

Cloud Application Development Assignment 1

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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

```

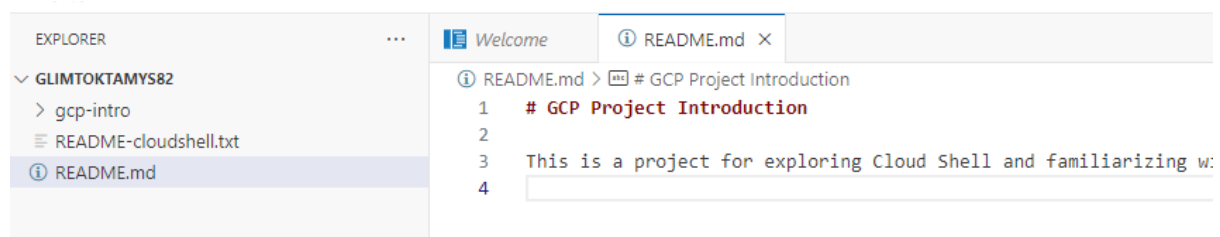
- Run the command `gcloud config list` to see your current configuration.

```
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.



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 project. 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.