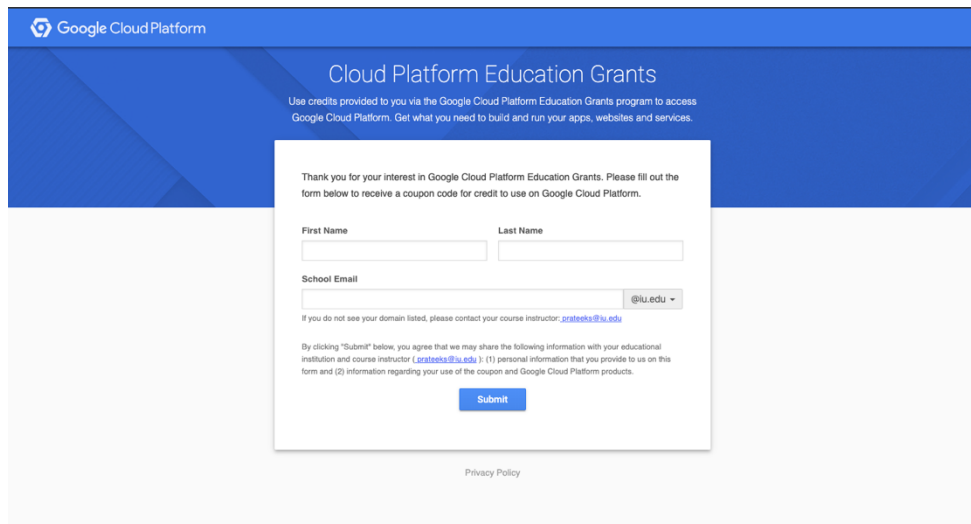


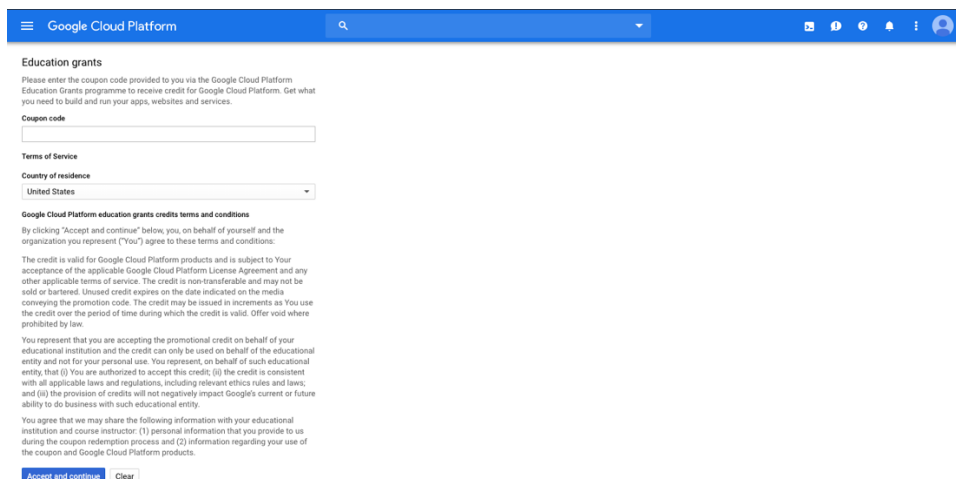
Google Cloud Platform (GCP) account setup

- 1.) Login and create your GCP accounts and claim the credits offered by Google. This should be visible in your browser console. Use the following link to enter your details and claim credits: [student coupon retrieval link](#). **PLEASE MAKE SURE TO USE YOUR IU ACCOUNTS WHEN CLAIMING CREDITS AND LOGGING IN TO GCP!** This is only for when you log in separately to your GCP console as the link for the education grant automatically takes an IU account.



