

Homework #7 Google Cloud Platform

This semester we are allowing all students to explore cloud computing as offered by the Google Cloud Platform. Using the instructions below one can establish a website using Google App Engine. Once established, you will be able to move your PHP program developed for Assignment #6 to your Google App Engine website and have it execute there.

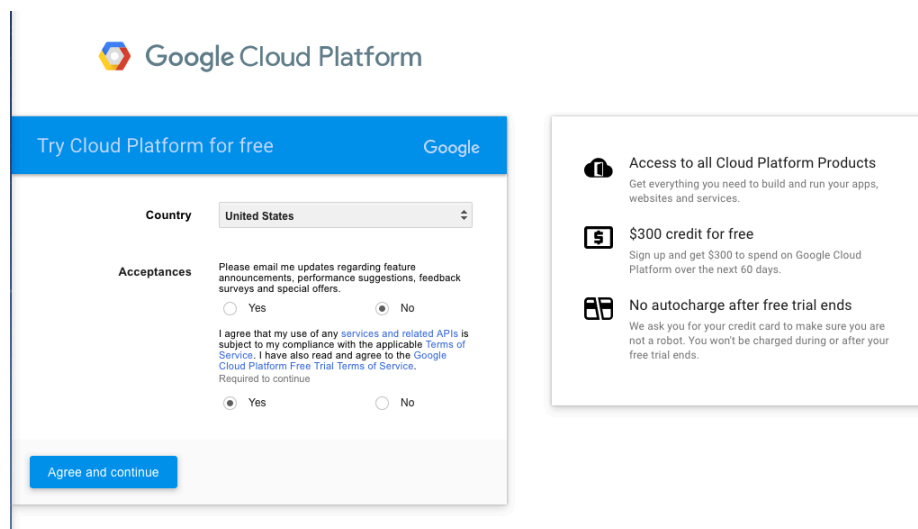
1. Sign up for Google Cloud Platform

To sign up for the Free Trial, with a \$300 credit, you need a credit card. Unfortunately, an American Express or other pre-paid Gift card will not work with Google Cloud.

To sign up go to:

<https://console.cloud.google.com/freetrial?pli=1&page=0>

In the Try Cloud Platform for free page, select that you “agree to use the services” and click on **Agree and continue**.



The screenshot shows the Google Cloud Platform sign-up page for a free trial. The page has a blue header with the Google Cloud Platform logo and the text "Try Cloud Platform for free" and "Google". Below the header, there is a "Country" dropdown menu set to "United States". Under the "Acceptances" section, there are two radio button options: "Yes" and "No", with "No" selected. Below these options, there is a paragraph of text stating: "I agree that my use of any services and related APIs is subject to my compliance with the applicable Terms of Service. I have also read and agree to the Google Cloud Platform Free Trial Terms of Service. Required to continue". At the bottom of the form, there is a blue button labeled "Agree and continue". To the right of the form, there is a box containing three bullet points: "Access to all Cloud Platform Products", "\$300 credit for free", and "No autocharge after free trial ends".

Select **Account Type Individual**. Follow the instructions to enter your account data. You should not be using your @usc.edu e-mail account for your primary contact e-mail address, but instead use your @gmail.com address and finish by clicking **Start my free trial**. You will have to provide a credit or debit card.

Google Cloud Platform

Try Cloud Platform for free

Google

Account type

☐ Business

☒ Individual

Name and address

Marco Papa

Address line 1

Address line 2

Redondo Beach

California

90278

Primary contact

Marco

papamarco95@gmail.com

What you pay with

☐ Bank account

☒ Credit or debit card

03 / 20

MARCO PAPA

☒ Credit or debit card address is same as above

Billing communication language

English (United States)

Start my free trial

Access to all Cloud Platform Products

Get everything you need to build and run your apps, websites and services.

\$300 credit for free

Sign up and get \$300 to spend on Google Cloud Platform over the next 60 days.

