

# Assignment 2

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## Exercise 1: Google App Engine

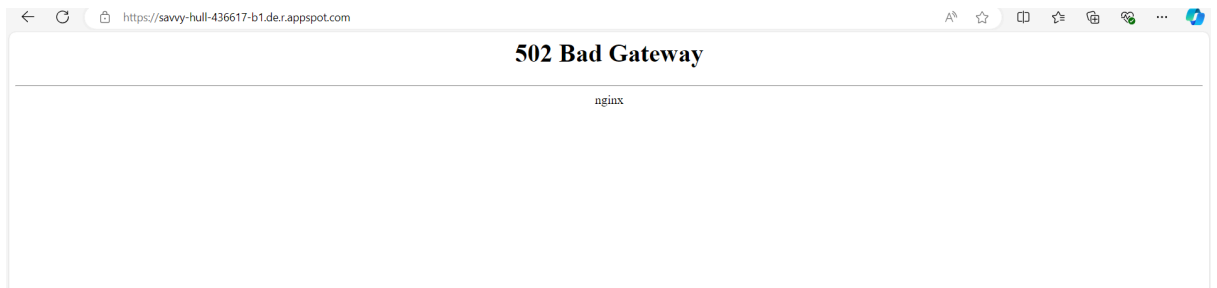
**Objective:** Deploy a simple web application on Google App Engine.

### Instructions:

1. **Setup:**
  - Ensure you have a Google Cloud account.
  - Install the Google Cloud SDK on your local machine.
2. **Create a Project:**
  - Create a new project in the Google Cloud Console.
3. **Prepare the Application:**
  - Write a simple "Hello, World!" web application using Python (Flask).
4. **Create the App Engine Configuration:**
5. **Deploy the Application:**
6. **Access the Application:**
  - Once deployed, access your application using the URL provided by Google App Engine.

### Deliverables:

- A deployed web application on Google App Engine.
- A screenshot of the running application.



```
vernur_y@DESKTOP-2PVM7F3:~/gcp-intro$ gcloud app deploy
Services to deploy:

descriptor:          [/home/vernur_y/gcp-intro/app.yaml]
source:              [/home/vernur_y/gcp-intro]
target project:      [savvy-hull-436617-b1]
target service:      [default]
target version:      [20240924t231147]
target url:          [https://savvy-hull-436617-b1.de.r.appspot.com]
target service account: [savvy-hull-436617-b1@appspot.gserviceaccount.com]

Do you want to continue (Y/n)? y

Beginning deployment of service [default]...

[= Uploading 1 file to Google Cloud Storage =]

File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://savvy-hull-436617-b1.de.r.appspot.com]

You can stream logs from the command line by running:
  $ gcloud app logs tail -s default

To view your application in the web browser run:
  $ gcloud app browse
```

yernur\_y@DESKTOP-2PVM7F3: ~/gcp-intro

GNU nano 6.2

runtime: python39

entrypoint: gunicorn -b :\$PORT app:app

handlers:

- url: /\*  
script: auto

yernur\_y@DESKTOP-2PVM7F3: ~/gcp-intro

GNU nano 6.2

```
from flask import Flask
```

```
app = Flask(__name__)
```

```
@app.route('/')  
def hello_world():
```

```
    return 'Hello, World!'
```

```
if __name__ == '__main__':
```

```
    app.run(host='0.0.0.0', port=8080, debug=True)
```

---

## Exercise 2: Building with Google Cloud Functions

**Objective:** Create a Google Cloud Function that processes HTTP requests.

**Instructions:**

1. **Setup:**
  - Ensure you have a Google Cloud account.
  - Install the Google Cloud SDK on your local machine.
2. **Create a Function:**
  - Create a new Google Cloud Function using the following configuration:
    - **Name:** `helloWorldFunction`
    - **Trigger:** HTTP
    - **Runtime:** Node.js 18 (or another supported runtime)

■ **Entry Point:** `helloWorld`

3. **Write the Code:**

- Write a simple function that returns "Hello, World!" when accessed via HTTP.

4. **Deploy the Function:**

Use the following command to deploy the function:

5. **Invoke the Function:**

- Once deployed, use the provided URL to test the function by accessing it via a web browser or `curl`.

**Deliverables:**

- A deployed Google Cloud Function.
- A screenshot showing the response from the function.

yernur\_y@DESKTOP-2PVM7F3: ~/helloWorldFunction

GNU nano 6.2

```
{
  "name": "helloworld",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "start": "node index.js"
  },
  "dependencies": {}
}
```

