Assignment 1, Cloud Application Development

Put all deliverables into github repository in your profile. Share link to google form 24 hours before defense. Defend by explaining deliverables and answering questions.
Deliverables: report in pdf
Google form: https://docs.google.com/forms/d/e/1FAIpQLSe0GyNdOYlvM1tX_I_CtlPod5jBf-ACLGdHYZq1gVZbUeBzIg/viewform?usp=sf_link

Exercise 1: Setting Up Google Cloud SDK

1. **Objective**: Install and configure the Google Cloud SDK on your local machine.
2. **Steps**:
   - Visit the Google Cloud SDK installation page.
   - Follow the instructions to download and install the SDK for your operating system.
   - After installation, run gcloud init to initialize the SDK and authenticate with your Google account.
   - Configure the default project and region.
   - Verify the installation by running gcloud version and gcloud info.
3. **Questions**:
   - What command did you use to authenticate with your Google account? gcloud auth login ○ How did you set the default project? gcloud config set project [PROJECT_ID] ○ What information does the gcloud info command provide? Account, Project, Universe Domain, Current Properties, Logs Directory,

Last Log File, git, ssh


```
C:\WINDOWS\SYSTEM32\cmd.exe                                                    —   □   ×

[1] seraphic-dock-348917
[2] Enter a project ID
[3] Create a new project
Please enter numeric choice or text value (must exactly match list item):  3

Enter a Project ID. Note that a Project ID CANNOT be changed later.
Project IDs must be 6-30 characters (lowercase ASCII, digits, or
hyphens) in length and start with a lowercase letter.
The Google Cloud CLI is configured and ready to use!

* Commands that require authentication will use madiyarbek.a2004@gmail.com by default
Run `gcloud help config` to learn how to change individual settings

This gcloud configuration is called [default]. You can create additional configurations if you work with multiple accoun
ts and/or projects.
Run `gcloud topic configurations` to learn more.

Some things to try next:

* Run `gcloud --help` to see the Cloud Platform services you can interact with. And run `gcloud help COMMAND` to get hel
p on any gcloud command.
* Run `gcloud topic --help` to learn about advanced features of the CLI like arg files and output formatting
* Run `gcloud cheat-sheet` to see a roster of go-to `gcloud` commands.

C:\Users\Admin\AppData\Local\Google\Cloud SDK>gcloud info
Google Cloud SDK [492.0.0]

Platform: [Windows, x86_64] uname_result(system='Windows', node='Rogstrix', release='10', version='10.0.22635', machine=
'AMD64')
Locale: ('English_United States', '1251')
Python Version: [3.11.9 (tags/v3.11.9:de54cf5, Apr  2 2024, 10:12:12) [MSC v.1938 64 bit (AMD64)]]
```

```
C:\WINDOWS\SYSTEM32\cmd.exe                                                    —   □   ×

C:\Users\Admin\AppData\Local\Google\Cloud SDK>gcloud info
Google Cloud SDK [492.0.0]

Platform: [Windows, x86_64] uname_result(system='Windows', node='Rogstrix', release='10', version='10.0.22635', machine=
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Locale: ('English_United States', '1251')
Python Version: [3.11.9 (tags/v3.11.9:de54cf5, Apr  2 2024, 10:12:12) [MSC v.1938 64 bit (AMD64)]]
Python Location: [C:\Users\Admin\AppData\Local\Google\Cloud SDK\google-cloud-sdk\platform\bundledpython\python.exe]
OpenSSL: [OpenSSL 3.0.13 30 Jan 2024]
Requests Version: [2.25.1]
urllib3 Version: [1.26.9]
Default CA certs file: [C:\Users\Admin\AppData\Local\Google\Cloud SDK\google-cloud-sdk\bin\..\lib\third_party\certifi\ca
cert.pem]
Site Packages: [Disabled]

Installation Root: [C:\Users\Admin\AppData\Local\Google\Cloud SDK\google-cloud-sdk]
Installed Components:
  bq: [2.1.8]
  core: [2024.09.06]
  gcloud-crc32c: [1.0.0]
  gsutil: [5.30]
System PATH: [C:\Users\Admin\AppData\Local\Google\Cloud SDK\google-cloud-sdk\bin\..\bin\sdk;C:\Users\Admin\AppData\Local
\Google\Cloud SDK\google-cloud-sdk\bin;C:\Program Files (x86)\Microsoft\Edge\Application;C:\Program Files\Common Files\O
racle\Java\javapath;C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\Program Files (x86)\NVIDIA Corporation\P
hysX\Common;C:\WINDOWS\system32;C:\WINDOWS;C:\WINDOWS\System32\Wbem;C:\WINDOWS\System32\WindowsPowerShell\v1.0\;C:\WINDO
WS\System32\OpenSSH\;C:\MinGW\bin;C:\Users\Admin\AppData\Local\Programs\Python\Python310;C:\Users\Admin\AppData\Local\Pr
ograms\Python\Python310\Scripts;C:\Program Files (x86)\PostgreSQL\Npgsql\bin;C:\Program Files\PostgreSQL\14\bin;C:\Progr
am Files\PostgreSQL\14\lib;C:\Program Files\nodejs\;C:\Program Files\Java\jdk-18.0.2.1\bin;C:\Program Files\Git\cmd;C:\P
rogram Files\Docker\Docker\resources\bin;C:\Program Files\PostgreSQL\15\bin;C:\Program Files\Redis\;C:\Program Files\pro
toc-23.1-win64\bin;C:\kubernetes;C:\protoc-23.4-win64\bin;C:\Program Files\MongoDB\mongosh-1.10.3-win32-x64\bin;C:\Progr
```