No autocharge after free trial ends

We ask you for your credit card to make sure you are not a robot. You won't be charged during or after your free trial ends.

After you are signed up, you will see the message “Creating project. This may take a few moments”. You will then be redirected to the **Dashboard** of the **Google Developer Console**.

Google Cloud Platform

My First Project

Home

Dashboard

Activity

Try Compute Engine

Create a Linux virtual machine instance in Compute Engine in this guided walkthrough.

Get started

Try App Engine

Create and deploy a Hello World app.

Get started

Learn Google Cloud Platform

Take an interactive tutorial now and learn how to deploy and build simple applications.

Get Started

Project: My First Project

Details about your project

Project ID

node-shift-147415

Project number

63863682673

Learn to use Cloud Storage

Cloud Storage is a powerful and simple storage service. In this tutorial you'll learn the basics by creating a storage bucket, and then uploading and sharing a sample file as a public URL link.

Get started

Use Google APIs

Enable APIs, create credentials, and track your usage.

RPI

Enable and manage APIs

Create a Cloud SQL instance

Cloud SQL is a MySQL database that runs in Google's cloud, with no installation or maintenance required.

Get started

Free Trial Support

Need help getting started with your Free Trial? Send us a question

Documentation

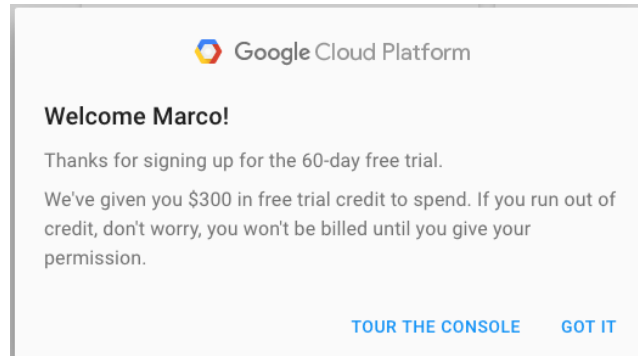
Learn about Compute Engine

Learn about Cloud Storage

Learn about App Engine

VIEW MORE

A message will pop up indicating your you signed up for the 60-day free trial, and have been given a \$300 free trial credit.



If you previously developed any projects using Google APIs, you will find them listed.

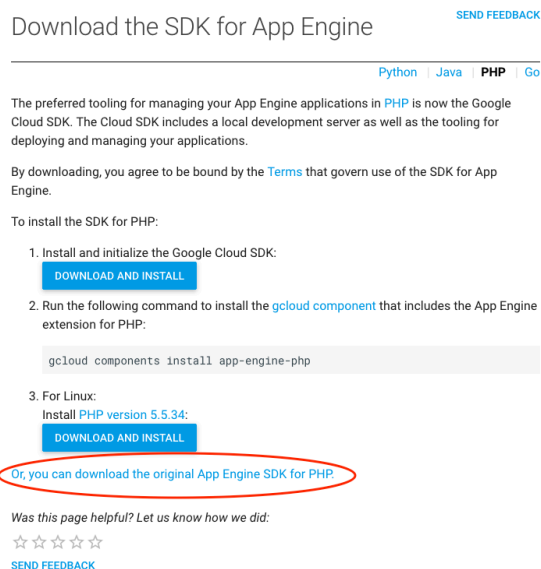
2. Download the App Engine SDK for PHP

The **Google App Engine SDK for PHP** is available for Windows, Mac OS X and Linux platforms.

Go to the URL:

https://cloud.google.com/appengine/downloads/#Google_App_Engine_SDK_for_PHP

Click the **PHP button**. You will be redirected to the “**Download the SDK for App Engine**” page. Click on “**Or, you can also download the original App Engine SDK for PHP**,” as highlighted in the picture below.



After you click on the hyperlink, a new section will appear below with LINUX, MAC OS X and WINDOWS tab installations. Select your platform tab.