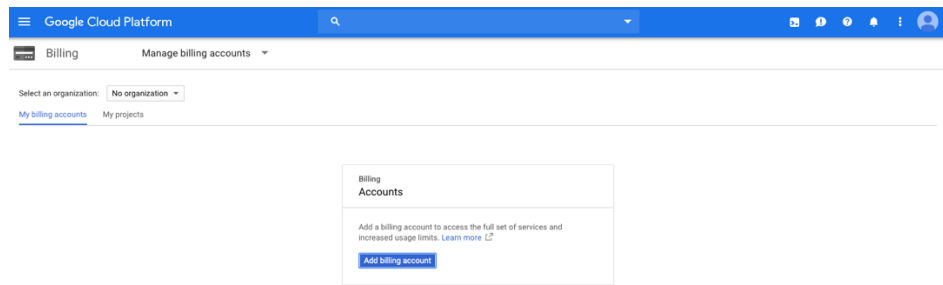
The screenshot shows the 'Cloud Platform Education Grants' registration page. It features a blue header with the Google Cloud Platform logo. The main content area is white with a blue border. It contains a form with fields for 'First Name', 'Last Name', and 'School Email'. The 'School Email' field has a dropdown menu showing '@iu.edu'. Below the form, there is a 'Submit' button and a 'Privacy Policy' link.

- 2.) After step 1, you should login to your GCP web browser [console](#) (with your IU id), and claim the [coupons](#).

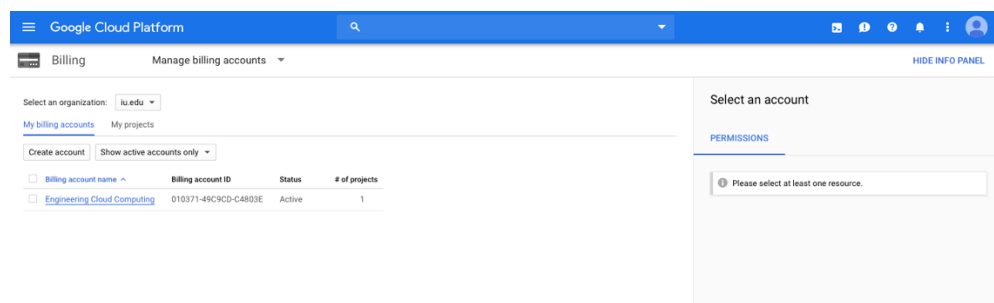


The screenshot shows the 'Education grants' redemption page in the Google Cloud Platform console. It has a blue header with the Google Cloud Platform logo and a search bar. The main content area is white. It contains a form with a 'Coupon code' field, a 'Terms of Service' section, and a 'Country of residence' dropdown menu showing 'United States'. Below the form, there is a 'Submit' button and a 'Privacy Policy' link.

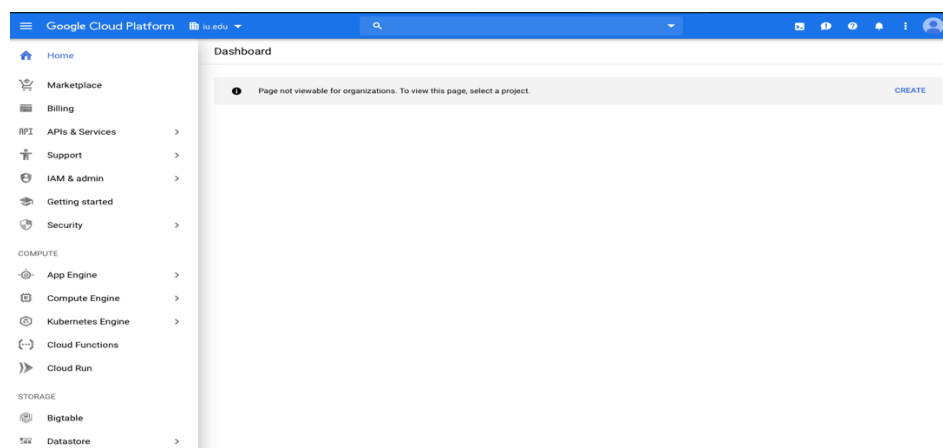
- 3.) Make sure the credit reflects in your account by checking the billing method in your console. The billing page is [here](#).



