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EXPERIMENT NO. 5

AIM : To create a Flask application that demonstrates template rendering by dynamically generating HTML content using the render_template() function.

PROBLEM STATEMENT :

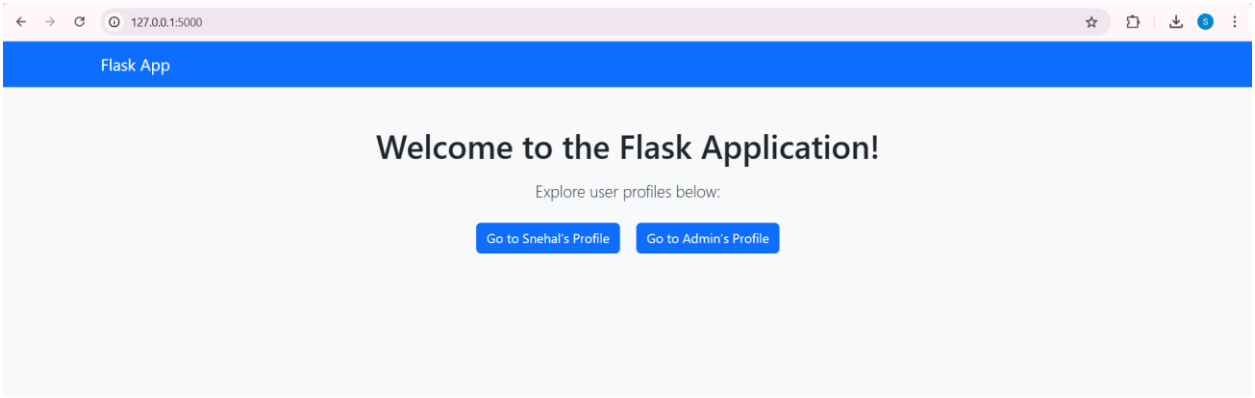
Develop a Flask application that includes:

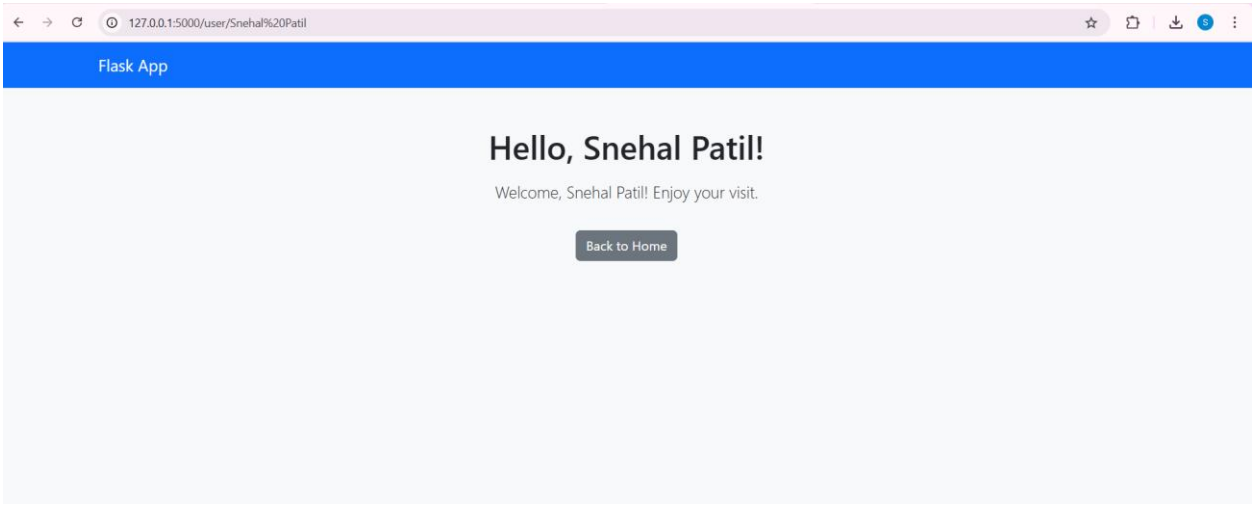
1. A homepage route (/) displaying a welcome message with links to additional pages.
2. A dynamic route (/user/<username>) that renders an HTML template with a personalized greeting.
3. Use Jinja2 templating features, such as variables and control structures, to enhance the templates.