LINUX

MAC OS X

WINDOWS

1. Download the App Engine SDK for PHP:

↓

DOWNLOAD

Version:

1.9.50 - 2017-01-23

Size:

66.1 MB

SHA1 Checksum:

f6883f1619b2a96d414e9b67ff781934b50d2735

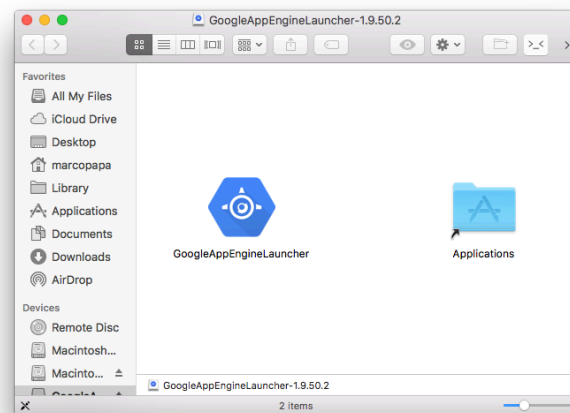
Click the **DOWNLOAD** button to download the package for your Platform to your local machine. The rest of this installation will show the steps needed for installing the SDK on the Mac OS X and Windows platforms.

3. Install the App Engine SDK for PHP

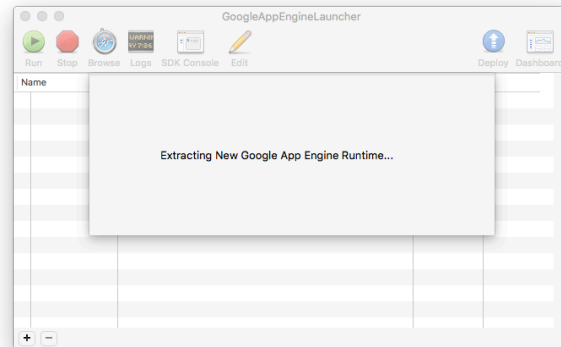
Installing on Mac OS X

To install the SDK on Mac OS X:

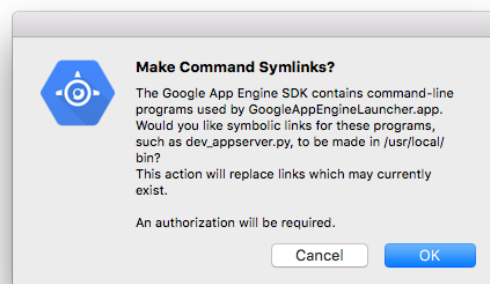
1. In the Finder, click **Go > Downloads** to open the Downloads folder.
2. Double click the App Engine SDK file you downloaded (*GoogleAppEngineLauncher-1.9.50.dmg*) to open it, then drag the **GoogleAppEngineLauncher** icon over to the Applications folder. You can now “eject” the volume GoogleAppEngineLauncher-1.9.50.2.



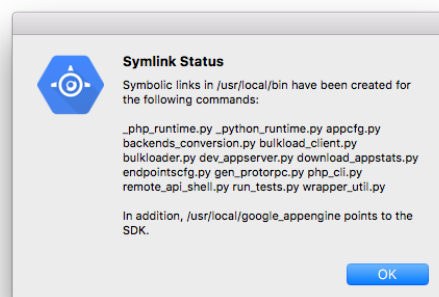
3. Double-click **GoogleAppEngineLauncher** in the Application folder.



4. When prompted to *Make Command Symlinks*, click **OK**. The symlinks allow you to run important SDK command-line tools in any terminal window.



Important: The GoogleAppEngineLauncher is a convenient UI-based tool for running and deploying App Engine apps, but it *does not* provide all the features you'll need. You will need to use the command-line equivalent, [appcfg.py](#), for many of the features you'll want to use.



