NORTHEASTERN UNIVERSITY, KHOURY COLLEGE OF COMPUTER SCIENCE

CS 6220 Data Mining — Lecture
September 9, 2024   (Week 1)

YOUR NAME + LDAP

In this lab, we will be exploring and reviewing our Google Cloud Platform (GCP) resources. We are going to be spinning up a virtual machine and installing packages, where we can access our $50 credit from GCP to create a VM. On your own, feel free to peruse some helpful instructions on Google Cloud Platform.

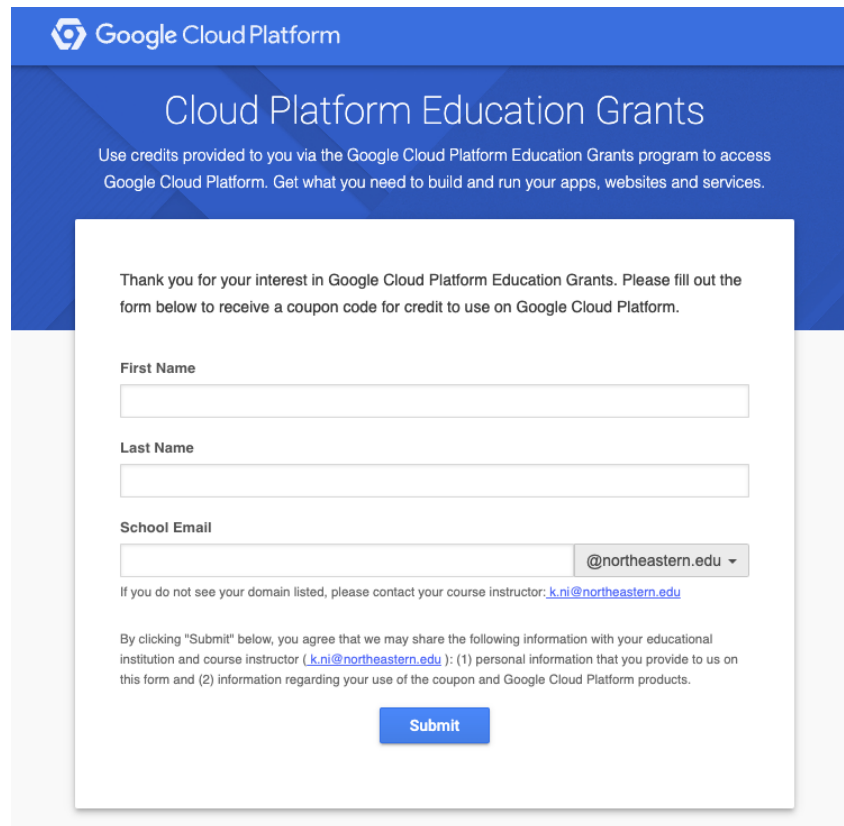> **REMINDER**: Shut down your instance when it is not in use to avoid unnecessary costs.

1 Setting Up Your GCP Account and Billing

In this lab, we will explore the offerings in GCP by first procuring a virtual machine (VM) for yourself.

1. Create and login to your GCP account (you can use any GMail account, but it is easier with your Northeastern e-mail).

2. Request the credit via e-mail. You will subsequently receive a link that can be redeemed until January, 2025. The splash page looks like Fig. 1.1.

   To claim these credits from your Northeastern e-mail, accept via the link provided.

3. You should receive an email from GCP with a link to confirm your email address. Click the link to verify your Northeastern email.

4. You will need to create a project and enable the Compute Engine API to apply the billing credit to enable resources. To do so, first enable the Compute Engine API, which will prompt you to create a project if you have not done so. This is done in Fig. 1.2.

5. Google Cloud does not support combining credits. Switch billing accounts from Free Tier credits to CS6120 credits. You will need to switch billing account if you want to use 2 sources of GCloud credits.

Figure 1.1: Accept your google cloud credits

2 Provision Your First Virtual Machine

In this section, we will create a virtual machine (VM) for us to operate with. A VM is a software-based representation of a physical computer. It allows you to run multiple operating systems and applications on a single physical machine. Think of it as a computer within a computer.

