit</button>
          </form>
        </div>
    </body>
    </html>
```

Result.html

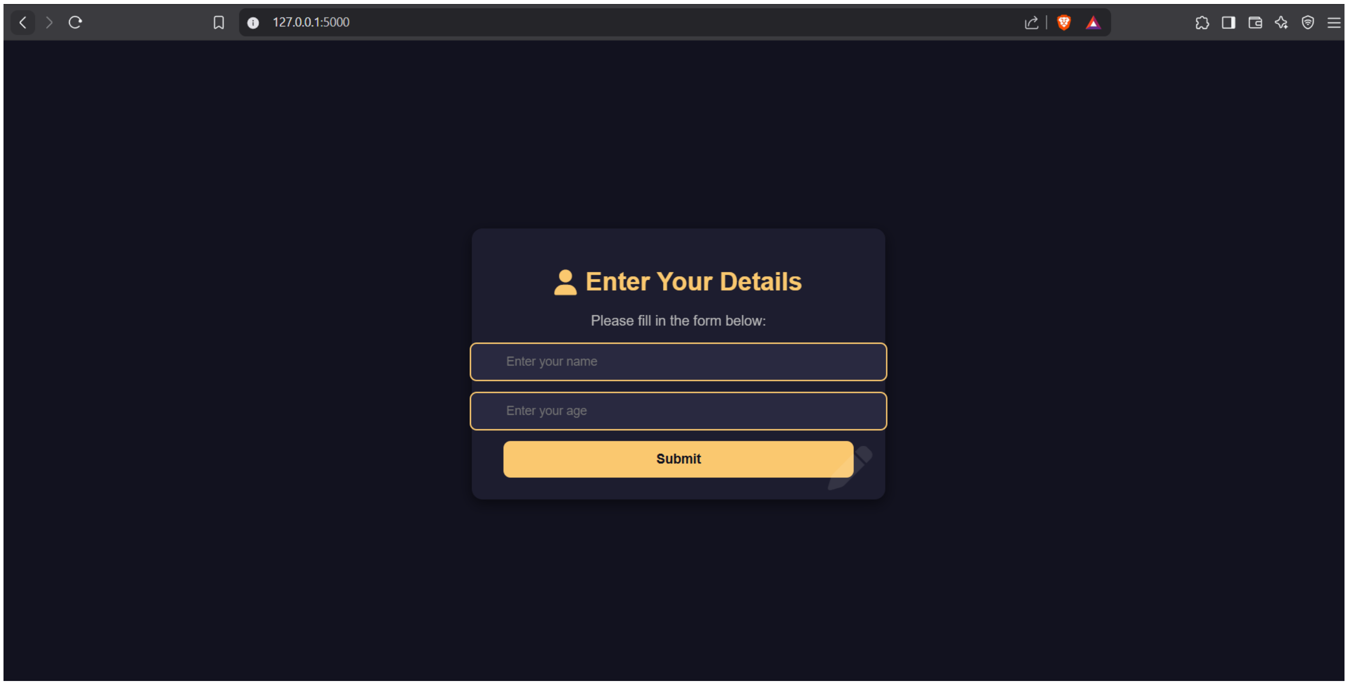
```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Result Page</title>
  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
</head>
<body>
  <div class="result-container">
    <h2>Submitted Details</h2>
    <div class="card">
      <p><strong>Name:</strong> {{ name }}</p>
      <p><strong>Age:</strong> {{ age }}</p>
    </div>
    <a href="{{ url_for('index') }}">Go Back</a>
  </div>
</body>
</html>
```

Style.css

```
 /* Import FontAwesome for icons */
@import url('https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.2/css/all.min.css');

/* General body styling */
body {
    margin: 0;
    padding: 0;
    font-family: 'Poppins', sans-serif;
    background: #12121f;
    display: flex;
    justify-content: center;
    align-items: center;
    min-height: 100vh;
    color: #ffffff;
}

/* Container styling */
.container, .result-container {
    background: #1e1e2f;
    padding: 25px;
    border-radius: 12px;
    box-shadow: 0px 5px 15px rgba(0, 0, 0, 0.5);
    text-align: center;
    width: 420px;
    margin: 15px;
    opacity: 0.98;
    position: relative;
}