yernur\_y@DESKTOP-2PVM7F3: ~/helloWorldFunction

GNU nano 6.2

```
exports.helloWorld = (req, res) => {
  res.send('Hello, World!');
};
```

```
yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$ gcloud functions deploy helloWorld --runtime nodejs18 --trigger-http --allow-unauthenticated
In a future Cloud SDK release, new functions will be deployed as 2nd gen functions by default. This is equivalent to currently deploying new with the --gen2
d and will continue to deploy as 1st gen functions.
You can preview this behavior in beta. Alternatively, you can disable this behavior by explicitly specifying the --no-gen2 flag or by setting the functions/gen
To learn more about the differences between 1st gen and 2nd gen functions, visit:
https://cloud.google.com/functions/docs/concepts/version-comparison
Deploying function (may take a while - up to 2 minutes)...
For Cloud Build Logs, visit: https://console.cloud.google.com/cloud-build/builds;region=us-central1/8d38a64f-91c8-43e3-b1d6-dc18b7bad307?project=915620101779
Deploying function (may take a while - up to 2 minutes)...done.
automaticUpdatePolicy: {}
availableMemoryMb: 256
buildId: 8d38a64f-91c8-43e3-b1d6-dc18b7bad307
buildName: projects/915620101779/locations/us-central1/builds/8d38a64f-91c8-43e3-b1d6-dc18b7bad307
buildServiceAccount: projects/savvy-hull-436617-b1/serviceAccounts/915620101779-compute@developer.gserviceaccount.com
dockerRegistry: ARTIFACT_REGISTRY
entryPoint: helloWorld
httpsTrigger:
  securityLevel: SECURE_ALWAYS
  url: https://us-central1-savvy-hull-436617-b1.cloudfunctions.net/helloWorld
ingressSettings: ALLOW_ALL
labels:
  deployment-tool: cli-gcloud
name: projects/savvy-hull-436617-b1/locations/us-central1/functions/helloWorld
runtime: nodejs18
serviceAccountEmail: savvy-hull-436617-b1@appspot.gserviceaccount.com
sourceUploadUrl: https://storage.googleapis.com/uploads-367793569975.us-central1.cloudfunctions.appspot.com/3c1b1467-ca41-4ac9-9a18-60b5e01433ac.zip
status: ACTIVE
timeout: 60s
updateTime: '2024-09-24T18:50:38.627Z'
versionId: '1'
yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$ curl https://us-central1-savvy-hull-436617-b1.cloudfunctions.net/helloWorld
Hello, World!yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$
```

```
yernur_y@DESKTOP-2PVM7F3:~$ mkdir helloWorldFunction
yernur_y@DESKTOP-2PVM7F3:~$ cd helloWorldFunction
yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$ echo "exports.helloWorld = (req, res) => { res.send('Hello, World!'); }; " > index.js
-bash: !': event not found
yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$ echo "exports.helloWorld = (req, res) => { res.send('Hello, World!'); }; " > index.js
yernur_y@DESKTOP-2PVM7F3:~/helloWorldFunction$ gcloud functions deploy helloWorldFunction --runtime nodejs18 --trigger-http --allow-unauthenticated
API [cloudfunctions.googleapis.com] not enabled on project [savvy-hull-436617-b1]. Would you like to enable and retry (this will take a few minutes)? (y/N)? y
```

## Exercise 3: Containerizing Applications

**Objective:** Containerize a simple application using Docker.

### Instructions:

1. **Setup:**
  - Ensure Docker is installed on your local machine.
2. **Create a Simple Application:**
  - Write a simple Python application.
  -
3. **Create a Dockerfile:**
  - Write a **Dockerfile** to containerize the application.
4. **Build the Docker Image:**

Build the Docker image using the following command:

5. **Run the Docker Container:**

Run the container using the following command:

### Deliverables:

- A Docker image that runs a simple application.
- A screenshot of the container output showing "Hello from inside the container!"

```

This message is shown once a day. To disable it please create the
/home/yernur.y/.hushlogin file.
yernur_y@DESKTOP-2PVM7F3:~$ nano app.py
yernur_y@DESKTOP-2PVM7F3:~$ nano app.py
yernur_y@DESKTOP-2PVM7F3:~$ touch Dockerfile
yernur_y@DESKTOP-2PVM7F3:~$ nano Dockerfile
yernur_y@DESKTOP-2PVM7F3:~$ docker build -t python-app .
ERROR: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Head "http://%2
nied
yernur_y@DESKTOP-2PVM7F3:~$ sudo docker build -t python-app .
[sudo] password for yernur_y:
[+] Building 34.3s (8/8) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.0s
=> => transferring dockerfile: 463B                                0.0s
=> [internal] load metadata for docker.io/library/python:3.9-slim 3.3s
=> [internal] load .dockerignore                                  0.0s
=> => extracting sha256:0fa26e0a6c779a41b265beaf4e11ac2899b82fc487fde96e28dec51f08fd831e 0.1s
=> => extracting sha256:a657783e238bbb29a690f2f314f9eb40a7bf9ab06f795e95590adf1f86413919 0.5s
=> => extracting sha256:b665d04ddefb24a5af0c944a98df2ebfb1e3a26e0a546573041f84e0a4a2150e 0.0s
=> [internal] load build context                                  0.0s
=> => transferring context: 85B                                       0.0s
=> [2/3] WORKDIR /app                                             0.3s
=> [3/3] COPY app.py .                                           0.0s
=> exporting to image                                             0.0s
=> => exporting layers                                              0.0s
=> => writing image sha256:7e0dbe2336c1e2948364dc1dd1363c0d87dbc2cae045bcd01db7f11e76210a12 0.0s
=> => naming to docker.io/library/python-app                      0.0s
[+] Building 1.0s (8/8) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.0s
=> => transferring dockerfile: 463B                                0.0s
=> [internal] load metadata for docker.io/library/python:3.9-slim 0.9s
=> [internal] load .dockerignore                                  0.0s
=> => transferring context: 2B                                       0.0s
=> [1/3] FROM docker.io/library/python:3.9-slim@sha256:2851c06da1fdc3c451784beef8aa31d1a313d8e3fc122e4a1891085a1 0.0s
=> [internal] load build context                                  0.0s
=> => transferring context: 27B                                       0.0s
=> CACHED [2/3] WORKDIR /app                                       0.0s
=> CACHED [3/3] COPY app.py .                                     0.0s
=> exporting to image                                             0.0s
=> => exporting layers                                              0.0s
=> => writing image sha256:7e0dbe2336c1e2948364dc1dd1363c0d87dbc2cae045bcd01db7f11e76210a12 0.0s
=> => naming to docker.io/library/python-app                      0.0s
yernur_y@DESKTOP-2PVM7F3:~$ docker run python-app
Hello from inside the container!
yernur_y@DESKTOP-2PVM7F3:~$

```