ECE599/692 - Deep Learning

THE UNIVERSITY OF
TENNESSEE
KNOXVILLE
BIG ORANGE. BIG IDEAS.®

Chengcheng Li

Date: 08/23/2018

Content

- Course Information

- Google Cloud Platform

Course Website

Not Secure | web.eecs.utk.edu/~qi/deeplearning/

ECE599/692 - Deep Learning

Course Information

Syllabus

References

Datasets

Instructor

- Dr. Hairong Qi
- Office Hour: MW 1:00pm-3:00pm, MK304
- Lectures: TR 2:10pm-3:25pm, MK405
- Email: hqi@utk.edu

Course Material

- Course Website: http://web.eecs.utk.edu/~qi/deeplearning
- Prerequisite: ECE471/571 (Pattern Recognition) or COSC425/528 (Machine Learning), basic linear algebra, probability, and statistics

Teaching Assistant

- Chengcheng Li
- Email: cli42@vols.utk.edu
- Office Hour: TR 3:30-5:30pm, MK539

Google Cloud Platform (GCP)

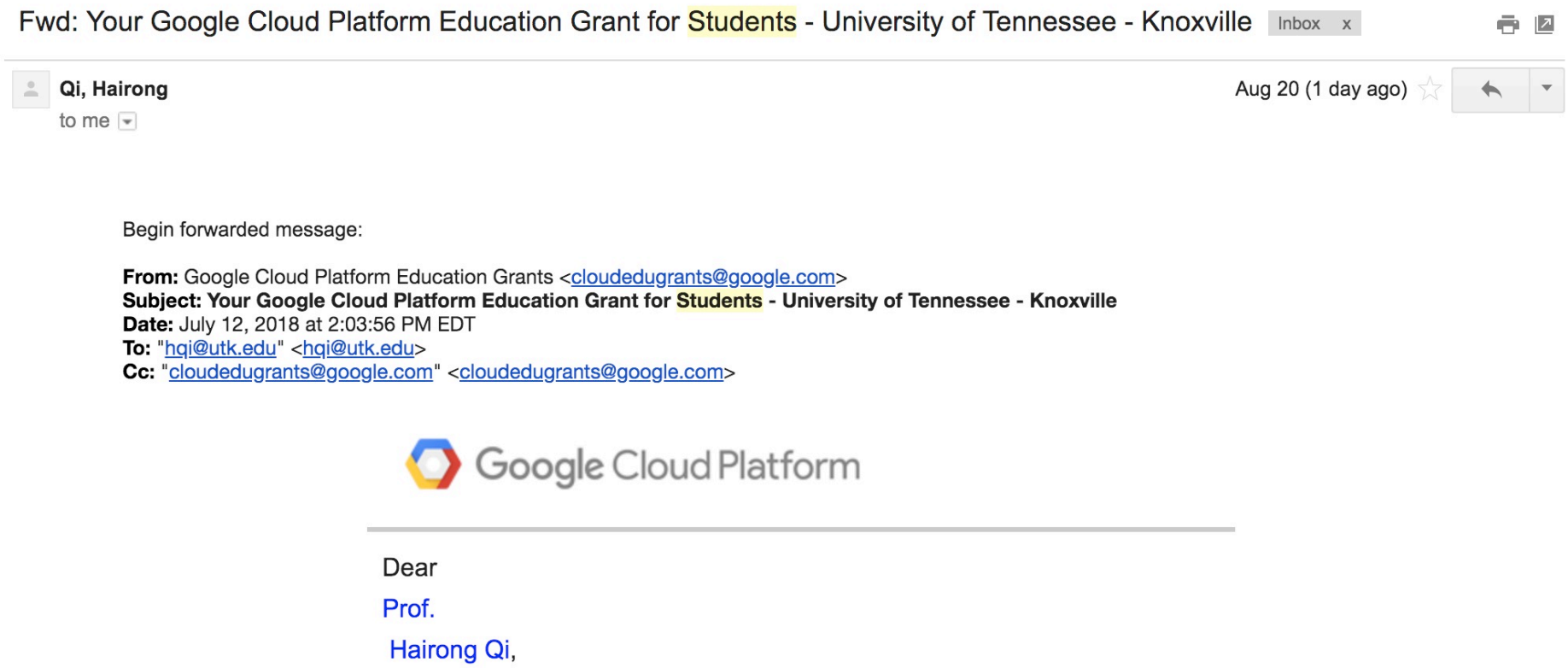
- Deep learning/neural network usually takes lots of computation resource
  - Storage
  - Memory
  - GPU
- GCP consists of a set of physical assets, such as computers and hard disk drives, and virtual resources, such as virtual machines (VMs).
- Use GPC for course projects

Google Cloud Platform (GCP)

- Education grants have been applied for this course. $50 credits are available for each students. To get the credits, you need:
  - Email Chengcheng with Subject **"599 - Google Cloud Account Request" or "692 - Google Cloud Account Request"**
  - Redeem your code
- Pricing
  - Calculate based on resource
  - Remove unnecessary occupations to avoiding incurring charges
- What if I use up all credits?

Redeem Students Code

Step 1: receive email from Dr. Qi, me or maybe GCP, which looks like the following figure



Fwd: Your Google Cloud Platform Education Grant for Students - University of Tennessee - Knoxville Inbox x

Qi, Hairong
to me

Aug 20 (1 day ago)

Begin forwarded message:

From: Google Cloud Platform Education Grants <cloudedugrants@google.com>
Subject: Your Google Cloud Platform Education Grant for Students - University of Tennessee - Knoxville
Date: July 12, 2018 at 2:03:56 PM EDT
To: "hqi@utk.edu" <hqi@utk.edu>
Cc: "cloudedugrants@google.com" <cloudedugrants@google.com>

Google Cloud Platform

Dear
Prof.
Hairong Qi,

Redeem Students Code

Step 2: find and click the *Student Coupon Retrieval Link*

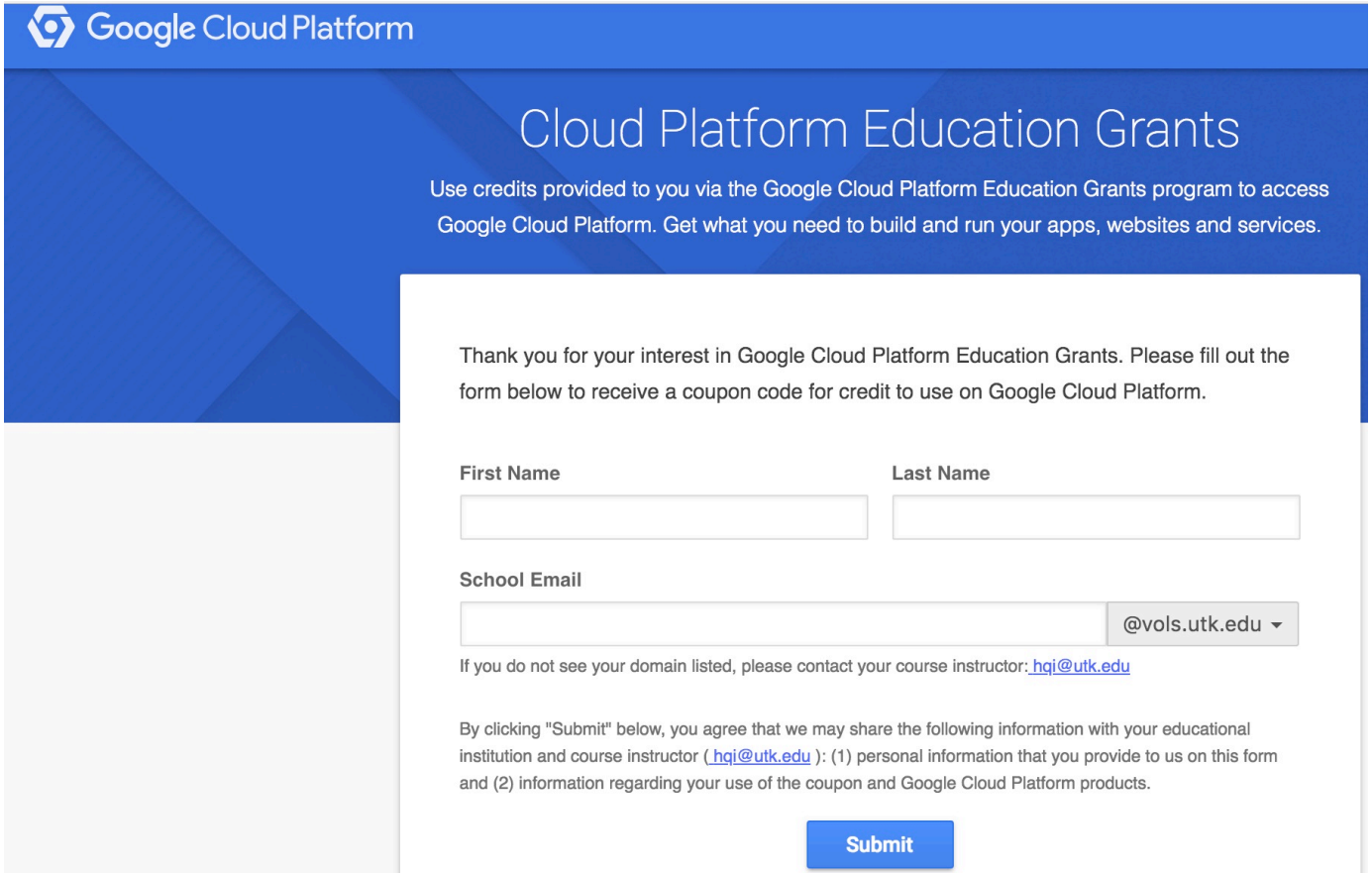
Here is the URL
you will need to access in order to request a Google Cloud Platform coupon. You will be asked to provide your school email address and name. An email will be sent to you to confirm these details before a coupon is sent to you.

