Cloud Application Development Assignment 1

Toktamys Gulim

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.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud init
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [default] are:
accessibility:
  screen_reader: 'True'
core:
  account: glimtoktamys82@gmail.com
  disable_usage_reporting: 'True'
```

○ Configure the default project and region.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud config set project cloud-lesson-2024
Updated property [core/project].

C:\Program Files (x86)\Google\Cloud SDK>gcloud config set compute/region us-central1
API [compute.googleapis.com] not enabled on project [cloud-lesson-2024]. Would you like to
take a few minutes)? (y/N)?  y
```

○ Verify the installation by running gcloud version and gcloud info.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud version
Google Cloud SDK 492.0.0
bq 2.1.8
core 2024.09.06
gcloud-crc32c 1.0.0
gsutil 5.30
```

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud info
Google Cloud SDK [492.0.0]

Platform: [Windows, x86_64] uname_result(system='Windows', node='WIN-FKFP0EHD2QR', release='10', vers
achine='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)]]
Python Location: [C:\Program Files (x86)\Google\Cloud SDK\google-cloud-sdk\platform\bundledpython\pyt
OpenSSL: [OpenSSL 3.0.13 30 Jan 2024]
Requests Version: [2.25.1]
urllib3 Version: [1.26.9]
Default CA certs file: [C:\Program Files (x86)\Google\Cloud SDK\google-cloud-sdk\bin\..\lib\third_par
em]
Site Packages: [Disabled]

Installation Root: [C:\Program Files (x86)\Google\Cloud SDK\google-cloud-sdk]
Installed Components:
  bq: [2.1.8]
  core: [2024.09.06]
  gcloud-crc32c: [1.0.0]
  gsutil: [5.30]
```

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?

Including: SDK version, Active account, Current project, Default region and zone, Installed components and their versions, Paths to the configuration files and SDK directories, Environment variables

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.

```
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ ls -la
total 36
drwxr-x--- 5 glimtoktamys82 glimtoktamys82 4096 Sep 13 10:15 .
drwxr-xr-x 4 root           root           4096 Sep 13 10:14 ..
-rw-r--r-- 1 glimtoktamys82 glimtoktamys82  220 Jan  6  2022 .bash_logout
-rw-r--r-- 1 glimtoktamys82 glimtoktamys82 3809 Aug 21 20:55 .bashrc
drwxr-xr-x 3 glimtoktamys82 glimtoktamys82 4096 Aug 22 07:05 .config
drwxrwxr-x 2 glimtoktamys82 glimtoktamys82 4096 Sep 13 10:15 .docker
drwxrwxr-x 3 glimtoktamys82 glimtoktamys82 4096 Sep 13 10:15 .npm
-rw-r--r-- 1 glimtoktamys82 glimtoktamys82  807 Jan  6  2022 .profile
-rw-r--r-- 1 glimtoktamys82 glimtoktamys82  913 Sep 13 10:15 README-cloudshell.txt
-rw-r--r-- 1 glimtoktamys82 glimtoktamys82    0 Sep 13 10:15 .sudo_as_admin_successful
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ which gcloud
/usr/bin/gcloud
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ which git
/usr/bin/git
```
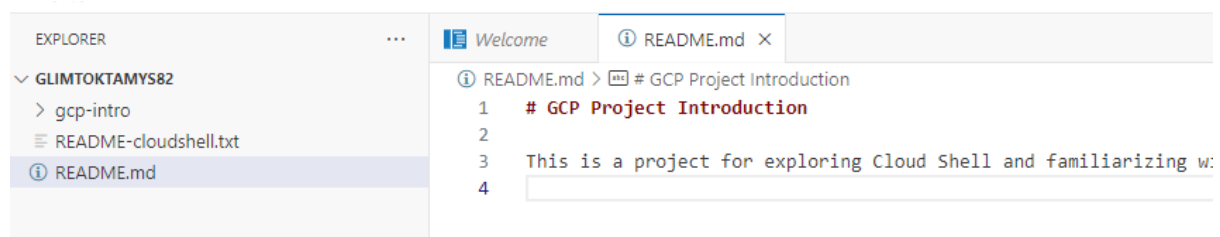
○ Run the command gcloud config list to see your current configuration.

```
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ gcloud config list
[accessibility]
screen_reader = True
[component_manager]
disable_update_check = True
[compute]
gce_metadata_read_timeout_sec = 30
[core]
account = glimtoktamys82@gmail.com
disable_usage_reporting = False
project = plated-howl-435508-q1
[metrics]
environment = devshell
```