Exercise 2: Exploring Cloud Shell

1. **Objective**: Familiarize yourself with the Google Cloud Shell environment.

2. **Steps**:
   - ○ Open the Google Cloud Console and activate Cloud Shell.
   - ○ Explore the environment by listing files and checking the available tools.
   - ○ Run the command gcloud config list to see your current configuration.
   - ○ Create a directory named gcp-intro and navigate into it.
   - ○ Use the built-in code editor to create a simple README.md file describing your GCP project.
3. **Questions**:

○ What is the default home directory in Cloud Shell? /home/[YOUR_USERNAME]/ ○

What tools are pre-installed in Cloud Shell? gcloud, gsutil, kubectl, nano, vim, etc. ○

How can you open the built-in code editor in Cloud Shell? Use the code command

Exercise 3: Managing Projects with Google Cloud SDK

1. **Objective**: Use Google Cloud SDK to manage projects.
2. **Steps**:
   - ○ List all the projects associated with your Google account using gcloud projects list.
   - ○ Create a new project with the command gcloud projects create PROJECT_ID -- name="My First GCP Project".
   - ○ Set this new project as your default project.
   - ○ Explore project metadata using gcloud projects describe PROJECT_ID.
   - ○ Delete the project using gcloud projects delete PROJECT_ID after completing the exercise.
3. **Questions**:

○ How do you list all projects associated with your account? gcloud projects list

○ What command is used to set a default project? gcloud config set project [PROJECT_ID]

○ How do you describe project metadata? gcloud projects describe [PROJECT_ID]

Exercise 4: Using Cloud Shell for Basic Operations

1. **Objective**: Perform basic file and directory operations in Cloud Shell.
2. **Steps**:
   - ○ In Cloud Shell, create a directory structure that mimics a small project (e.g., myproject/src, myproject/tests, myproject/docs).
   - ○ Create a few files in these directories and use commands like touch, nano, cat, and rm to manipulate them.
   - ○ Write how to use gsutil to create a new Cloud Storage bucket and upload a file from your Cloud Shell environment.

○　Verify the file upload by listing the contents of the bucket.
3. **Questions**:

○ What command did you use to create the directory structure? mkdir -p myproject/src myproject/tests myproject/docs

○ How did you upload a file to a Cloud Storage bucket? gsutil cp [LOCAL_FILE_PATH] gs://[BUCKET_NAME]

○ How can you list the contents of a Cloud Storage bucket? gsutil ls gs://[BUCKET_NAME]

Exercise 5: Automating Tasks with Shell Scripts in Cloud Shell

1. **Objective**: Write and execute a basic shell script in Cloud Shell.
2. **Steps**:
    ○　In Cloud Shell, create a new shell script named setup.sh in your gcp-intro directory.
    ○　The script should automate the creation of a new directory, a simple text file, and set up a basic Google Cloud configuration (e.g., set a default project).
    ○　Make the script executable using chmod +x setup.sh.
    ○　Run the script and verify that it performs the expected tasks.
3. **Questions**:
○ What command did you use to make the script executable? chmod +x setup.sh
 ○ How did you ensure the script was executed correctly? By checking the output and verifying the tasks are performed.
○ What steps did your script automate? Creation of directory, file, and setting default project