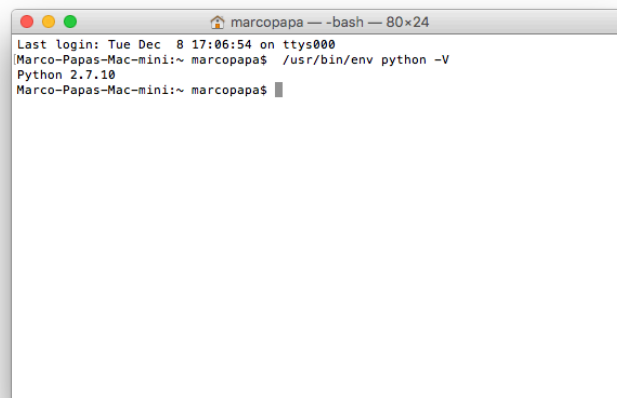
5. Notice that the installation process above unpacks the contents of the App Engine SDK at the location:

```
/usr/local/google_appengine
```

6. The App Engine PHP SDK requires Python 2.7, which is installed by default on Mac OS X 10.6 (Lion) or later. Verify your Mac's Python installation using the following command:

```
/usr/bin/env python -V
```

If the output looks like **Python 2.7.<number>** then you already have the correct Python version installed. Otherwise you can download and install Python 2.7 from [the Python web site](#). If you are using Mac OS X Sierra, you will have Python 2.7.10, as shown below:



```
marcopapa ~ -bash — 80x24
Last login: Tue Dec 8 17:06:54 on ttys000
Marco-Papas-Mac-mini:~ marcopapa$ /usr/bin/env python -V
Python 2.7.10
Marco-Papas-Mac-mini:~ marcopapa$
```

Installing on Windows

To install the SDK on Windows:

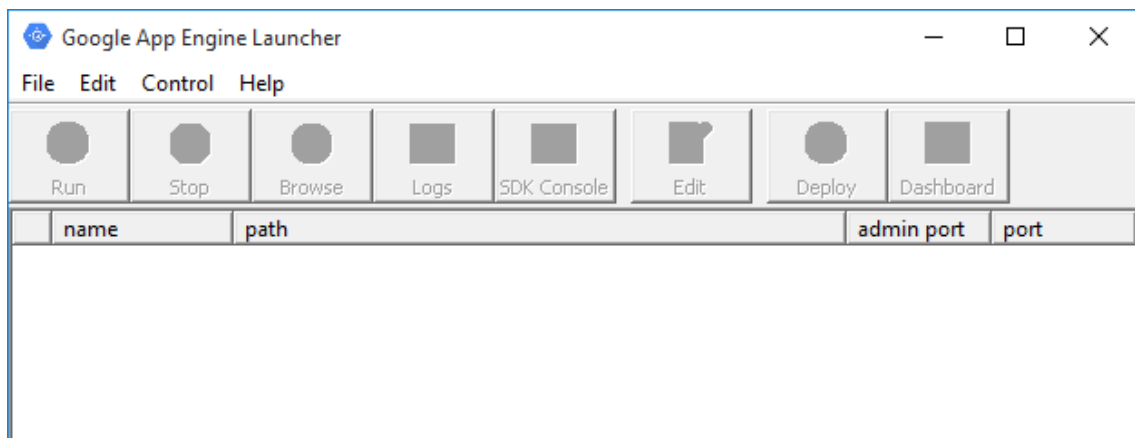
1. Double-click the SDK file you downloaded (*GoogleAppEngine-1.9.50.msi*) and follow the prompts to install the SDK.
2. You will need Python 2.7 to use the App Engine PHP SDK, because the [Development Server](#) is a Python application. Download Python 2.7.5 (don't use a higher version) from [the Python web site](#).

Note: The PHP SDK includes binaries for the PHP 5.4 runtime, including all [enabled extensions](#), so there is no need to download PHP separately for the purposes of developing with App Engine -- you just need Python.