○ Create a directory named gcp-intro and navigate into it.

```
Your active configuration is: [cloudshell-12730]
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ mkdir gcp-intro
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ cd gcp-intro
```

○ Use the built-in code editor to create a simple README.md file describing your GCP project.

```
EXPLORER                          ···    Welcome        ⓘ README.md  ×

∨ GLIMTOKTAMYS82                          ⓘ README.md > ᴹᴰ # GCP Project Introduction
  > gcp-intro                             1    # GCP Project Introduction
  ☰ README-cloudshell.txt                 2
  ⓘ README.md                             3    This is a project for exploring Cloud Shell and familiarizing wi
                                          4
```

3. Questions:

○ What is the default home directory in Cloud Shell?

/home/glimtoktamys82

```
glimtoktamys82@cloudshell:~/gcp-intro (plated-howl-435508-q1)$ echo $HOME
/home/glimtoktamys82
```

○ What tools are pre-installed in Cloud Shell?

Google Cloud SDK command-line tool. Google Cloud Storage command-line tool. Git.Python, Java.

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

clicking the Open Editor button

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.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud projects list
PROJECT_ID: alien-container-434507-d1
NAME: My First Project
PROJECT_NUMBER: 272753792922

PROJECT_ID: cloud-lesson-2024
NAME: cloud-lesson-2024
PROJECT_NUMBER: 1073947986247

PROJECT_ID: data-hype-434507
NAME: Data hype
PROJECT_NUMBER: 816747147905

PROJECT_ID: plated-howl-435508-q1
NAME: My First Project
PROJECT_NUMBER: 701177240841

PROJECT_ID: static-potion-434507-d9
NAME: My First Project
PROJECT_NUMBER: 76988136427
```

○ Create a new project with the command gcloud projects create

PROJECT_ID --name="My First GCP Project".

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud projects create my-new-cloud-project --name="My First GCP Project"
ERROR: (gcloud.projects.create) Project creation failed. The project ID you specified is already in use by another proje
ct. Please try an alternative ID.

C:\Program Files (x86)\Google\Cloud SDK>gcloud projects list
PROJECT_ID: alien-container-434507-d1
NAME: My First Project
PROJECT_NUMBER: 272753792922

PROJECT_ID: cloud-lesson-2024
NAME: cloud-lesson-2024
PROJECT_NUMBER: 1073947986247

PROJECT_ID: data-hype-434507
NAME: Data hype
PROJECT_NUMBER: 816747147905

PROJECT_ID: plated-howl-435508-q1
NAME: My First Project
PROJECT_NUMBER: 701177240841

PROJECT_ID: static-potion-434507-d9
NAME: My First Project
PROJECT NUMBER: 76988136427
```

○ Set this new project as your default project.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud projects create my-first-gcp-project-2002 --name="My First GCP Project"
Create in progress for [https://cloudresourcemanager.googleapis.com/v1/projects/my-first-gcp-project-2002].
Waiting for [operations/cp.5428092740387855084] to finish...done.
Enabling service [cloudapis.googleapis.com] on project [my-first-gcp-project-2002]...
Operation "operations/acat.p2-678425632894-71b0b06e-2658-4ba0-816a-57aa92655de8" finished successfully.