Student Coupon Retrieval Link

- You
  will be asked for a name and email address, which needs to match the domain. A confirmation email will be sent to you with a coupon code.
- You can request a coupon from
  the URL and redeem it until: 12/22/2018
- Coupon
  valid through: 8/22/2019
- You

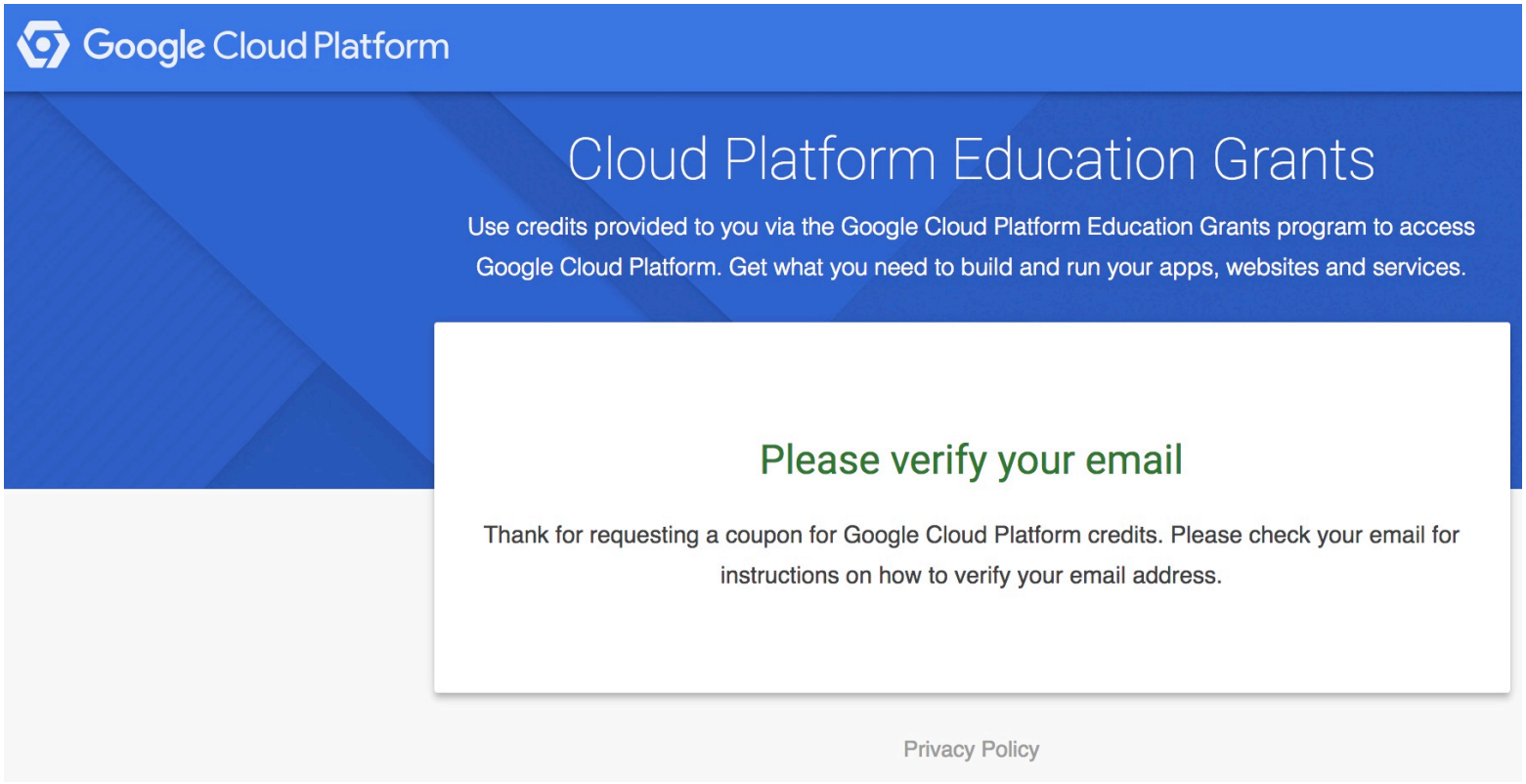
Redeem Students Code

Step 3: fill out the form. UTK email is required.