4. Create application using GoogleAppEngineLauncher

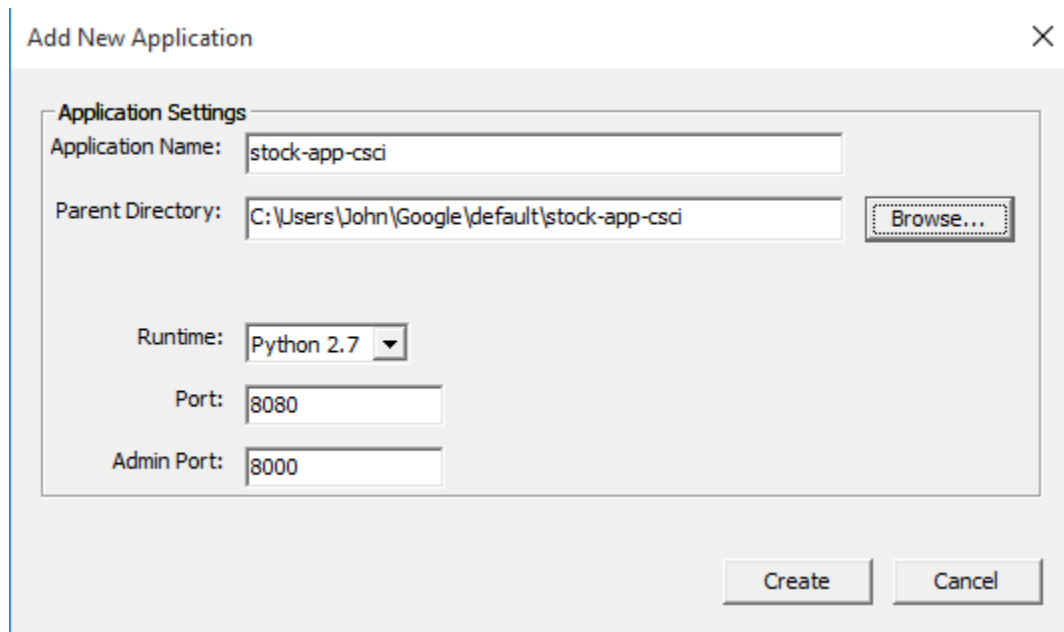
You can use the Google App Engine Launcher, which is installed as part of the App Engine SDK for PHP.

Run the Google App Engine Launcher:



Google App Launcher (Windows)

Invoke File -> Create (Windows) or File -> New Application (OS X). Or use File -> Add Existing Application (OS X) if the app already has been created.

