Assignment: Deploy a Python Web Application on Cloud

Description:

As a Python developer with knowledge of Google Cloud Platform (GCP), your task is to deploy a Python web application on Google Cloud Run. This assignment will evaluate your programming knowledge, understanding of containerization, and proficiency in deploying applications on GCP.

Requirements:

1. Python Web Application:

a. Create a Python web application using a lightweight web framework such as Flask or FastAPI.
b. Implement basic functionality, such as handling routes, request/response handling, and any additional features you choose to include.
c. Create two Functionalities, to **Register** a face and then **Recognise** a face using DeepFace Library
d. Ensure the application is modular, maintainable, and follows best coding practices.

2. Containerization:

a. Containerize the Python web application using Docker.
b. Create a Dockerfile that sets up the necessary environment and dependencies for running the web application.
c. Test the Docker container locally to ensure it runs correctly.

3. Google Cloud Run Deployment:

a. Set up a project on Google Cloud Platform (GCP) and enable the Cloud Run service.
b. Push the Docker image to a container registry on GCP (e.g., Google Container Registry or Docker Hub).
c. Deploy the containerized web application on Google Cloud Run, ensuring it is accessible via an HTTP endpoint.
d. Configure any necessary environment variables or networking settings required for the application.

Alternatively, some other cloud can be used, but cloud deployment will be crucial.

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4. Testing and Verification:

a. Validate the deployed web application by performing functional tests to ensure it behaves as expected.

b. Verify that the application can handle incoming requests, process them correctly, and return appropriate responses.

5. Documentation:

a. Provide clear and concise documentation explaining the deployment process, including the steps required to set up the GCP project, containerize the application, and deploy it on Google Cloud Run.

b. Include instructions on how to access and test the deployed web application.

Evaluation Criteria:

Your assignment will be evaluated based on the following criteria:
1. Successful Deployment: The Python web application should be deployed on Google Cloud Run and accessible via an HTTP endpoint.
2. Functionality: The web application should demonstrate the basic functionality described in the requirements along with face register and face recognition.
3. Code Quality: The code for the web application should follow best coding practices, be well-structured, and maintainable.
4. Containerization: The Docker container should be properly configured, allowing the web application to run correctly.
5. Testing and Verification: The deployed web application should pass functional tests and handle requests appropriately.
6. Documentation: The documentation should be clear, concise, and provide sufficient instructions for understanding and reproducing the deployment process.

Note: This assignment requires knowledge of containerization, Docker, and Google Cloud Platform (GCP). Ensure you are familiar with these concepts and GCP's documentation to successfully complete the assignment.