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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-ACLGdHYZq1gVZbUeBzlg/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 or **gcloud init**
 - How did you set the default project?
To set the default project I used: **gcloud config set project cloud-dev-435717**
(cloud-dev-435717 – my project id)
 - What information does the `gcloud info` command provide?
Google cloud SDK version, platform (MAC for me), python version and location, installation root, system path, active config, current account, project and universe domain,

```

Updated property [core/project].
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set compute/region
ERROR: (gcloud.config.set) argument VALUE: Must be specified.
Usage: gcloud config set SECTION/PROPERTY VALUE [optional flags]
optional flags may be --help | --installation

For detailed information on this command and its flags, run:
gcloud config set --help
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set compute/region cloud-dev
API [compute.googleapis.com] not enabled on project [cloud-dev]. Would you like
to enable and retry (this will take a few minutes)? (y/N)? y

Enabling service [compute.googleapis.com] on project [cloud-dev]...
ERROR: (gcloud.config.set) PERMISSION_DENIED: Permission denied to enable service [compute.googleapis.com]
Help Token: AaueqGSL3Sbehom_yx9stWwVnGxZ_5V-6cDDD-d4jQt_2iShOA79-uVGMbS2hZYUGHuI-eHS0aIj6MN0gDJeV32viPkurVio00AARUpAGtdRpx7. This command is authenticated as altairkabdrakhmanov@gmail.com which is the active account specified by the [core/account] property
- '@type': type.googleapis.com/google.rpc.PreconditionFailure
violations:
- subject: ?error_code=110002&service=serviceusage.googleapis.com&permission=serviceusage.services.enable&resource=cloud-dev
type: googleapis.com
- '@type': type.googleapis.com/google.rpc.ErrorInfo
domain: serviceusage.googleapis.com
metadata:
[
  permission: serviceusage.services.enable
  resource: cloud-dev
  service: serviceusage.googleapis.com
  reason: AUTH_PERMISSION_DENIED
]
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud auth login
Your browser has been opened to visit:
https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555948559.apps.googleusercontent.com&redirect_uri=http%3A%2F%2Flocalhost%3A8085%2F&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fsqlservice.login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=KclKvgMoNdVa8UBglSKLeLWZujGFft&access_type=offline&code_challenge=9E0FR7aVi4cqFtBAZia7gBxCa5zxNd6ljIHQ8C1oZ18&code_challenge_method=S256

You are now logged in as [altairkabdrakhmanov@gmail.com].
Your current project is [cloud-dev]. You can change this setting by running:
$ gcloud config set project PROJECT_ID
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set project cloud-dev
WARNING: [altairkabdrakhmanov@gmail.com] does not have permission to access projects instance [cloud-dev] (or it may not exist): The caller does not have permission. This command is authenticated as altairkabdrakhmanov@gmail.com which is the active account specified by the [core/account] property
Are you sure you wish to set property [core/project] to cloud-dev?

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

Updated property [core/project].
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set project cloud-dev-435717
Updated property [core/project].
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set compute/region
ERROR: (gcloud.config.set) argument VALUE: Must be specified.
Usage: gcloud config set SECTION/PROPERTY VALUE [optional flags]
optional flags may be --help | --installation

For detailed information on this command and its flags, run:
gcloud config set --help
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set compute/region --help

(base) kabdrakhman@MacBook-Pro-Altair ~ %
(base) kabdrakhman@MacBook-Pro-Altair ~ % gcloud config set compute/region EUROPE
API [compute.googleapis.com] not enabled on project [cloud-dev-435717]. Would
you like to enable and retry (this will take a few minutes)? (y/N)? y

Enabling service [compute.googleapis.com] on project [cloud-dev-435717]...
WARNING: Property validation for compute/region was skipped.
Updated property [compute/region].
(base) kabdrakhman@MacBook-Pro-Altair ~ % █

```

Exercise 2: Exploring Cloud Shell

- Objective:** Familiarize yourself with the Google Cloud Shell environment.
- 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.
- Questions:**
 - What is the default home directory in Cloud Shell?
/home/altairkabdrakhmanov
 - What tools are pre-installed in Cloud Shell?
Available tools: Linux utilities, gcloud cli, git, docker, TensorFlow, Terraform.
Available languages: Java, Go, Python, Node.js, Ruby, PHP, .NET Core
 - How can you open the built-in code editor in Cloud Shell?
In cloud shell terminal tab you can find 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`.
 - 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?
I did that with using **gcloud projects list** command
 - What command is used to set a default project?
To set a default project I used **gcloud config set project my-first-gcp-project-435718 (project id)** command
 - How do you describe project metadata?
To describe I used **gcloud projects describe my-first-gcp-project-435718 (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 myproject/src, myproject/tests, myproject/docs`
I used this command
`mkdir -p myproject/src, myproject/tests, myproject/docs`
 - How did you upload a file to a Cloud Storage bucket?
I created new Cloud Storage bucket, then I used this command

gsutil cp [FILE_PATH] gs://[BUCKET_NAME]

- How can you list the contents of a Cloud Storage bucket?
To list the contents of a Cloud Storage I used:
gsutil ls gs://[BUCKET_NAME] command

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?
To make this script executable I write this command
chmod +x setup.sh

- How did you ensure the script was executed correctly?

When I ran `./setup.sh` command it showed my the script. Below the screenshot

```
altairkabdrakhmanov@cloudshell:~/gcp-intro (cloud-dev-435717)$ ./setup.sh
Enter the name for the new directory:
Altair
Directory 'Altair' created successfully.
Enter the name of the file (without extension):
hello
What content would you like to add to 'hello.txt'?
Hello world
File 'hello.txt' created inside 'Altair'.
Enter your Google Cloud PROJECT_ID:
cloud-dev-435717
Updated property [core/project].
Google Cloud project set to 'cloud-dev-435717'.
Setup complete! File 'Altair/hello.txt' created and project
'cloud-dev-435717' is now set as the default.
altairkabdrakhmanov@cloudshell:~/gcp-intro (cloud-dev-435717)$
```

- What steps did your script automate?
Creating directory, text file, content for it and select default project.