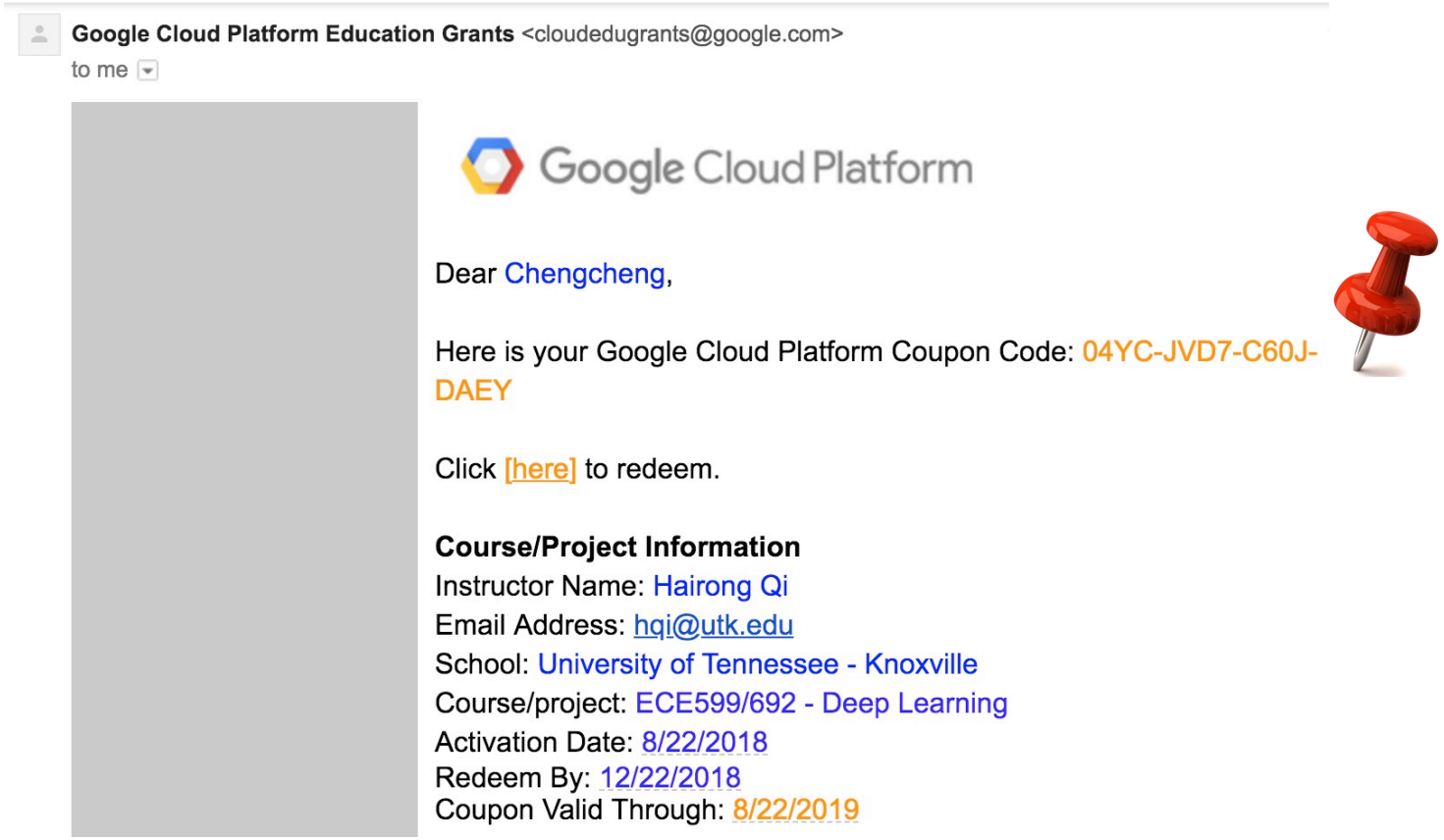
Redeem Students Code

Step 4: verify your email



Redeem Students Code

Step 5: receive email from GCP, find the Coupon Code and click [here] to redeem



Google Cloud Platform Education Grants <cloudedugrants@google.com>
to me

Google Cloud Platform

Dear Chengcheng,

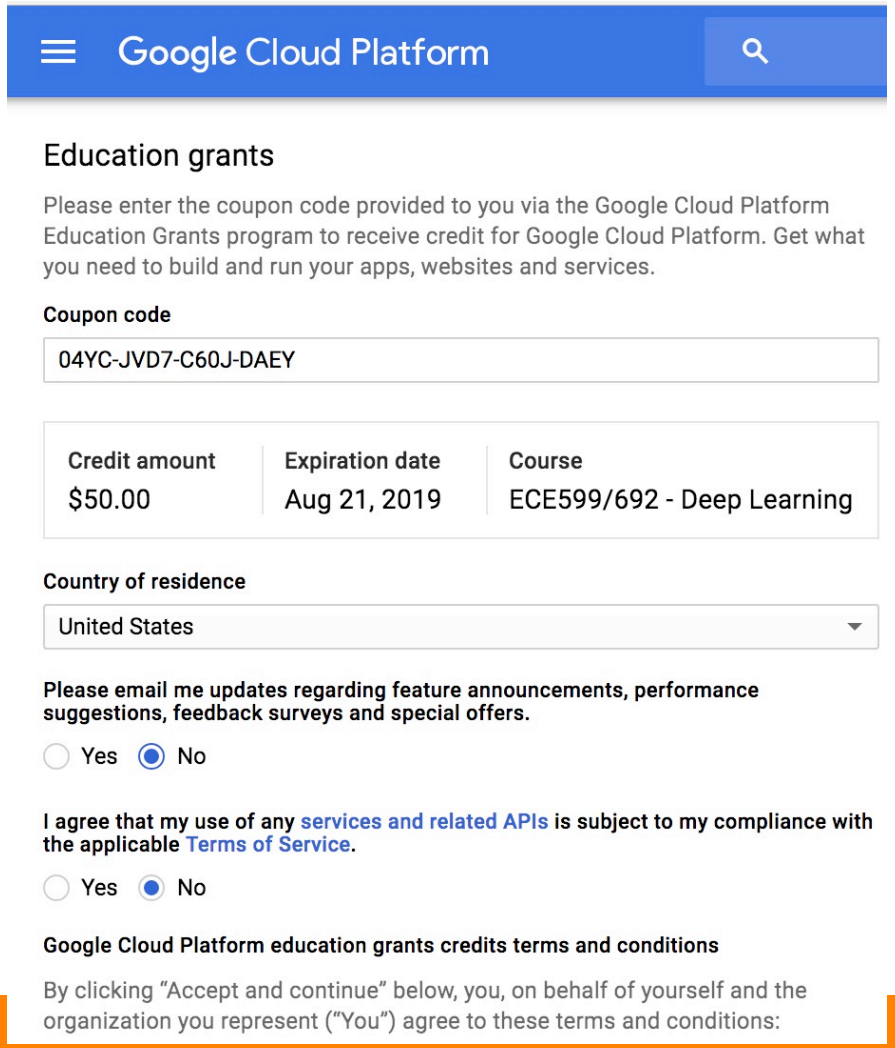
Here is your Google Cloud Platform Coupon Code: 04YC-JVD7-C60J-DAEY

Click [here] to redeem.

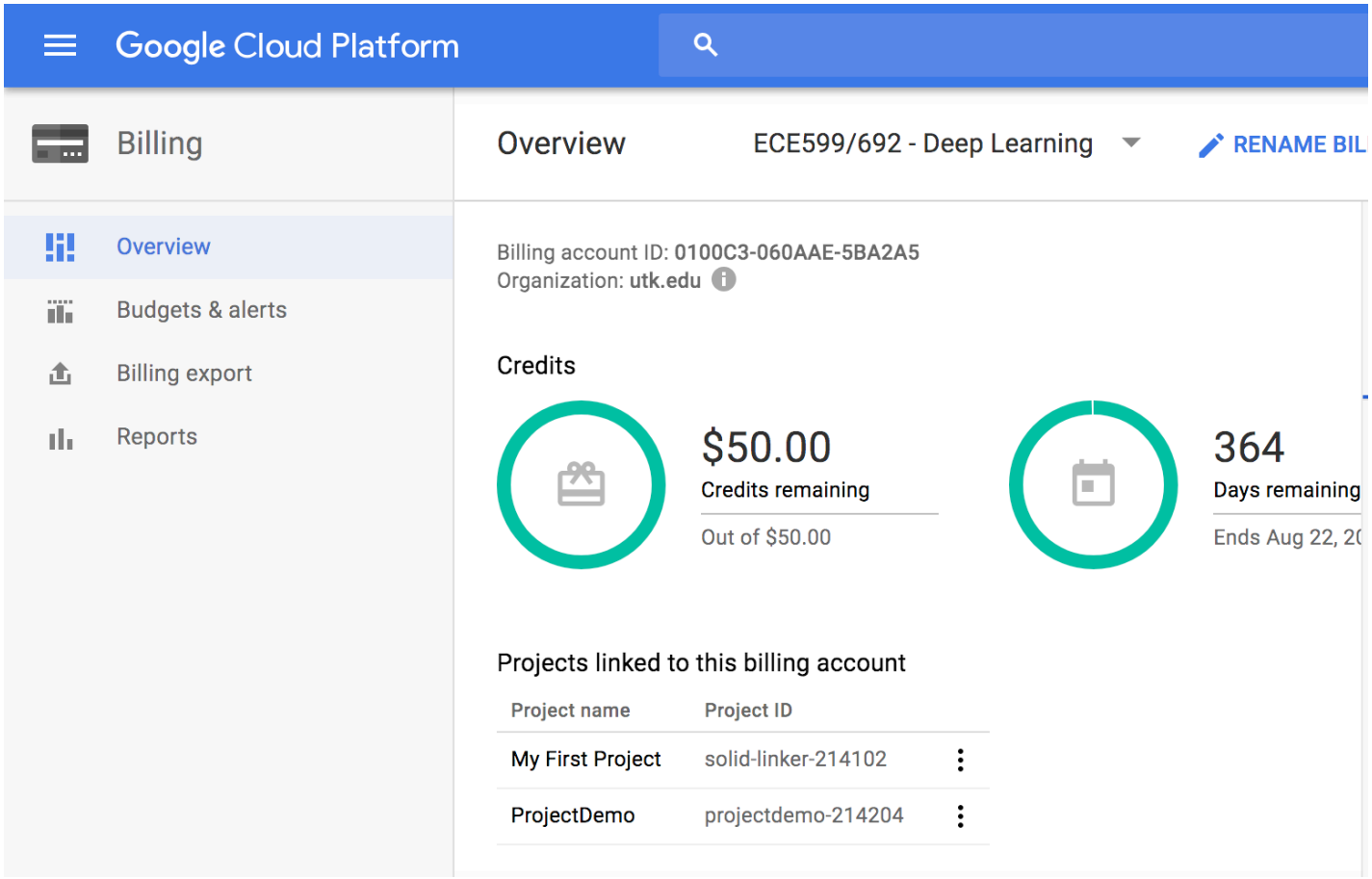
Course/Project Information
Instructor Name: Hairong Qi
Email Address: hqi@utk.edu
School: University of Tennessee - Knoxville
Course/project: ECE599/692 - Deep Learning
Activation Date: 8/22/2018
Redeem By: 12/22/2018
Coupon Valid Through: 8/22/2019

Redeem Students Code

Step 5: paste your code and fill out the form. It's done.