Go ahead and provision your first virtual machine on the grant that you'd created. Simply click on Compute Engine $\longrightarrow$ Virtual Machine Instances. Once you've clicked on "Create", you'll notice many options.

1. First, change the name to something that you can remember, for example "my-first-webserver".

2. Second, we won't be needing a very large machine or much memory at all. Select a smaller machine (e.g., `e2-micro`), and watch the cost go down on the right. Mine says $7.11 per month.

3. Third, we will be accessing the webpage you create through HTTP; therefore, in the Firewall settings, check all the boxes (i.e., "Allow HTTP, HTTPS, and Load Balancer Health Checks").

At this time, you do not need to change any of the other fields, but I would encourage that you familiarize yourself with what they mean. Feel free to create your machine when ready.
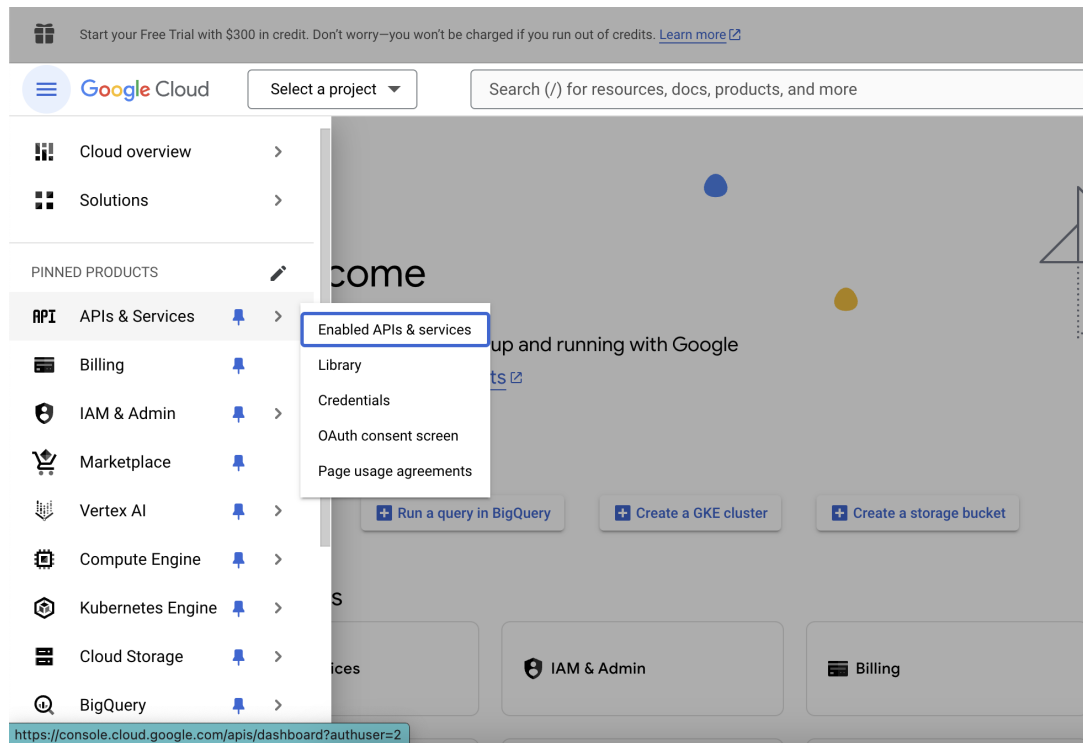
Figure 1.2: Enable the Compute Engine API

Once you've created your VM, it should take a couple minutes to create (the status will be spinning). You'll notice a green checkmark when it is ready. Login to it `SSH` under connect. Note down the `External IP`, which is its IP address to the outside world; we'll need it for later. (If you wish, you could even `SSH` to that address.)

NOTE: For some projects later in the semester, you may want a machine that has a GPU, which you can rent from Google. It is worth mentioning that these resources require an increase in quota of GPU's. For now, we will not worry about this, but you can review the document linked in the introduction if you'd like a head start.

