Python Web Application Documentation

This documentation provides an overview of the Python web application built using Flask.

Overview

The web application displays the current time in Moscow. It utilizes the Flask web framework to create a simple web server and the `datetime` and `pytz` modules to retrieve and format the current time.

Code Structure

The application consists of a single Python script:

- `app.py`: This script contains the main code for the Flask web application. It imports the necessary modules, defines the Flask application instance, and sets up a route to handle requests to the root URL (`/`). When a request is received at this route, the `current_time` function is called to retrieve the current time in Moscow and return it as a response.

Implementation Details

Flask Application Creation

- The Flask web application is created by instantiating the `Flask` class from the `flask` module. This class represents the Flask application and provides methods for handling routes, requests, and responses.

```
from flask import Flask

app = Flask(__name__)
```

Define Route for Homepage

- The route `/` is defined using the `@app.route('/')` decorator. This decorator binds the URL `/` to the current_time function, specifying that the function should be called when a request is made to the root URL.

```
@app.route('/')
def current_time():
    # Function implementation goes here
    pass
```

Current Time Retrieval Function

- The `current_time` function is responsible for retrieving the current time in Moscow and formatting it as a string with the format `YYYY-MM-DD HH:MM:SS`. This function combines the usage of `datetime.now()` to get the current time and `pytz.timezone('Europe/Moscow')` to convert it to the Moscow timezone.

```
from datetime import datetime
import pytz

def current_time():
    moscow_time = datetime.now(pytz.timezone('Europe/Moscow')).strftime('%Y-%m-
%d %H:%M:%S')
    return moscow_time
```

Get The Number of website visits `/visits`

```
def get_visits():
    with open('visits.txt', 'r') as file:
        visits = int(file.read())
    return visits
```

Also, I keep the number of visits in a file called `visits.txt` and increment it every time the website is visited. This file is mounted to the container so the number of visits will be saved even if the container is deleted.

Running the Flask Application

- When the script is executed directly (`__name__ == '__main__'`), the Flask application is run using the `app.run()` method, which starts the development server.

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

How To Install and Run

To run the Flask web application, follow these steps:

1. **Create a Virtual Environment:**
    - It's recommended to use a virtual environment to isolate project dependencies. Create a new virtual environment by running:

      ```
      python -m venv venv
      ```

- Activate the virtual environment:
  - On Windows:

```
venv\Scripts\activate
```

  - On macOS/Linux:

```
source venv/bin/activate
```

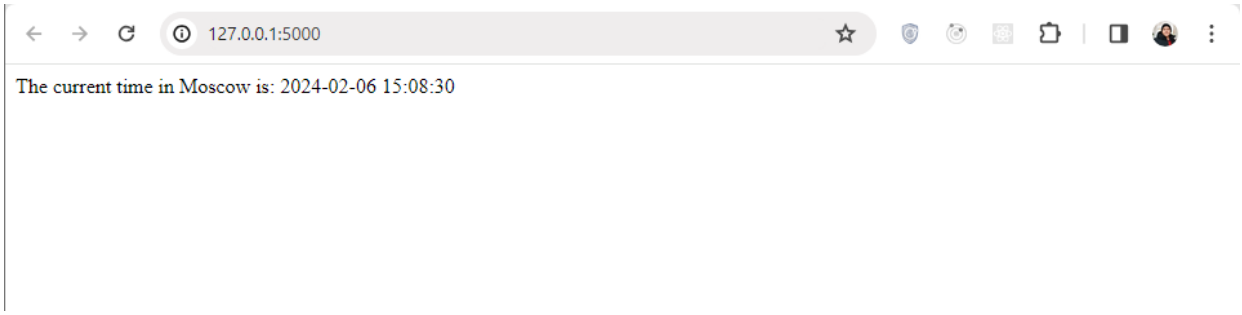
2. **Install Dependencies:**
   - Once the virtual environment is activated, install the required dependencies by running:

```
pip install -r requirements.txt
```

3. **Run the Application:**
   - After installing dependencies, navigate to the directory containing the `app.py` file.
   - Run the following command to start the Flask development server:

```
python app.py
```

   - Open a web browser and visit `http://127.0.0.1:5000/` to access the application.
   - You should see the current time in Moscow displayed on the webpage.
   - Refresh the browser tab and still works 😃




```
(.venv) PS D:\Innopolis\3\2\devops\S24-core-course-labs> python .\app_python\app.py
 * Serving Flask app 'app'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [06/Feb/2024 15:31:58] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [06/Feb/2024 15:31:58] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [06/Feb/2024 15:31:58] "GET / HTTP/1.1" 200 -
```

Unit Tests

Testing Current Time Formatting

- We have a unit test named `test_current_time_format` which verifies that the current time retrieved by our application is correctly formatted in the expected format (`YYYY-MM-DD HH:MM:SS`).

Running the Unit Tests

To run the unit tests for the Python web application, follow these steps:

1. **Navigate to the Application Directory:**
   - Open a terminal or command prompt.
   - Navigate to the directory where your Python web application (`app_python`) is located.
2. **Activate Virtual Environment (if applicable):**
   - If you are using a virtual environment, activate it using the appropriate command for your operating system.
3. **Install Testing Dependencies (if not already installed):**
   - Ensure that the required testing dependencies are installed. You can install them using pip:

     ```
     pip install pytest
     ```
4. **Run the Unit Tests:**
   - Run the following command to execute the unit tests:

     ```
     pytest
     ```

- This command will discover and run all test cases within the `tests` directory.

5. **View Test Results:**

   - After running the tests, pytest will display the test results in the terminal. You should see information about the test cases executed and whether they passed or failed.