Checking Credits

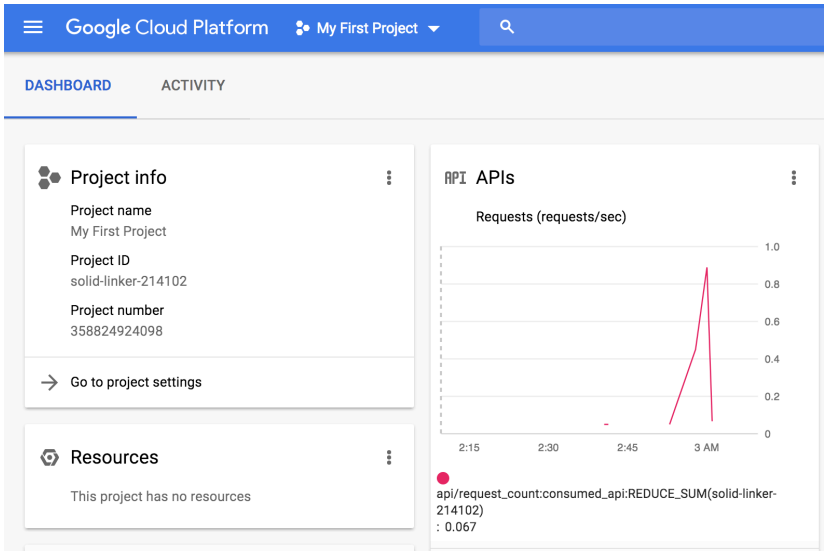


Concepts

- Projects
- Instances
  - Virtual machine
- Buckets
  - Data/objects storage

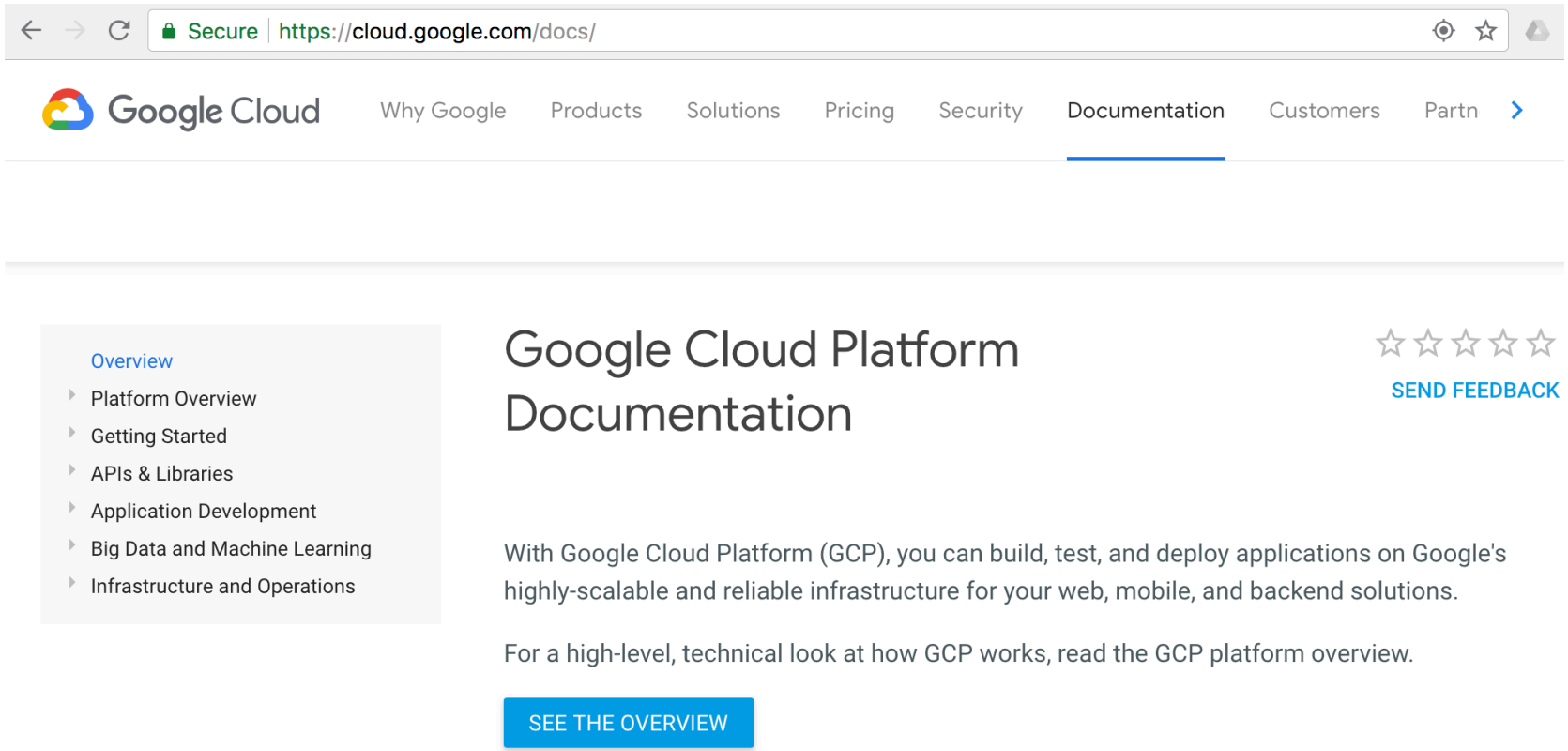
Ways to Interact With GCP

- Google Cloud Platform Console

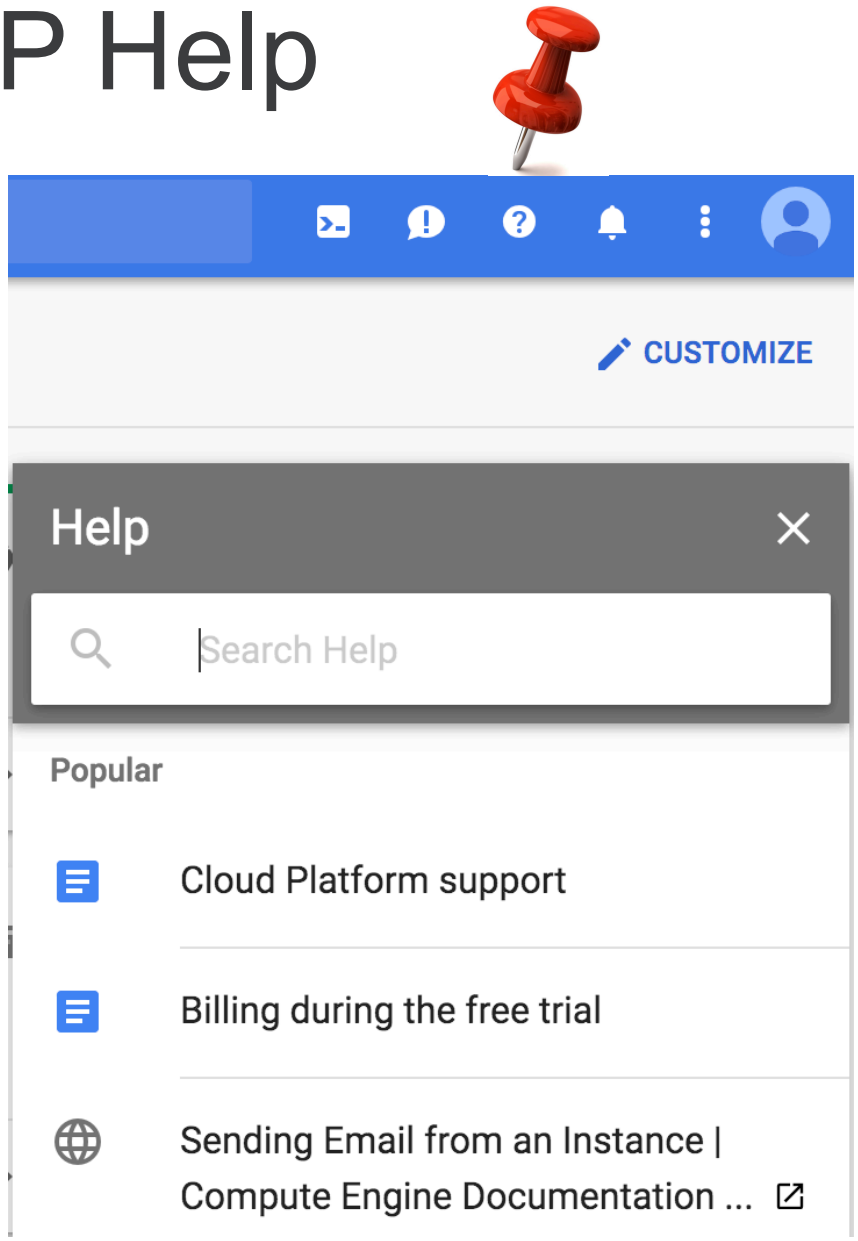


- Command-line interface
  - gcloud
  - cloud shell

GCP Docs


Secure https://cloud.google.com/docs/
Google Cloud
Why Google
Products
Solutions
Pricing
Security
Documentation
Customers
Partn
Overview
Platform Overview
Getting Started
APIs & Libraries
Application Development
Big Data and Machine Learning
Infrastructure and Operations
Google Cloud Platform Documentation
SEND FEEDBACK
With Google Cloud Platform (GCP), you can build, test, and deploy applications on Google's highly-scalable and reliable infrastructure for your web, mobile, and backend solutions.
For a high-level, technical look at how GCP works, read the GCP platform overview.
SEE THE OVERVIEW

