CSE 332: Data Structures and Parallelism

Google Compute Engine & Eclipse

This handout will help you set up Google Compute Engine and Eclipse for the Chess project.

(1) Setting up Eclipse/Terminal

This project, you will use Google Compute Engine to access more computing power than normal. As such, you will need to `ssh` to a remote instance. Google Compute Engine lets you do this by clicking a button in the browser, but you may `ssh` however you like.

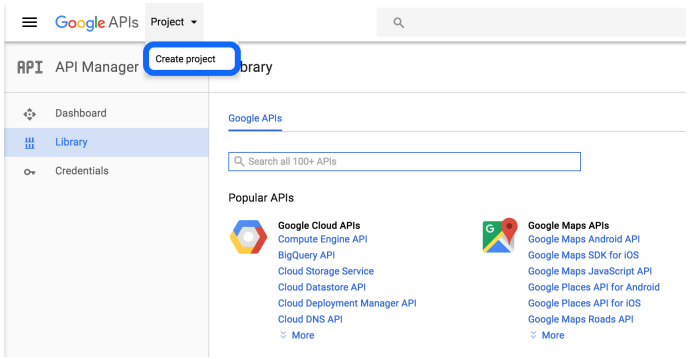
(2) Setting up Google Compute Engine

Additionally, you will need to create a **project** and **VM Instances** using Google Compute Engine.

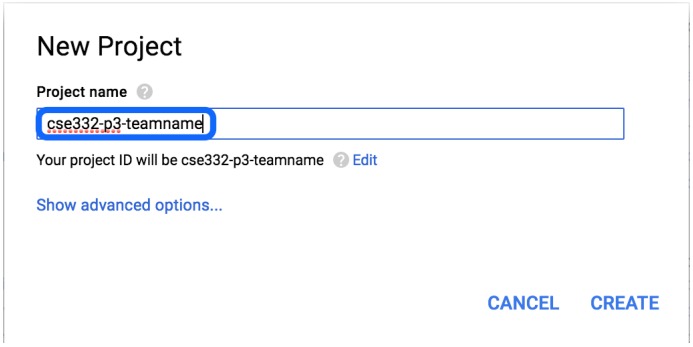
You should begin by going to:

`https://console.developers.google.com/start`

Then, create a project by clicking on the top left:



You should use `cse332-p3-<your team name>` as the project name.



Next, you will need to get a "coupon code". Google has provided us with one coupon code per student. This should be more than enough credits to complete the project, but if you end up needing more, send an e-mail to Adam (blank@cs.washington.edu).

To get a coupon code, follow these steps:

(1) Go to `http://goo.gl/gcpedu/h5C5oR` and fill in your name and e-mail address.

(2) You should get a confirmation e-mail with a link. Click on the link.

(3) You should get another e-mail with a link and a coupon code. Either click on the link in the e-mail, or go to `https://console.cloud.google.com/education` and fill in the coupon code.

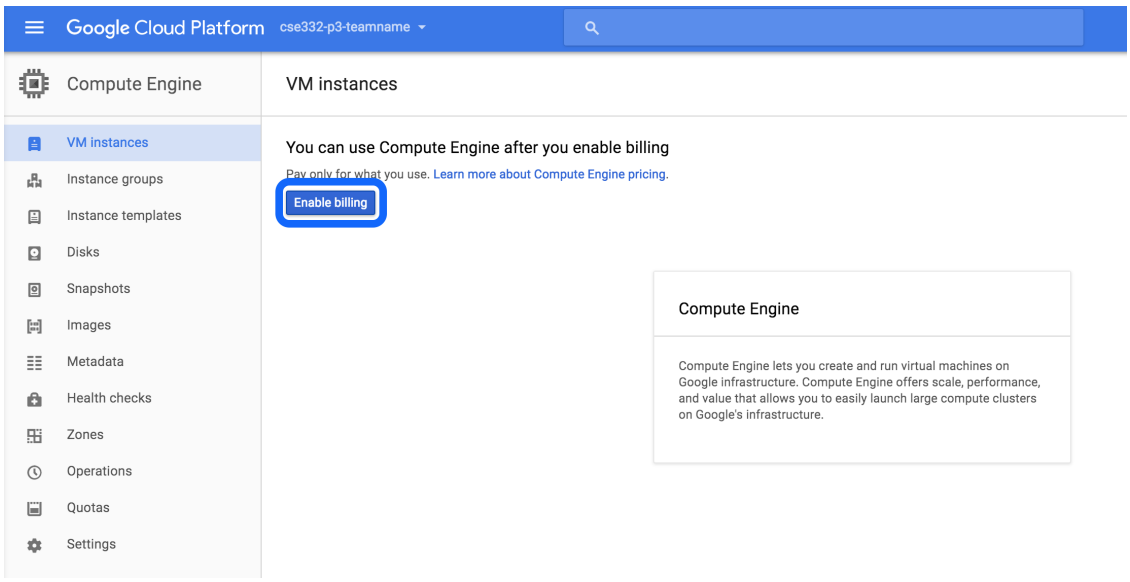
(4) Chose "yes" or "no, and then click "Accept and Continue" on the webpage that comes up.

(3) Enabling Billing

Now that you have a "billing account" filled with your coupon code, you need to *apply* it to your GCE project.

(1) Go to `https://console.cloud.google.com/compute`

(2) Click the "enable billing" button:



(3) Choose "Chess Bots" in the pop-up dialog, and click "Set Account".

Your project should be set up to use the GCE coupon; you might need to wait a little bit for compute engine to get ready.

(4) Creating An Instance

Now you should be ready to go with GCE. To test this out, let's try spinning up an instance.