- 4.) Without a valid billing method, you cannot create projects and hence, create any VM instances or launch services on the cloud. The coupons you just claimed should be visible under the billing account name **Engineering Cloud Computing**. Select 'iu.edu' as a drop-down from 'Select an organization'. You should then see something like this:

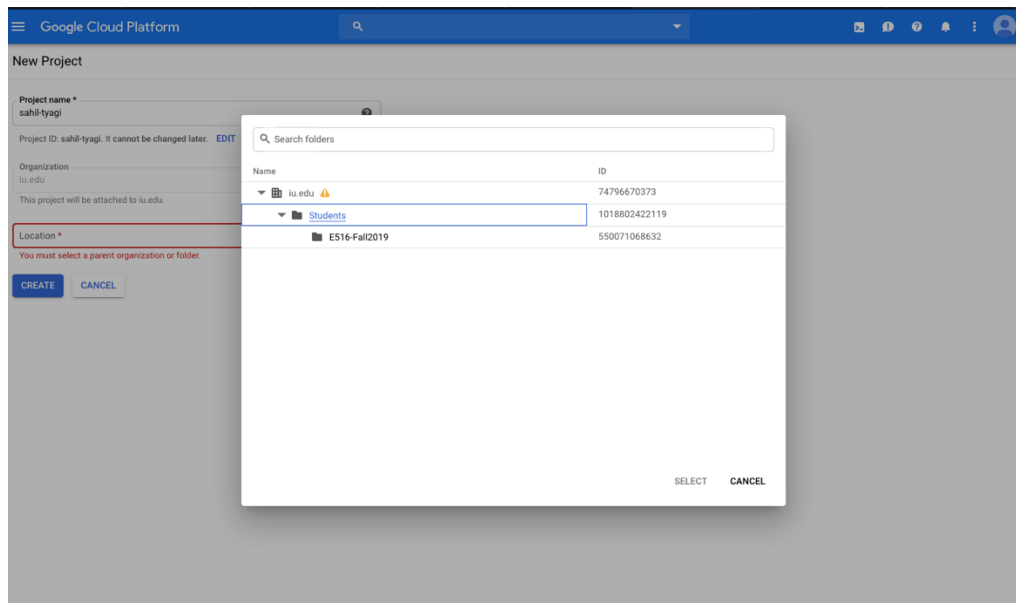


- 5.) Once that is done, each one of you should create a project to get started with using the cloud services. If you're already logged in to GCP, browse to Home where you will see something like:



- 6.) Click on **CREATE** and enter the Project name. Please use the project name in the format of ***your-first-name *hyphen* your-last-name***. Projects by default will be converted to lowercase format fyi. For example, I have created a project with my name as *sahil-tyagi*. This is to help us monitor/assist each of you with future tasks.

The organization will be **iu.edu**. You create your projects in the location: Students->E516-Fall2019.



GCP SDK setup:

- 7.) Open the following and follow the steps for the OS that you're using: <https://cloud.google.com/sdk/install>. Assuming most of you are using Windows or MacOS, use the interactive installer to download the cloud SDK. People with Ubuntu can use the apt-get or yum installer and follow steps, although I would strongly suggest you use the interactive installer.

LINUXMACOSWINDOWS (INSTALLER)WINDOWS (ZIP)

1. Enter the following at a command prompt:

```
curl https://sdk.cloud.google.com | bash
```

2. Restart your shell:

```
exec -l $SHELL
```

3. Run **gcloud init** to initialize the **gcloud** environment:

```
gcloud init
```

- 8.) For Windows users, you can either download the zip file and execute the install.bat script. Alternatively, you can use the installer mode.
- 9.) You need to enter your GCP credentials that you created in step 1 to proceed with the setup of the SDK after *gcloud init*. If you do run the init command multiple times,

you can just pick the same old configuration (which would be option 1). If you have already created the project from step 6, you should see it listed in the terminal.

```
149-160-219-203:Desktop sahiltyagi$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [e516] are:
core:
  account: styagi@iu.edu
  disable_usage_reporting: 'False'

Pick configuration to use:
[1] Re-initialize this configuration [e516] with new settings
[2] Create a new configuration
[3] Switch to and re-initialize existing configuration: [default]
Please enter your numeric choice: 2

Enter configuration name. Names start with a lower case letter and
contain only lower case letters a-z, digits 0-9, and hyphens '-': e516config
Your current configuration has been set to: [e516config]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).

Choose the account you would like to use to perform operations for
this configuration:
[1] sahil.tyagi@gmail.com
[2] styagi@iu.edu
[3] Log in with a new account
Please enter your numeric choice: 2

You are logged in as: [styagi@iu.edu].

Pick cloud project to use:
[1] e516-sahiltyagi
[2] kbtest-256713
[3] sahil-tyagi
[4] Create a new project
Please enter numeric choice or text value (must exactly match list
item):
```