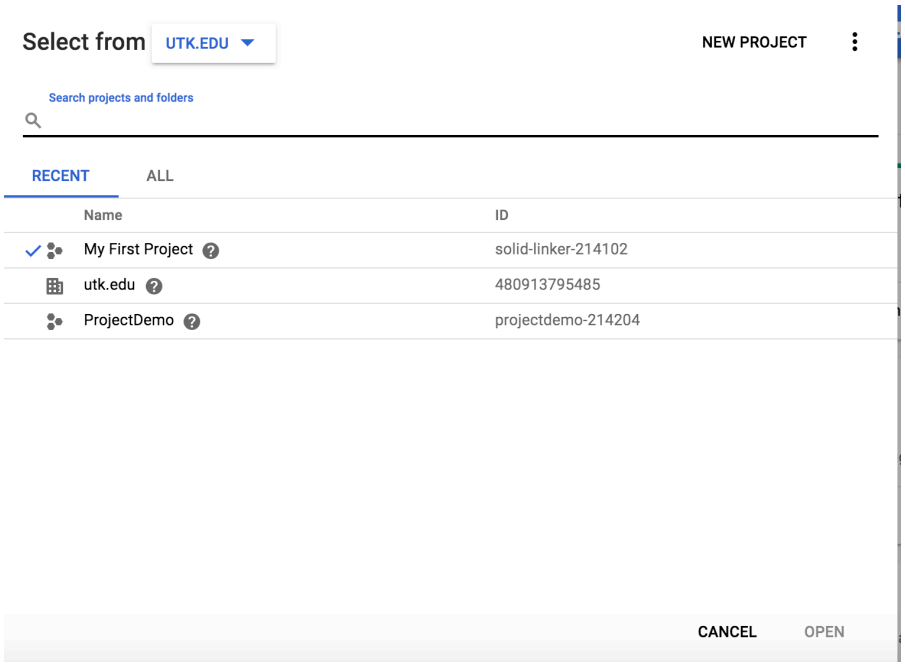
GCP Help

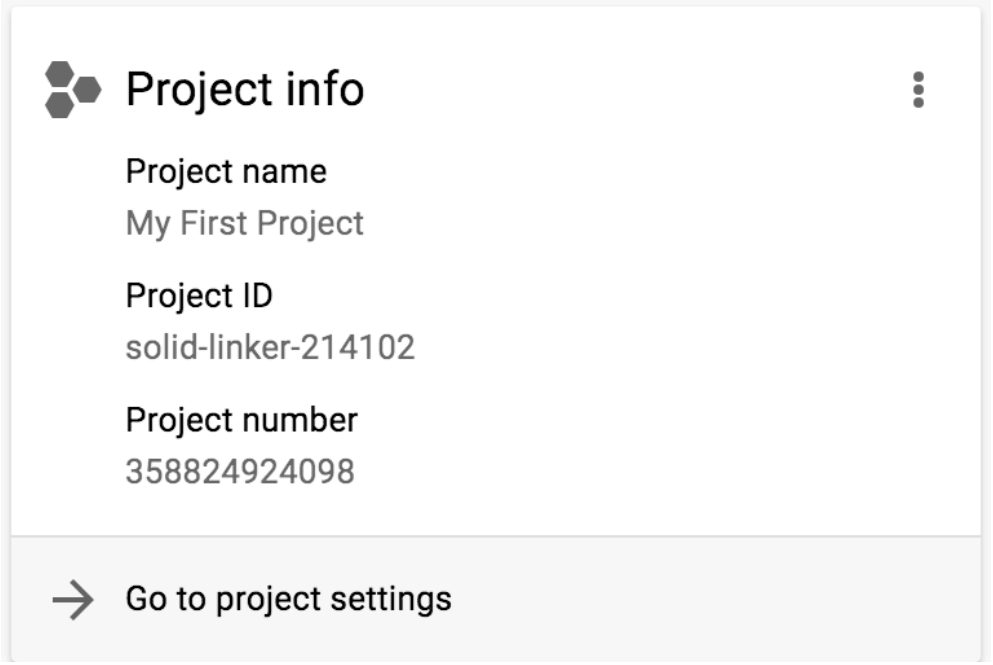

CUSTOMIZE
Help
Search Help
Popular
Cloud Platform support
Billing during the free trial
Sending Email from an Instance | Compute Engine Documentation ...

Projects

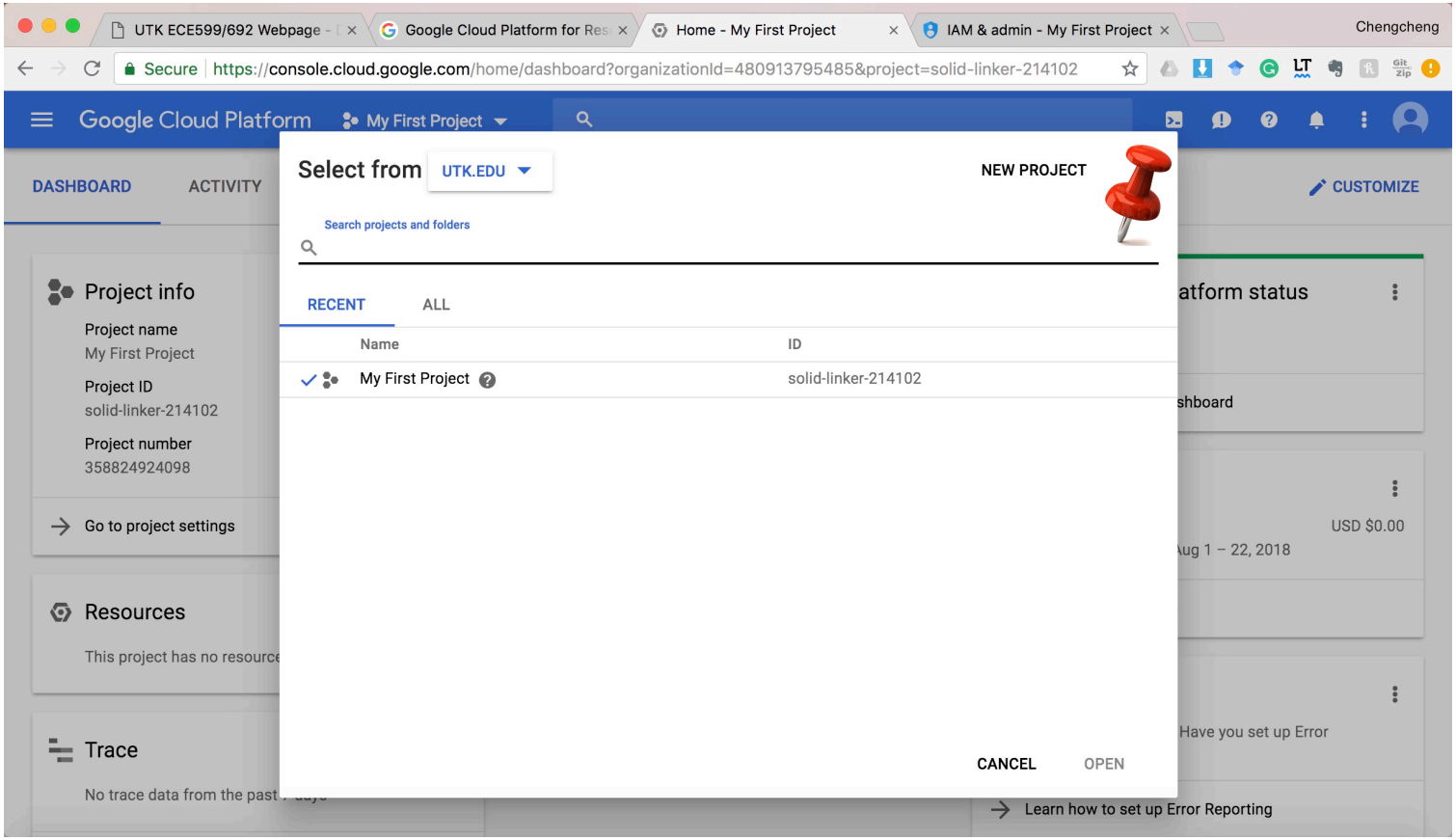
- Any GCP resources that you allocate and use must belong to a project.
- Each GCP project has:
  - A project name, which you provide.
  - A project ID, which you can provide or GCP can provide for you.
  - A project number, which GCP provides.
- Existing projects vs new self-created projects