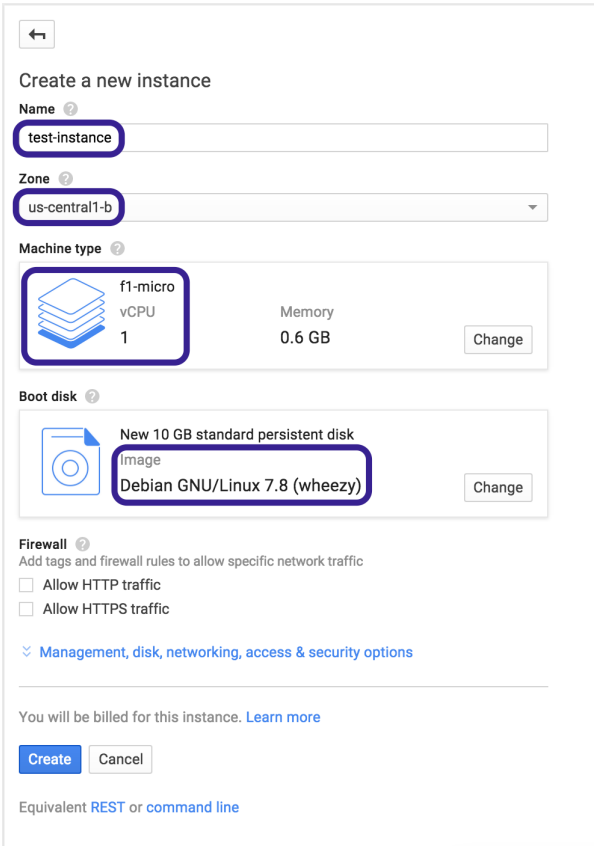
Go to `https://console.cloud.google.com/compute`, and click on the "create instance" button.

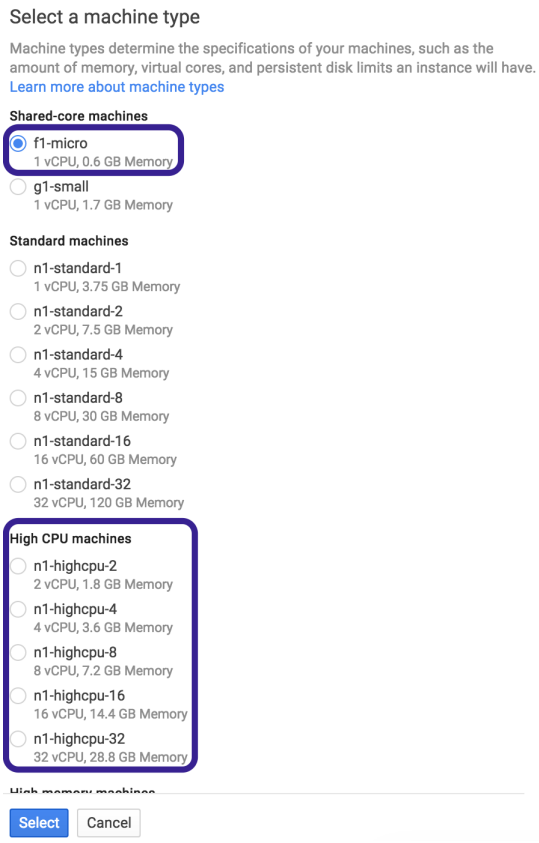
When creating an instance, you will have a choice of several options. You *can* choose anything you like, but we recommend the following choices. In particular, if you are creating a "test instance", we recommend you use `f1-micro`.

Suggested GCE Instance Choices

- Zone: `us-central1-b`
- Machine Type:
  - For a test instance: `f1-micro`
  - For a real instance: `n1-highcpu-32`
- Image: Debian GNU/Linux 7.8

If you insist on using a Windows Image, you're on your own.





Once your instance boots, you will be able to `ssh` into it by clicking the "ssh" button next to it in the list:

(5) Connecting To An Instance

Now that you've created your instance, you are ready to `ssh` to it. To do this, click the button in the GCE interface labeled "ssh" in the row of the instance you just created.

You're now connected to your instance!

Once you connect to your instance, you should copy/paste the following command into the terminal:

```
source <(curl -s https://courses.cs.washington.edu/courses/cse332/gce/setup-instance.sh)
```

Make sure you read the instructions that the script prints out. You will need to copy another key to `gitlab`, and, when you do, if it errors, make sure your key does not have any spaces in it.

(6) Running A Bot On A GCE Instance

When you are running one of your bots on a GCE instance, you **should not** use `EasyChess`, because you do not want to access it with a GUI. Instead, you will use `CloudClient.java`.

In preparation for running your bot on the server, edit the configuration of `CloudClient.java` to be set to your Chess Server Login and the bot you want to run. Then, after you've run the command (above), you should run `CloudClient` on the VM. Finally, to see your bot play the game, you should do the following:

- Run `EasyChess` on your local machine
- Type "`games`" to see the list of currently running games
- Type "`watch #`"

(7) GCE Won't Allow Me To Use More Cores!

If you have multiple instances running, the *total* you are allowed is 32 cores. Sometimes, for reasons that I haven't figured out, GCE doesn't let you use 32 cores like it should.

If this happens, follow these instructions and it should start working in a matter of minutes:

- Go to this form:

  `https://docs.google.com/forms/d/1vb2MkAr9JcHrp6myQ3oTxCyBv2c7Iyc5wqIKqE3K4IE/viewform`
- Fill out the required fields at the top, and then the one labeled "Total requested number of cores" in the "US-CENTRAL1 regional quotas" part of the form.
- Then, check back periodically at:

  `https://console.cloud.google.com/compute/quotas?project=YOUR_PROJECT`

  to see if the 24 goes up to 32.