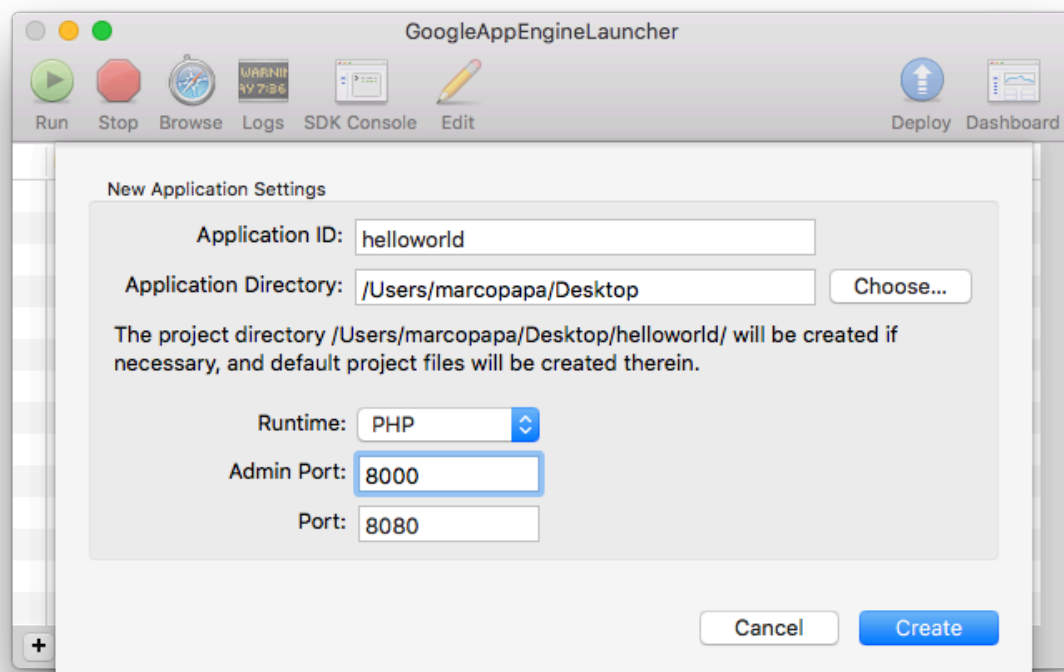


The image shows a Windows dialog box titled "Add New Application" with a close button (X) in the top right corner. The dialog contains a section titled "Application Settings" with the following fields:

- Application Name:** stock-app-csci
- Parent Directory:** C:\Users\John\Google\default\stock-app-csci, with a "Browse..." button to its right.
- Runtime:** Python 2.7 (selected from a dropdown menu)
- Port:** 8080
- Admin Port:** 8000

At the bottom right of the dialog are two buttons: "Create" and "Cancel".

Add New Application (Windows) [Note Runtime should be PHP]



The image shows a Mac dialog box titled "New Application Settings" overlaid on a "GoogleAppEngineLauncher" window. The launcher window has a menu bar with icons for Run, Stop, Browse, Logs, SDK Console, and Edit, and buttons for Deploy and Dashboard. The "New Application Settings" dialog contains the following fields:

- Application ID:** helloworld
- Application Directory:** /Users/marcopapa/Desktop, with a "Choose..." button to its right.
- Runtime:** PHP (selected from a dropdown menu)
- Admin Port:** 8000
- Port:** 8080

Below the "Application Directory" field, there is a note: "The project directory /Users/marcopapa/Desktop/helloworld/ will be created if necessary, and default project files will be created therein."

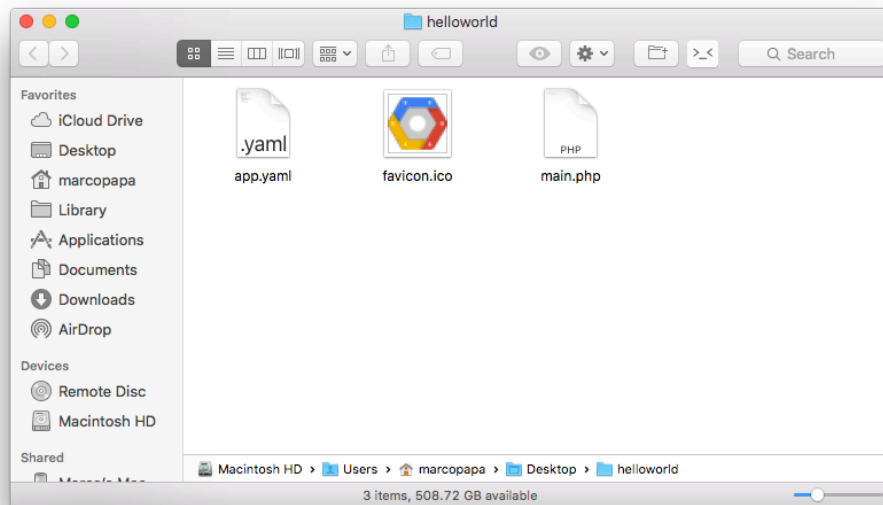
At the bottom right of the dialog are two buttons: "Cancel" and "Create".