Check Projects

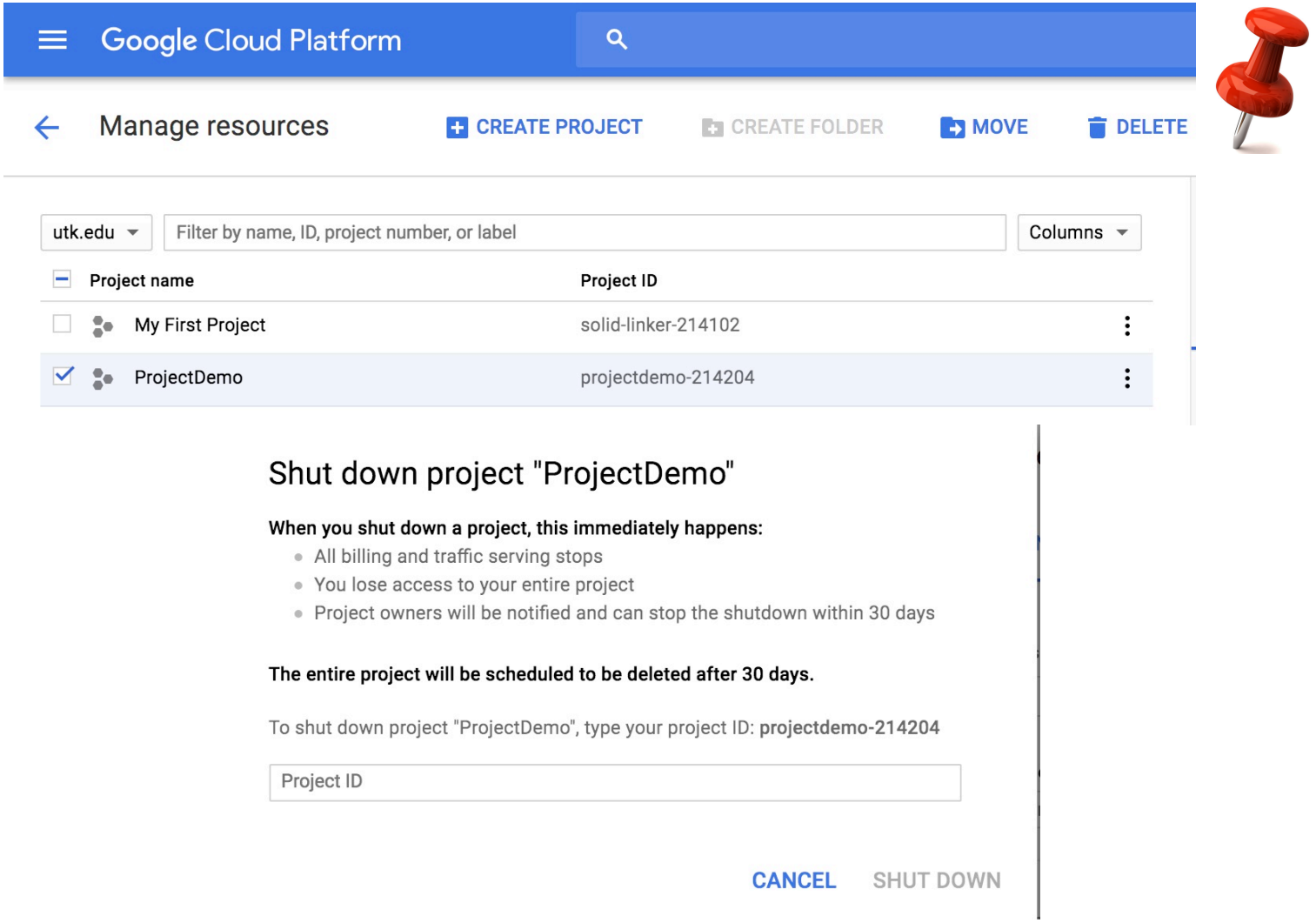




Create Projects



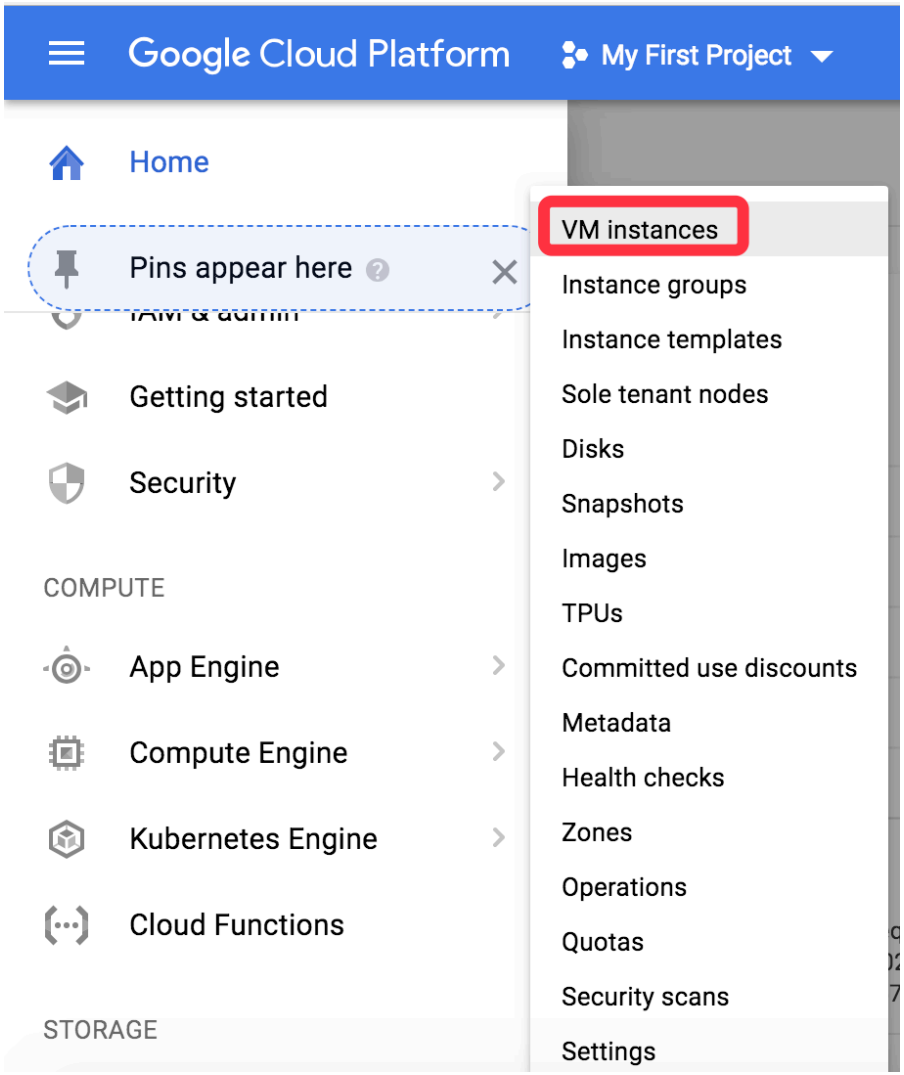
Remove Projects

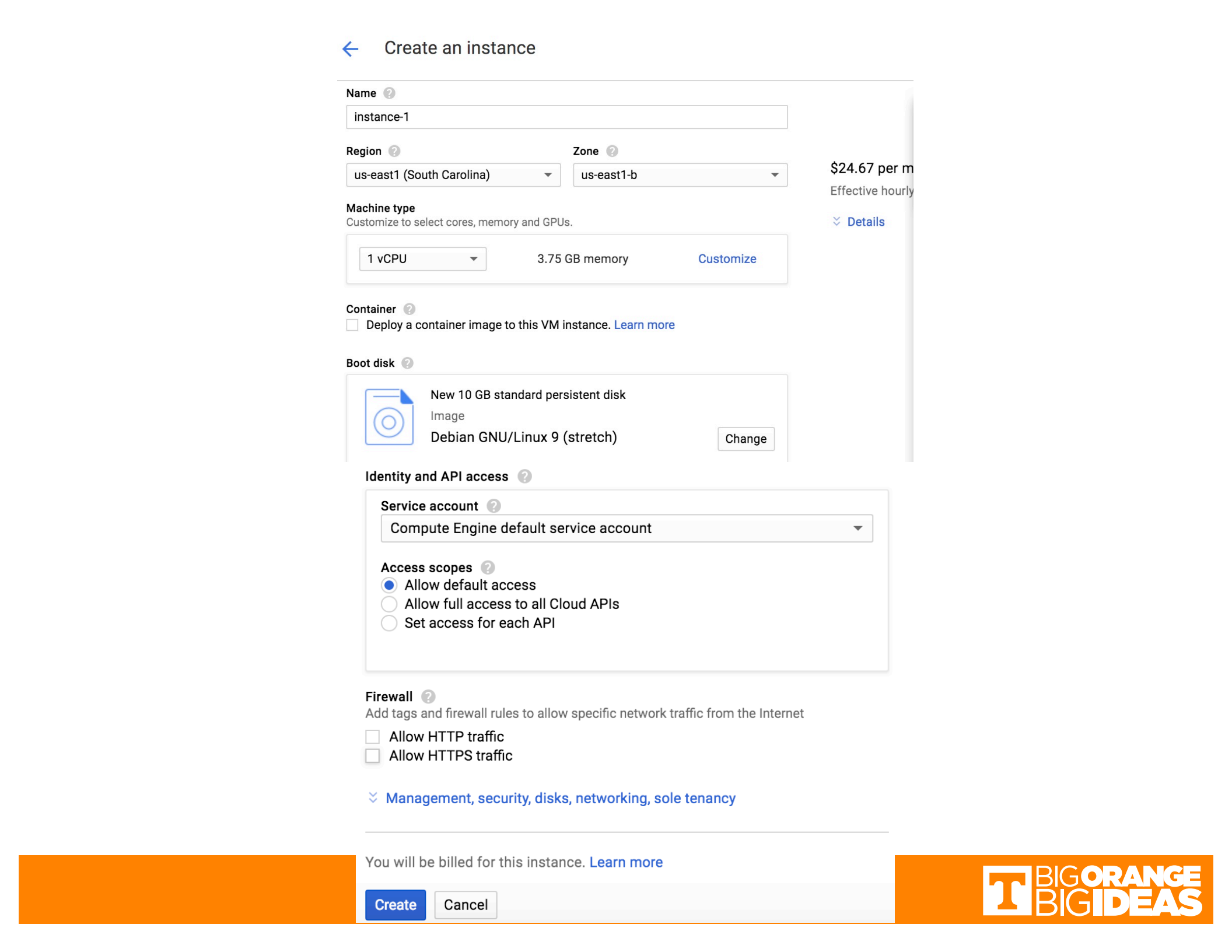


Instances

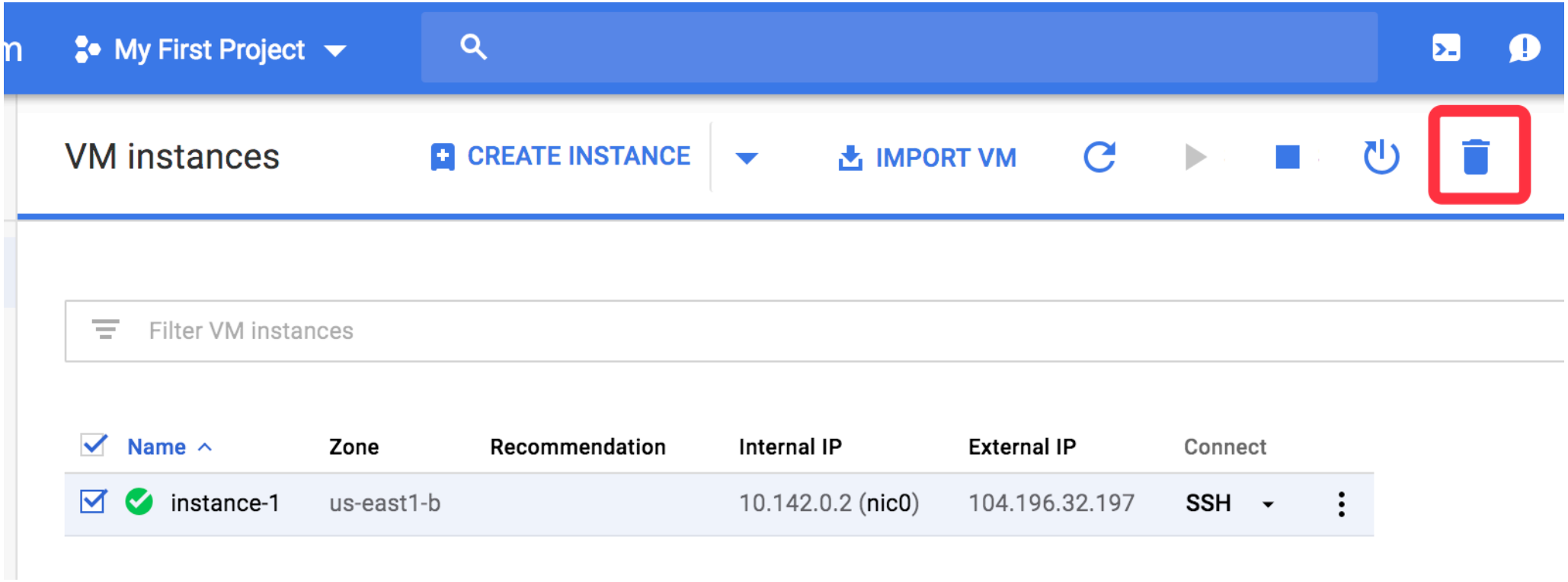
- An *instance* is a virtual machine (VM)
- Create an instance by using the Google Cloud Platform Console or the *gcloud* command-line tool
- Each instance belongs to a project, and a project can have one or more instances.
- Remove unnecessary instances to avoid incurring charge

