

Q1. What is Flask Framework? Advantages of Flask

Flask:

- Flask is a **lightweight, micro web framework** in Python for building web applications and APIs.
- It is called “micro” because it provides **core features** and allows you to add extensions as needed.

Advantages of Flask:

1. **Lightweight & Simple:** Minimal boilerplate code for small projects.
 2. **Flexible:** You can structure your app as you like.
 3. **Built-in Development Server & Debugger:** Easy to test and debug.
 4. **Supports RESTful request handling:** Ideal for APIs.
 5. **Extensible:** Add extensions for database, authentication, and more.
 6. **Jinja2 Templating:** For dynamic HTML rendering.
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Q2. Simple Flask Application to display ‘Hello World!!’

```
# Import Flask module
from flask import Flask

# Create Flask app instance
app = Flask(__name__)

# Define route
@app.route('/')
def hello():
    return "Hello World!!"
```

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

Instructions in Jupyter Notebook:

1. Install Flask:

```
!pip install flask
```

2. Run the code in a `.py` file or use `%run filename.py`.
3. Open the URL in the browser (usually `http://127.0.0.1:5000/`) to see **Hello World!!**.
4. Take a **screenshot** of the output in the browser and attach it in Jupyter Notebook.

Q3. What is App Routing in Flask? Why do we use app routes?

App Routing:

- Routing is the process of **mapping URLs to functions** in a Flask application.
- The `@app.route()` decorator defines which URL triggers a function.

Why we use app routes:

- To **control what the user sees at different URLs**.
- Enables **dynamic content delivery**.
- Allows **RESTful endpoints** for APIs.

Example:

```
@app.route('/home')
def home():
    return "Welcome to Home Page"
```

- Accessing <http://127.0.0.1:5000/home> displays **Welcome to Home Page**.
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Q4. Create two routes: **/welcome** and **/**

```
from flask import Flask

app = Flask(__name__)

# Root route
@app.route('/')
def company_details():
    return """
    Company Name: ABC Corporation<br>
    Location: India<br>
    Contact Detail: 999-999-9999
    """

# /welcome route
@app.route('/welcome')
def welcome():
    return "Welcome to ABC Corporation"

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

Instructions:

1. Run the Flask app.
2. Visit:

- `http://127.0.0.1:5000/` → Shows company details.
- `http://127.0.0.1:5000/welcome` → Shows welcome message.

3. Take screenshots and attach in Jupyter Notebook.

Q5. Function used in Flask for URL building: `url_for()`

`url_for()`

- Generates a **URL for a given function name**.
- Useful to avoid hardcoding URLs and allows dynamic URL building.

Example:

```
from flask import Flask, url_for

app = Flask(__name__)

@app.route('/')
def home():
    return "This is the Home Page"

@app.route('/about')
def about():
    return "This is the About Page"

@app.route('/show_urls')
def show_urls():
    home_url = url_for('home')
    about_url = url_for('about')
    return f"Home URL: {home_url} <br> About URL: {about_url}"

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

Explanation:

- `url_for('home')` → returns `'/'`
- `url_for('about')` → returns `'/about'`
- If you change the route URL later, `url_for()` **automatically updates the links.**