C:\Program Files (x86)\Google\Cloud SDK>gcloud config set project my-first-gcp-project-2002
Updated property [core/project].
```

○ Explore project metadata using gcloud projects describe PROJECT_ID.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud projects describe my-first-gcp-project-2002
createTime: '2024-09-13T12:09:59.109037Z'
lifecycleState: ACTIVE
name: My First GCP Project
projectId: my-first-gcp-project-2002
projectNumber: '678425632894'
```

○ Delete the project using gcloud projects delete PROJECT_ID after

completing the exercise.

```
C:\Program Files (x86)\Google\Cloud SDK>gcloud projects delete my-first-gcp-project-2002
Your project will be deleted.

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

Deleted [https://cloudresourcemanager.googleapis.com/v1/projects/my-first-gcp-project-2002].

You can undo this operation for a limited period by running the command below.
    $ gcloud projects undelete my-first-gcp-project-2002

See https://cloud.google.com/resource-manager/docs/creating-managing-projects for information on shutting down projects.
```

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.

```
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ mkdir -p myproject/src myproject/tests myproject/docs
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ touch myproject/src/main.py myproject/tests/test_main.py myproject/docs/readme.md
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ nano myproject/docs/readme.md
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ cat myproject/docs/readme.md
# My Project Documentation

glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ rm myproject/tests/test_main.py
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$
```

○ 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.

```
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ gsutil mb gs://my-first-bucket-2002
Creating gs://my-first-bucket-2002/...
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ gsutil cp myproject/docs/readme.md gs://my-first-bucket-2002/
Copying file://myproject/docs/readme.md [Content-Type=text/markdown]...
- [1 files][   28.0 B/   28.0 B]
Operation completed over 1 objects/28.0 B.
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ gsutil ls gs://my-first-bucket-2002/
gs://my-first-bucket-2002/readme.md
```

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 myproject/docs/readme.md gs:// my-first-bucket-2002/

○ How can you list the contents of a Cloud Storage bucket?

gsutil ls gs:// my-first-bucket-2002/

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.

```
glimtoktamys82@cloudshell:~ (plated-howl-435508-q1)$ mkdir -p ~/gcp-intro && cd ~/gcp-intro
glimtoktamys82@cloudshell:~/gcp-intro (plated-howl-435508-q1)$ nano setup.sh
glimtoktamys82@cloudshell:~/gcp-intro (plated-howl-435508-q1)$
```

○ 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).

```
mkdir ~/my-new-directory

touch ~/my-new-directory/text.txt

echo "This is a sample file" > ~/my-new-directory/text.txt

gcloud config set project cloud-lesson-2024

echo "Directory, file created, and default project set."
```

○ Make the script executable using chmod +x setup.sh.

○ Run the script and verify that it performs the expected tasks.

```
glimtoktamys82@cloudshell:~/gcp-intro (plated-howl-435508-q1)$ chmod +x setup.sh
glimtoktamys82@cloudshell:~/gcp-intro (plated-howl-435508-q1)$ ./setup.sh
Updated property [core/project].
Directory, file created, and default project set.
glimtoktamys82@cloudshell:~/gcp-intro (cloud-lesson-2024)$ ls ~/my-new-directory
text.txt
glimtoktamys82@cloudshell:~/gcp-intro (cloud-lesson-2024)$ cat ~/my-new-directory/text.txt
This is a sample file
glimtoktamys82@cloudshell:~/gcp-intro (cloud-lesson-2024)$ gcloud config list project
[core]
project = cloud-lesson-2024

Your active configuration is: [cloudshell-14252]
glimtoktamys82@cloudshell:~/gcp-intro (cloud-lesson-2024)$
```

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?

First, I'm running the script using ./setup.sh.then   using ls and cat commands to verify the directory and file were created.at last,running gcloud config list project to check the Google Cloud project was set

○ What steps did your script automate?

create a new directory, a sample file and default project.