Create New Instances




Create an instance
Name
instance-1
Region
us-east1 (South Carolina)
Zone
us-east1-b
$24.67 per m
Effective hourly
Machine type
Customize to select cores, memory and GPUs.
Details
1 vCPU
3.75 GB memory
Customize
Container
Deploy a container image to this VM instance. Learn more
Boot disk
New 10 GB standard persistent disk
Image
Debian GNU/Linux 9 (stretch)
Change
Identity and API access
Service account
Compute Engine default service account
Access scopes
Allow default access
Allow full access to all Cloud APIs
Set access for each API
Firewall
Add tags and firewall rules to allow specific network traffic from the Internet
Allow HTTP traffic
Allow HTTPS traffic
Management, security, disks, networking, sole tenancy
You will be billed for this instance. Learn more
Create
Cancel

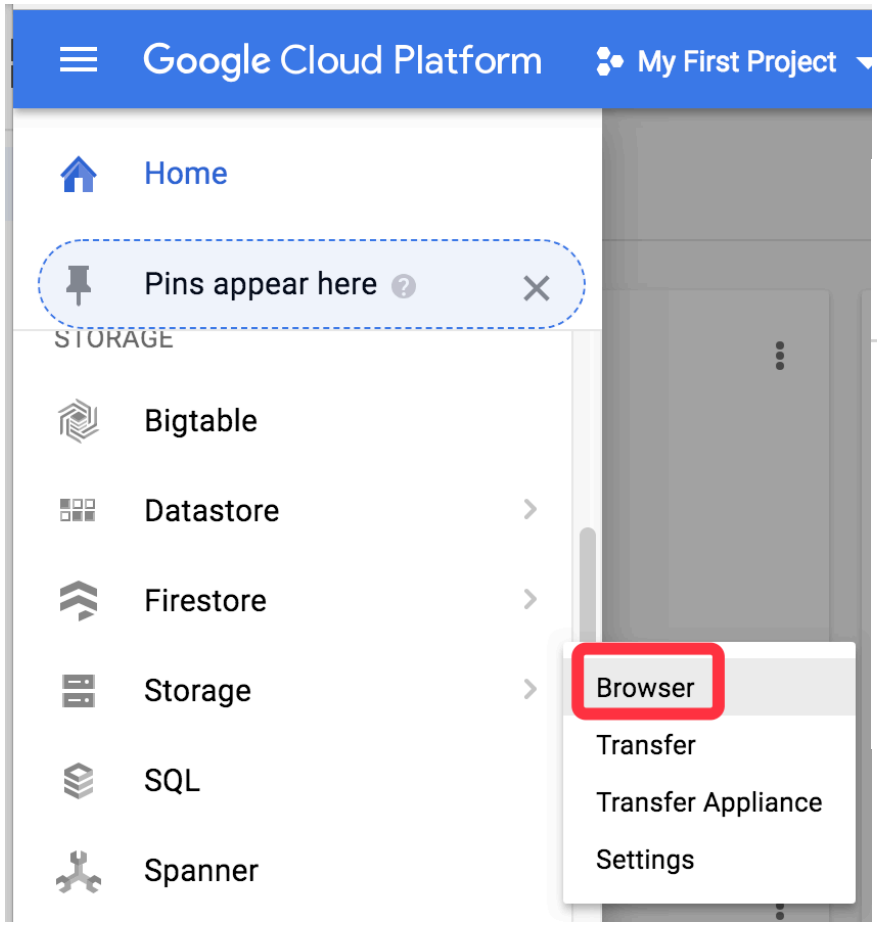
Remove Instances

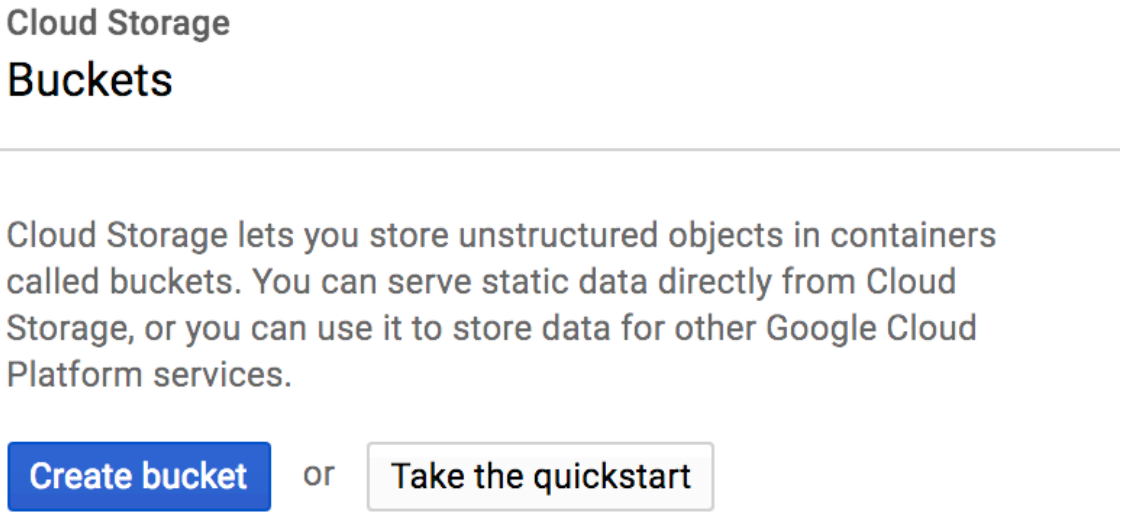


Bucket

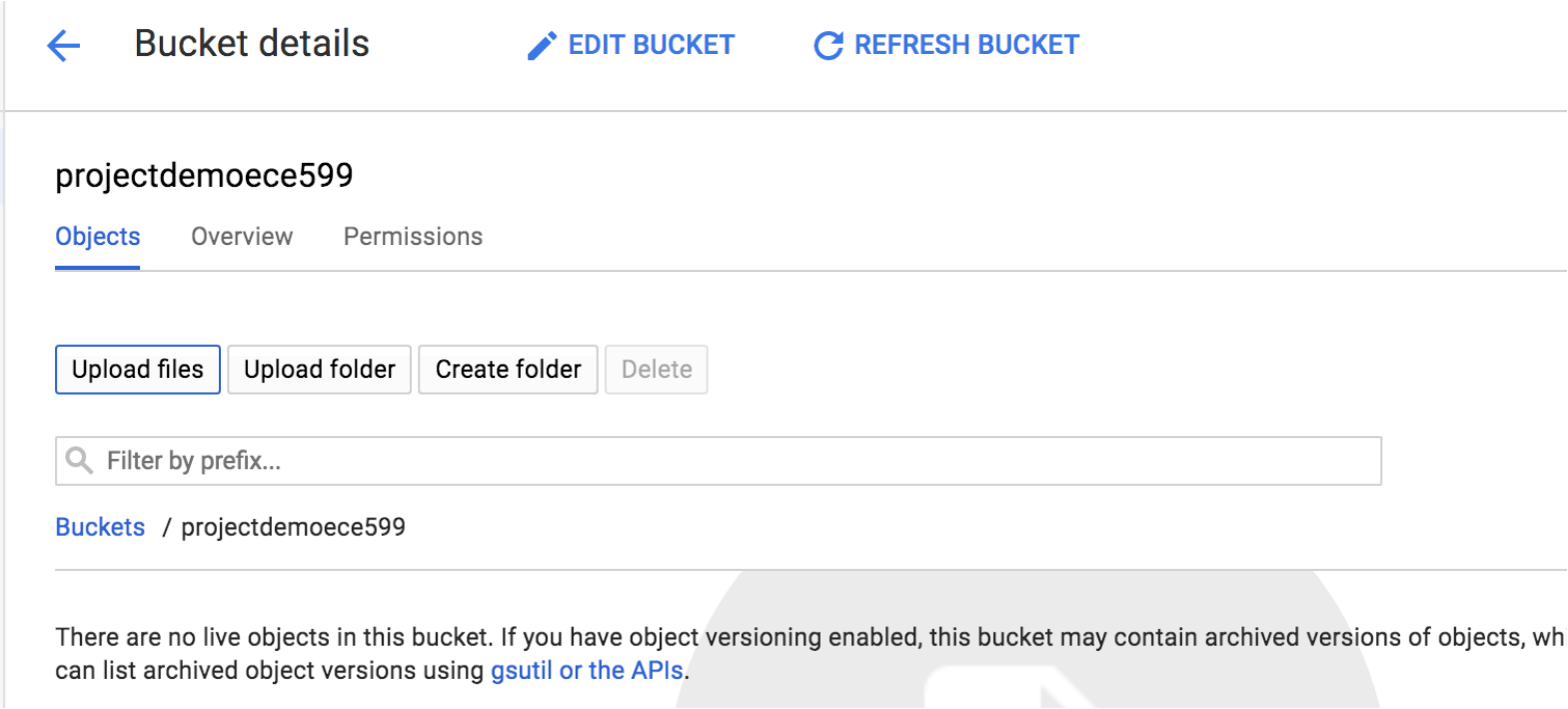
- Buckets contain objects/datasets.
- A bucket is always owned by the project team owners group.
- Creating Storage Buckets
  - console
  - GSUTIL
- Access Cloud Storage bucket