- 10.) Once set, you should see the confirmation as shown below and you're good to go. I would suggest that you update the components with ***gcloud components update***.

```
Your current project has been set to: [sahil-tyagi].

Not setting default zone/region (this feature makes it easier to use
[gcloud compute] by setting an appropriate default value for the
--zone and --region flag).
See https://cloud.google.com/compute/docs/gcloud-compute section on how to set
default compute region and zone manually. If you would like [gcloud init] to be
able to do this for you the next time you run it, make sure the
Compute Engine API is enabled for your project on the
https://console.developers.google.com/apis page.

Your Google Cloud SDK is configured and ready to use!

* Commands that require authentication will use styagi@iu.edu by default
* Commands will reference project 'sahil-tyagi' by default
Run 'gcloud help config' to learn how to change individual settings

This gcloud configuration is called [e516config]. You can create additional configurations if you work with multiple accounts 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 help on any gcloud command.
* Run 'gcloud topic --help' to learn about advanced features of the SDK like arg files and output formatting

Updates are available for some Cloud SDK components. To install them,
please run:
  $ gcloud components update

149-160-219-203:Desktop sahiltyagi$
```

- 11.) When you try to use command line APIs, you might have to enable them from the command line itself before using them (it's going to be a simple y/N option). Try to list your project from the terminal with ***gcloud projects list***.

- 12.) Now let's try to create a compute instance and add ssh keys so we can access the same from the command line. To create an instance, use the command ***gcloud compute instances create *instance_name****. You'll be asked to select the region to spawn the instance (you can select any, though # 46-50 make most sense since they're closest, hence least latency!). You can list your instances with ***gcloud compute instances list***. SSH keys will be generated automatically when you try to ssh to a remote instance and the key will be automatically saved in the metadata when you use the cloud SDK. Run ***gcloud compute ssh *instance name****. You don't have to enter a passphrase if you don't want to (just hit enter!). You can also login to the browser console and had over to metadata to see your key.(ping is a simple command to test transmission of network packets to a server). If you want to exit the instance, just hit ***exit***.

```
gcloud help -- SEARCH_RESULTS
149-160-219-203:Desktop sahiltyagi$ gcloud compute ssh instance1
WARNING: The public SSH key file for gcloud does not exist.
WARNING: The private SSH key file for gcloud does not exist.
WARNING: You do not have an SSH key for gcloud.
WARNING: SSH keygen will be executed to generate a key.
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /Users/sahiltyagi/.ssh/google_compute_engine.
Your public key has been saved in /Users/sahiltyagi/.ssh/google_compute_engine.pub.
The key fingerprint is:
SHA256:HTScXrLSW/xnEJi/aNGL4UKNTgNpFTXW/urCJfOL9xM sahiltyagi@Sahil.local
The key's randomart image is:
+----[RSA 2048]-----+
|      +=+=+      |
|      +.oo=.o    |
|      .o.+ * o    |
|      .*. * o!    |
|      S+.o * B.l  |
|      o B =E=l    |
|      + = oo!     |
|      o.+ .       |
|      .+ooo!      |
+----[SHA256]-----+
No zone specified. Using zone [us-central1-b] for instance: [instance1].
Updating project ssh metadata...Updated [https://www.googleapis.com/compute/v1/projects/sahil-tyagi].
Updating project ssh metadata...done.
Waiting for SSH key to propagate.
Warning: Permanently added 'compute.6879964721882228535' (ECDSA) to the list of known hosts.
Linux instance1 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
sahiltyagi@instance1:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=52 time=0.915 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=52 time=0.292 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=52 time=0.294 ms
```

- 13.) To stop or start an instance, use ***gcloud compute instances start/stop *instance_name****. If you want to delete an instance, replace the start/stop above with delete . **MAKE SURE TO STOP ALL INSTANCES WHEN YOU'RE DONE USING THEM AS THIS WOULD COST YOU CREDITS** (unless the work you're doing requires you to do otherwise).
- 14.) Report the output of ***gcloud compute operations list*** as part of your assignment submission.