/* Headings with icons */
h1, h2 {
    margin-bottom: 18px;
    color: #ffcc70;
    font-size: 1.8em;
    display: flex;
    align-items: center;
    justify-content: center;
    gap: 10px;
}

h1::before {
    content: "\f007"; /* User icon */
    font-family: "Font Awesome 6 Free";
    font-weight: 900;
    color: #ffcc70;
}

h2::before {
    content: "\f05a"; /* Info icon */
    font-family: "Font Awesome 6 Free";
    font-weight: 900;
    color: #ffcc70;
}
```

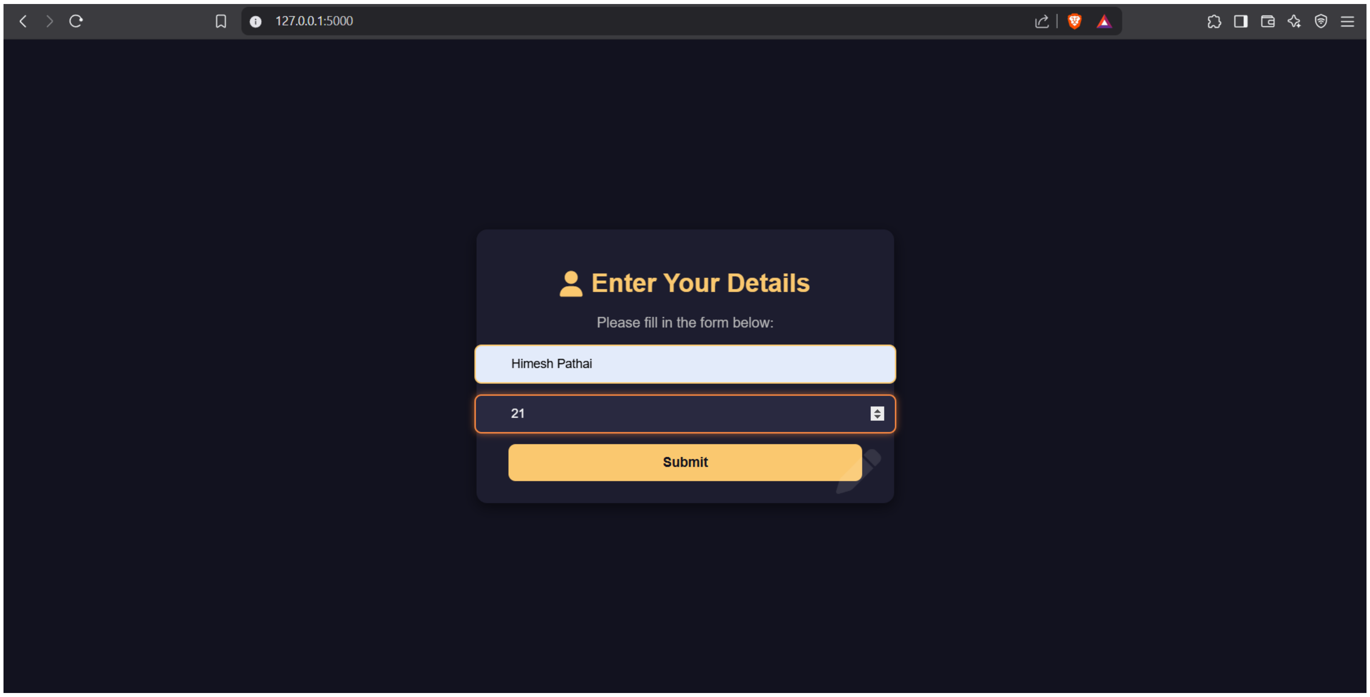
```
/* Paragraph styling */
p {
   margin-bottom: 15px;
   color: #bbbbbb;
   font-size: 1em;
}

/* Form layout */
form {
   display: flex;
   flex-direction: column;
   align-items: center;
}

/* Input field with icons */
.input-container {
   position: relative;
   width: 90%;
}

.input-container i {
   position: absolute;
   left: 15px;
   top: 50%;
   transform: translateY(-50%);
   color: #ffcc70;
}

input {
   margin-bottom: 12px;
   padding: 12px 12px 12px 40px; /* Space for icon */
   border-radius: 8px;
   border: 2px solid #ffcc70;
   font-size: 14px;
   background: #2a2a40;
   color: #ffffff;
   width: 100%;
   outline: none;
   transition: all 0.3s ease;
}

input:focus {
   border-color: #ff8c42;
   box-shadow: 0 0 8px rgba(255, 140, 66, 0.6);
}