Add New Application (Mac)

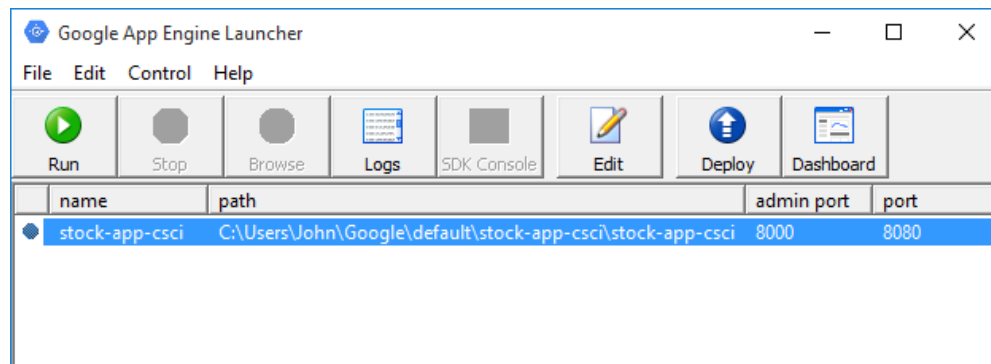
You will need to enter the following fields:

- Application Name or ID: use a new app name, like helloworld (this will be the name of a new folder)
- Parent of Application Directory: use the full path to the parent folder, for example:
 - /Users/yourname/Desktop/ in OS X
 - C:\Users\yourname\Desktop\ in Windows
- Runtime: **should be PHP**
- Port: defaults to 8080
- Admin Port: defaults to 8000

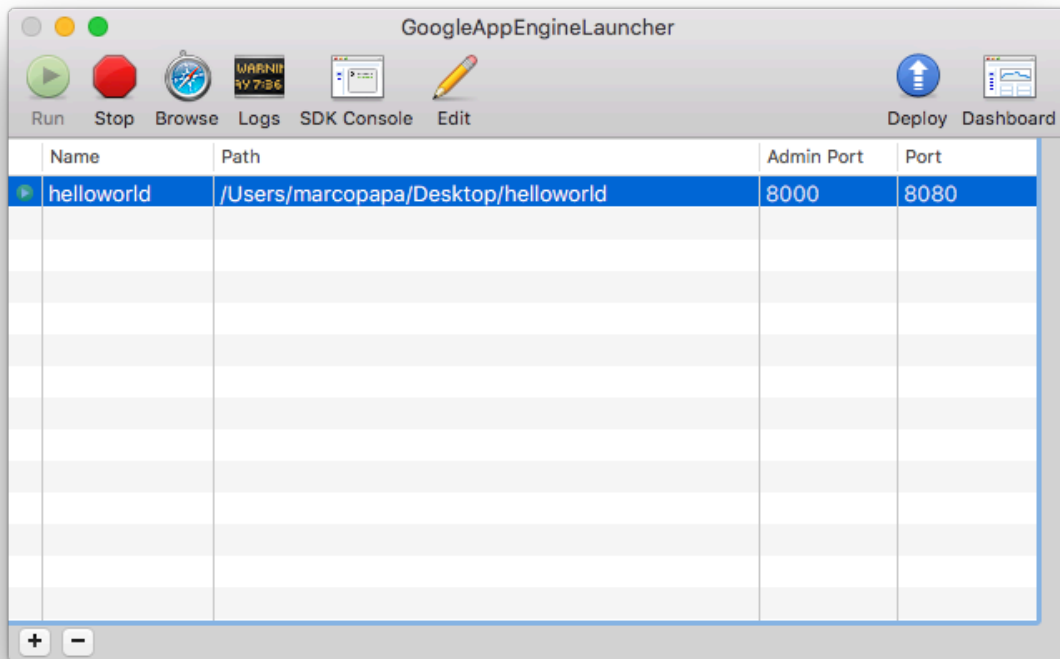
Click **Create**. The folder named helloworld will be created, containing 3 files, as shown below.