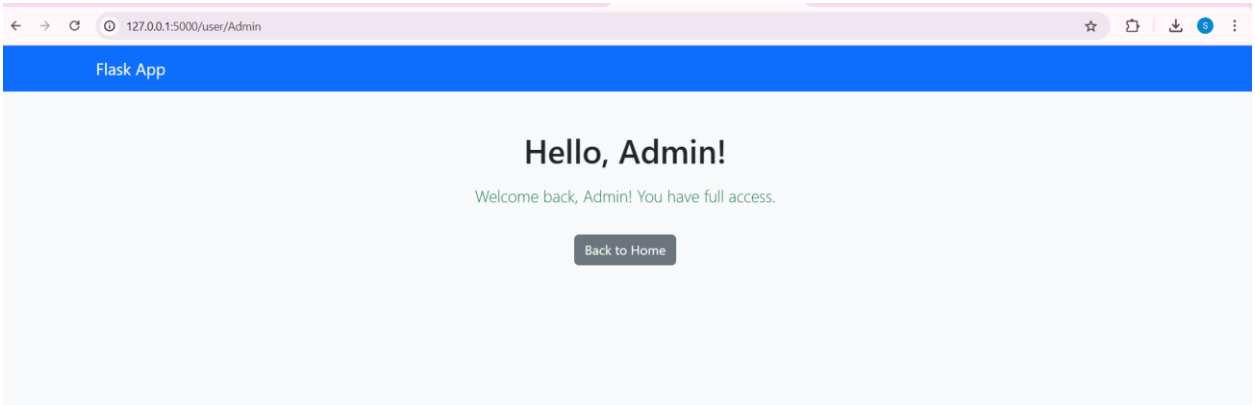
Theory:

1.What does the render_template() function do in a Flask application?
2. What is the significance of the templates folder in a Flask project?
3. What is Jinja2, and how does it integrate with Flask?

IMPLEMENTATION:







Theory Answers:

1. What does the render_template() function do in a Flask application?

- The render_template() function is used to **render HTML templates** from the templates folder.
- It dynamically injects data into the HTML using **Jinja2**, allowing for a more interactive user experience.
- Example:

```
from flask import Flask, render_template

app = Flask(__name__)

@app.route('/user/<username>')
def user(username):
    return render_template('user.html', name=username)

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

    - This will render user.html and pass the username variable to the template.

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2. What is the significance of the templates folder in a Flask project?

- Flask automatically looks for HTML templates in a folder named **templates**.
- It allows for **separation of logic and presentation**, following the **MVC (Model-View-Controller)** pattern.
- Placing HTML files inside templates makes them accessible to render_template().
- Folder structure:

```
/project_folder
  ├── app.py  (Flask application)
  ├── templates/
  │    ├── index.html
  │    ├── user.html
  └── static/  (for CSS, JS, images)
```

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3. What is Jinja2, and how does it integrate with Flask?

- **Jinja2** is a **templating engine** used in Flask to embed Python-like expressions into HTML.
- It supports:
    - **Variables**: {{ name }} (Inserts dynamic values)
    - **Loops**: {% for item in list %}...{% endfor %}
    - **Conditionals**: {% if condition %}...{% endif %}
- Example user.html:

```
html
<html>
<body>
    <h1>Hello, {{ name }}!</h1>
    {% if name == "Admin" %}
        <p>Welcome back, Admin!</p>
    {% else %}
        <p>Enjoy your visit, {{ name }}!</p>
    {% endif %}
</body>
</html>
```

- Flask automatically integrates **Jinja2** when using render_template().