/* Button styling */
button {
   padding: 12px 25px;
   background: #ffcc70;
   color: #12121f;
   border: none;
   border-radius: 8px;
   cursor: pointer;
   font-weight: bold;
   font-size: 15px;
   transition: all 0.3s ease;
   width: 95%;
   display: flex;
   align-items: center;
   justify-content: center;
   gap: 10px;
}

button i {
   font-size: 16px;
}

button:hover {
   background: #ff8c42;
   transform: scale(1.05);
}

/* Floating decorative icon */
.container::after {
   content: "\f304"; /* User Shield icon */
   font-family: "Font Awesome 6 Free";
   font-weight: 900;
   font-size: 50px;
   color: rgba(255, 255, 255, 0.1);
   position: absolute;
   bottom: 10px;
   right: 15px;
```

Result:-



Enter Your Details

Please fill in the form below:



Enter Your Details

Please fill in the form below:

Himesh Pathai

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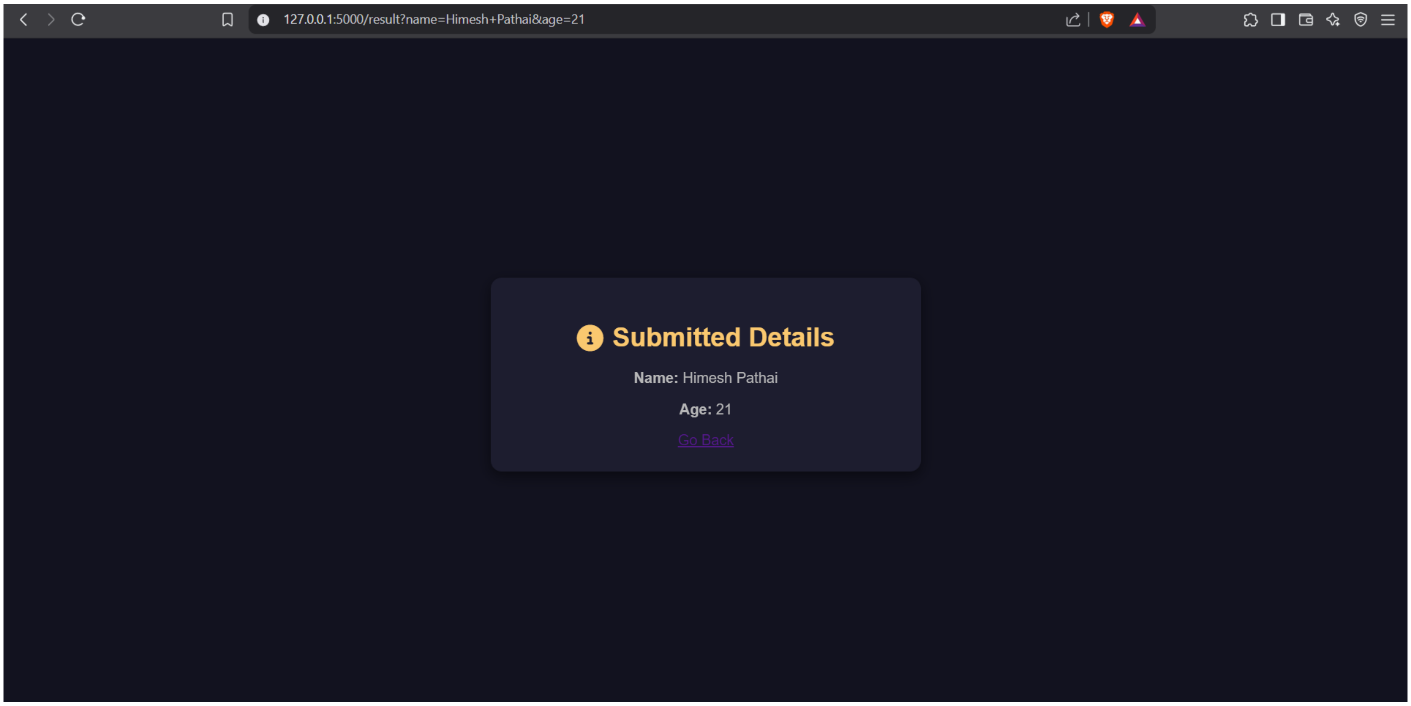
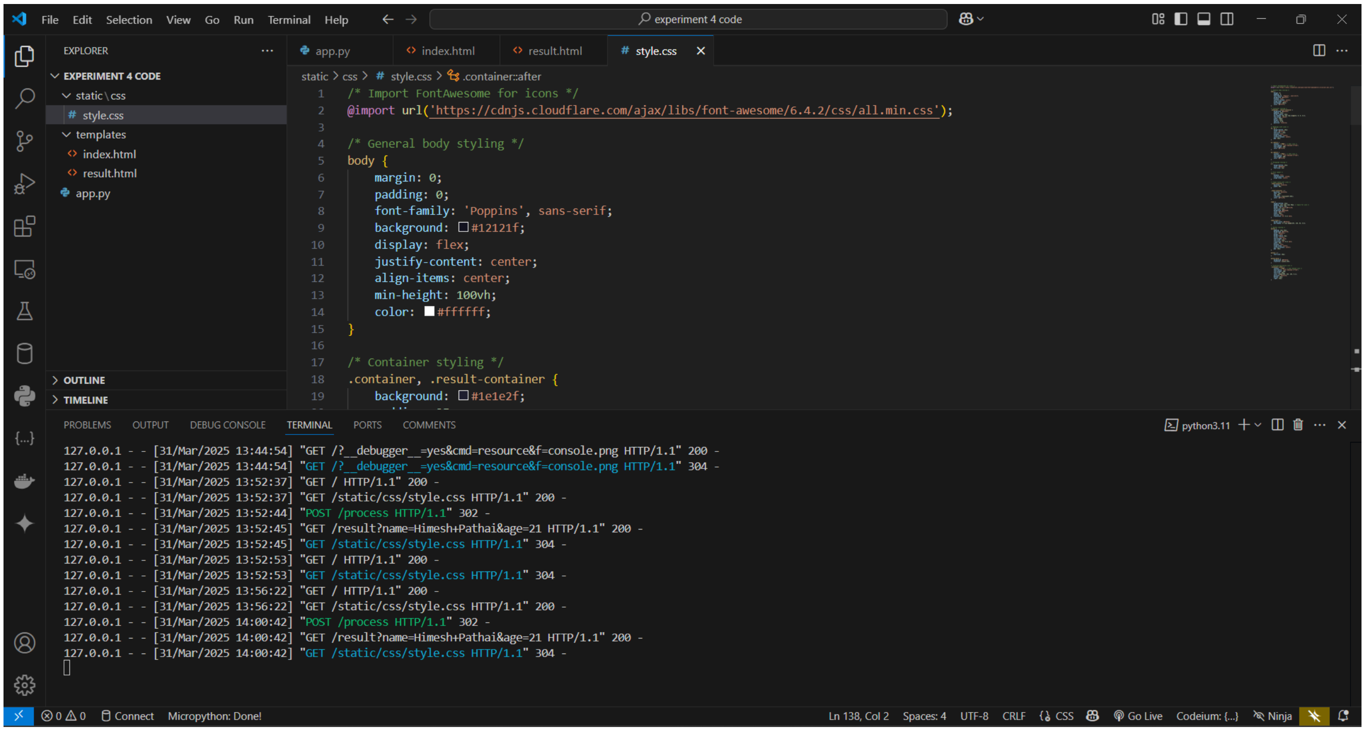


Submitted Details

Name: Himesh Pathai

Age: 21

Go Back



```css
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@import url('https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.2/css/all.min.css');

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    align-items: center;
    min-height: 100vh;
    color: #ffffff;
}

/* Container styling */
.container, .result-container {
    background: #1e1e2f;
```

```
127.0.0.1 - - [31/Mar/2025 13:44:54] "GET /?__debugger__=yes&cmd=resource&f=console.png HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:44:54] "GET /?__debugger__=yes&cmd=resource&f=console.png HTTP/1.1" 304 -
127.0.0.1 - - [31/Mar/2025 13:52:37] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:52:37] "GET /static/css/style.css HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:52:44] "POST /process HTTP/1.1" 302 -
127.0.0.1 - - [31/Mar/2025 13:52:45] "GET /result?name=Himesh+Pathai&age=21 HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:52:45] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [31/Mar/2025 13:52:53] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:52:53] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [31/Mar/2025 13:56:22] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 13:56:22] "GET /static/css/style.css HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 14:00:42] "POST /process HTTP/1.1" 302 -
127.0.0.1 - - [31/Mar/2025 14:00:42] "GET /result?name=Himesh+Pathai&age=21 HTTP/1.1" 200 -
127.0.0.1 - - [31/Mar/2025 14:00:42] "GET /static/css/style.css HTTP/1.1" 304 -
```