**[Que-46] - How can you implement file uploads in Flask application**

Implementing file uploads in a Flask application involves configuring a route to handle file uploads, creating an HTML form with appropriate attributes, and handling the uploaded file in the backend. Here’s a step-by-step guide on how to implement file uploads in Flask:

### **Step 1: Set Up Your Flask Application**

Make sure you have Flask installed. If not, you can install it using pip:

pip install flask

### **Step 2: Create a Flask Application**

Create a new directory for your Flask application and within it, create a file named app.py.

### **Step 3: Configure the Flask Application**

#### **app.py**

from flask import Flask, render\_template, request  
  
app = Flask(\_\_name\_\_)  
app.config['UPLOAD\_FOLDER'] = 'uploads' # Folder where uploaded files will be stored  
app.config['ALLOWED\_EXTENSIONS'] = {'txt', 'pdf', 'png', 'jpg', 'jpeg', 'gif'} # Allowed file extensions  
  
@app.route('/')  
def index():  
 return render\_template('index.html')  
  
@app.route('/upload', methods=['POST'])  
def upload\_file():  
 if 'file' not in request.files:  
 return 'No file part'  
 file = request.files['file']  
 if file.filename == '':  
 return 'No selected file'  
 if file and allowed\_file(file.filename):  
 filename = secure\_filename(file.filename)  
 file.save(os.path.join(app.config['UPLOAD\_FOLDER'], filename))  
 return 'File uploaded successfully'  
 return 'Invalid file extension'  
  
def allowed\_file(filename):  
 return '.' in filename and \  
 filename.rsplit('.', 1)[1].lower() in app.config['ALLOWED\_EXTENSIONS']  
  
if \_\_name\_\_ == '\_\_main\_\_':  
 app.run(debug=True)

### **Explanation:**

1. **Import Flask and Request**:
   * from flask import Flask, render\_template, request: Imports necessary modules from Flask.
2. **Configure Upload Folder and Allowed Extensions**:
   * app.config['UPLOAD\_FOLDER'] = 'uploads': Specifies the folder where uploaded files will be stored (uploads in this case).
   * app.config['ALLOWED\_EXTENSIONS'] = {'txt', 'pdf', 'png', 'jpg', 'jpeg', 'gif'}: Sets the allowed file extensions.
3. **Define Routes**:
   * /: Renders the index.html template where the file upload form will be displayed.
   * /upload (POST method): Handles the file upload request.
4. **Handle File Upload**:
   * upload\_file(): Checks if a file was uploaded and verifies its extension. If valid, saves the file to the UPLOAD\_FOLDER.
5. **Validate File Extension**:
   * allowed\_file(filename): Checks if the file extension is in the allowed extensions list.
6. **Run the Flask Application**:
   * if \_\_name\_\_ == '\_\_main\_\_': app.run(debug=True): Starts the Flask application in debug mode.

### **Step 4: Create HTML Form for File Upload**

Create an HTML template named index.html inside a templates folder in your project directory.

#### **templates/index.html**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>File Upload</title>  
</head>  
<body>  
 <h1>Upload File</h1>  
 <form method="POST" enctype="multipart/form-data" action="/upload">  
 <input type="file" name="file" accept=".txt, .pdf, .png, .jpg, .jpeg, .gif">  
 <input type="submit" value="Upload">  
 </form>  
</body>  
</html>

### **Explanation:**

1. **Form Method and Encoding Type**:
   * method="POST": Sends the form data as a POST request.
   * enctype="multipart/form-data": Allows the form to upload files.
2. **File Input**:
   * <input type="file" name="file" accept=".txt, .pdf, .png, .jpg, .jpeg, .gif">: Defines a file input field where users can select files to upload. The accept attribute restricts the file types to specified extensions.
3. **Submit Button**:
   * <input type="submit" value="Upload">: Submits the form data to the /upload route defined in app.py.

### **Step 5: Run Your Flask Application**

1. Open a terminal or command prompt.
2. Navigate to the directory where app.py is located.
3. Run the following command:

python app.py

1. Open a web browser and go to <http://127.0.0.1:5000/>. You should see the file upload form.

### **Step 6: Test File Upload**

* Choose a file with one of the allowed extensions (txt, pdf, png, jpg, jpeg, gif).
* Click the "Upload" button.
* If the file is successfully uploaded, you should see a message indicating success.