3 Deploy Your Capability

In Linux, there are a few commands that you should remember: `apt-get update` and `apt-get install <command>`. The first command updates the packages if any are outdated, and the second command installs the package. For your VMs, you may need to type `sudo` in front, which gives you root privileges.

In an editor of your choice (e.g., *vim*, *nano*, *emacs*, *gedit*, etc.), open up the file `/var/www/html/index.html`. Alternatively, you can create the file locally, and then upload it. There may be an `index.html` already in that directory that you'll need to overwrite. If you're worried about losing what was there originally, you can always copy the file. Finally, since this file is in a protected directory, you may also need to use `sudo` in front of each command.
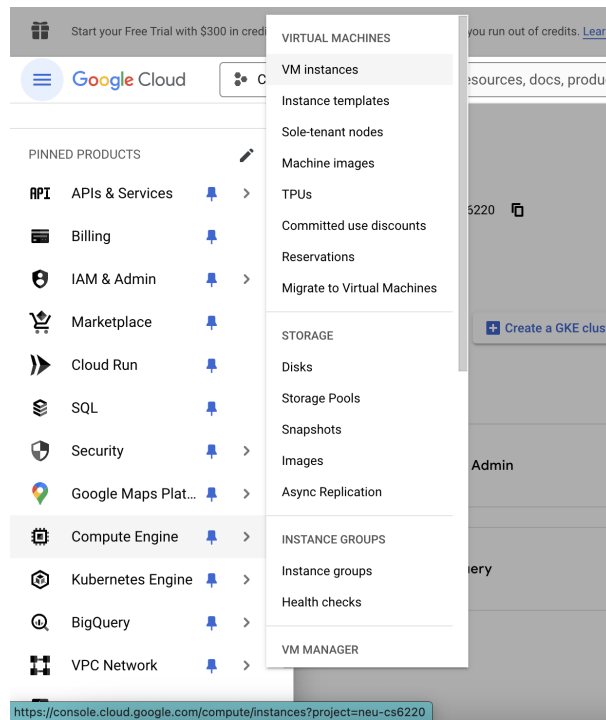
Figure 2.1: Create a virtual machine

In the HTML file, use the following text while replacing the text words between the double parentheses with the appropriate words.

```
<!DOCTYPE html>
<html>
<head>
    <title>Hello, World!</title>
</head>
<body>
    <h1>Hello, World!</h1>
    My name is ((YOUR NAME)). My LDAP is ((YOUR LDAP)).
    I LOVE Data Mining.
</body>
</html>
```

4 Turn In Your Lab

Navigate to Gradescope and turn in a screenshot of your webpage with the address. Your screenshot should look like Fig. 4.1. Also, **don't forget to delete your instance; you will be charged otherwise.**
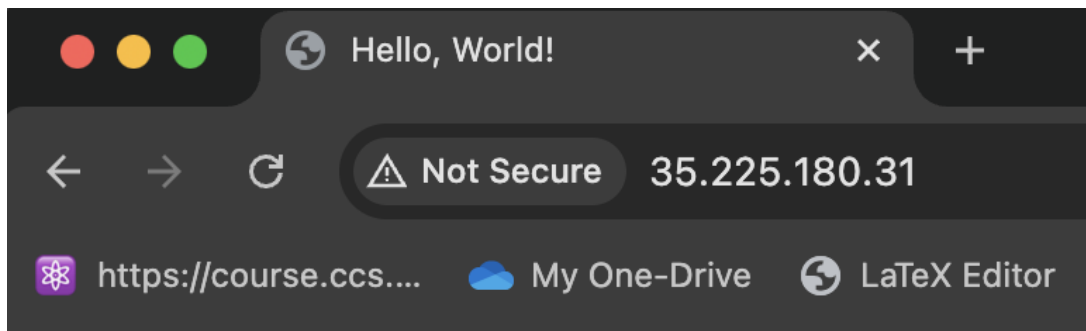
Figure 4.1: Hello World! Your first web application.