Create Bucket





Upload Data


Bucket details
EDIT BUCKET
REFRESH BUCKET
projectdemoece599
Objects
Overview
Permissions
Upload files
Upload folder
Create folder
Delete
Filter by prefix...
Buckets / projectdemoece599
There are no live objects in this bucket. If you have object versioning enabled, this bucket may contain archived versions of objects, wh
can list archived object versions using gsutil or the APIs.

Access Public Bucket

To access public data:

CONSOLE | GSUTIL | API LINK

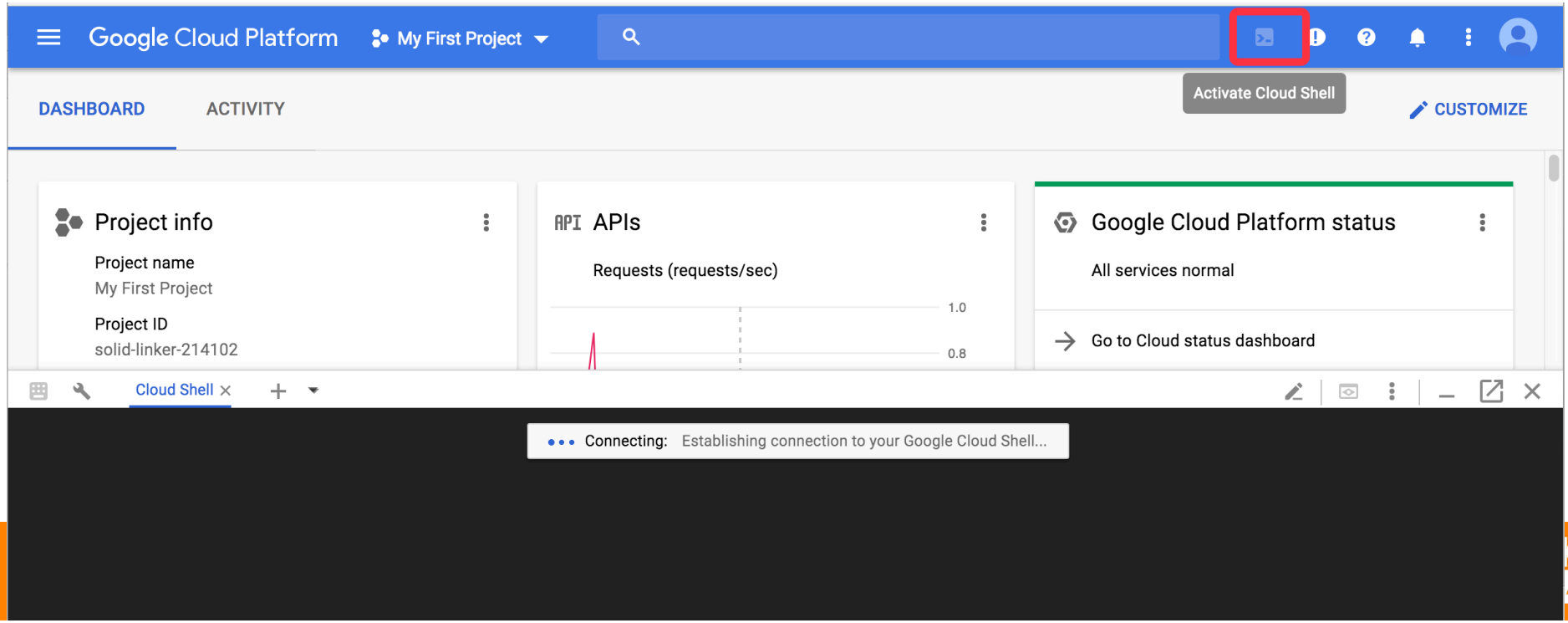
1. Get the name of the public bucket.
2. Using a web browser, access the bucket with the following URI (you will be asked to sign in if necessary):

```
https://console.cloud.google.com/storage/[BUCKET_NAME]/
```

- gsutil is a Python application that lets you access Cloud Storage from the command line.
- Every bucket has its unique name.

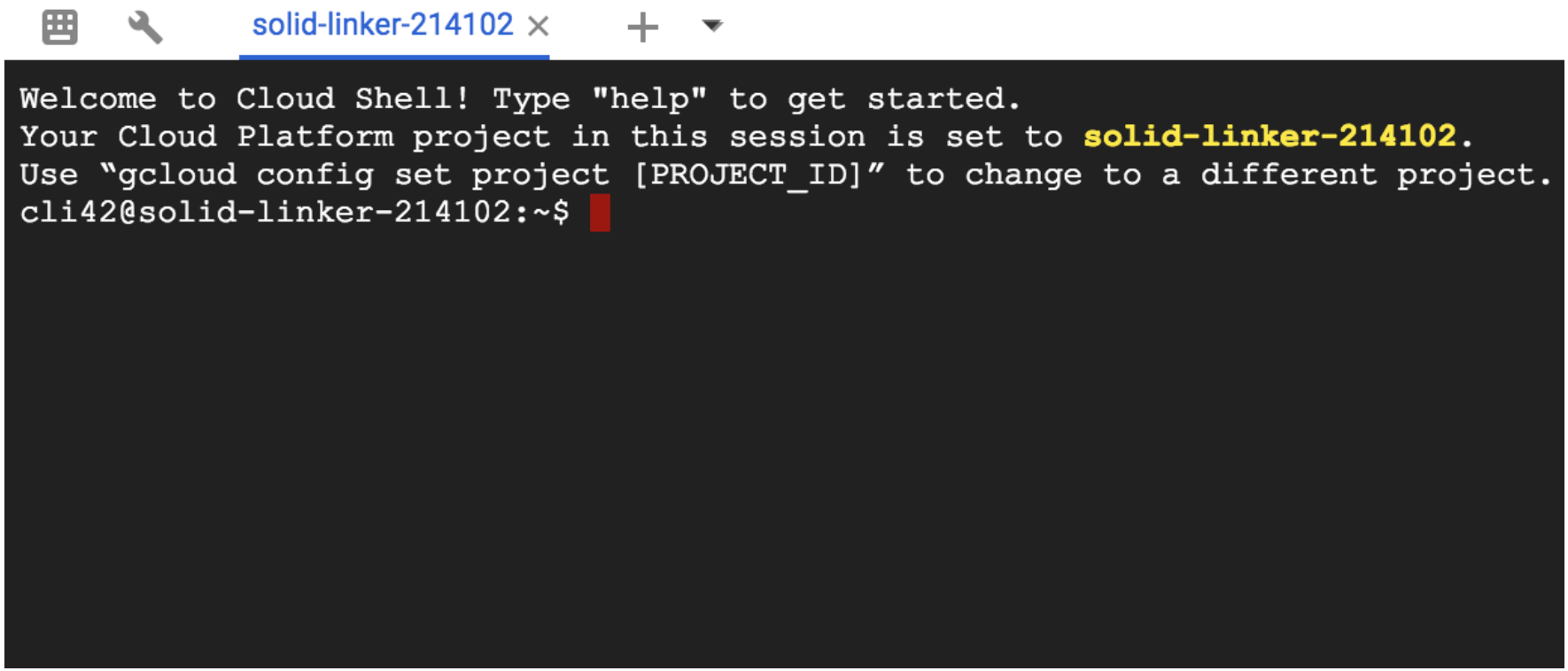
gcloud

- Gcloud is a tool that provides the primary command-line interface to Google Cloud Platform.
- You can use this tool to perform many common platform tasks either from the command-line or in scripts and other automations.
- Click the Active Cloud Shell button in the toolbar to access it



gcloud

- It is a terminal where you can create files, install package, run your code and etc.



Walkthrough

- Set up your project
  - Select or create a GCP project
- Set up your environment
  - Install packages and dependences
- Prepare data
  - Create a bucket or access an public bucket
- Prepare your code
  - Write or download the code
- Run the code with gcloud

https://cloud.google.com/ml-engine/docs/tensorflow/getting-started-training-prediction


Any
Questions


THANK
YOU