Now you can run the application by clicking the **Run** button:



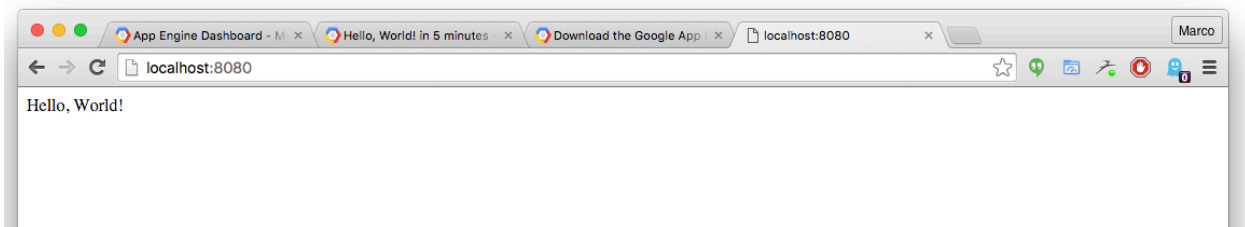
Run application locally (Windows)



Run Application locally (OS X)

The web server is now running, listening for requests on port 8080. You can test the application by visiting the following URL in your web browser:

<http://localhost:8080/>

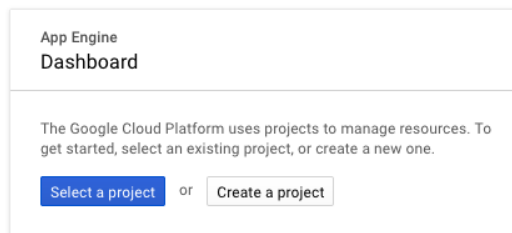


5. Creating a Project and Application

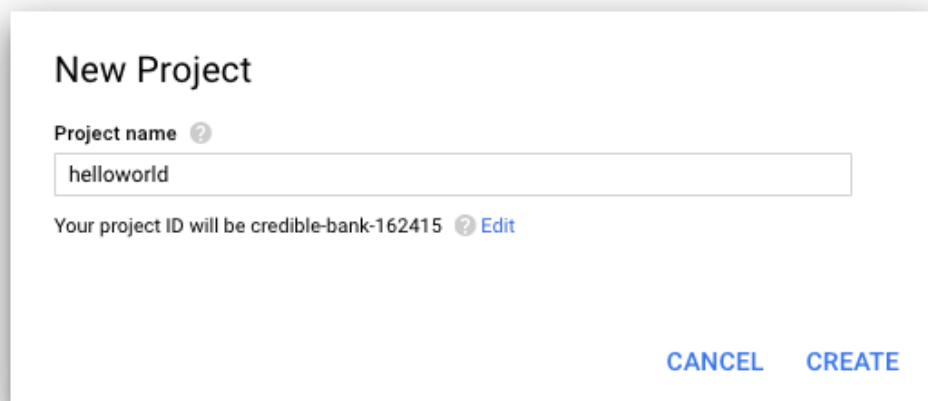
1. Sign in to App Engine using your Google account. If you do not have a Google account, you can [create a Google account](#) with an email address and password.

2. Before you can deploy your apps to the App Engine standard environment, you typically need to create or set up the following:
 - a. A Cloud Platform **project**
 - b. An App Engine **application**
3. To deploy your apps to a Cloud Platform project, you must create a corresponding App Engine application, which defines the location from where you want your App Engine services run. To create a Cloud Platform project and App Engine application:
 - a. Go to the App Engine page:

<https://console.cloud.google.com/projectselector/appengine/create?lang=php&st=true>



- b. Select or create a Cloud Platform project. If you have not created a Cloud Platform project yet, click **Create a project**.

A screenshot of the 'New Project' dialog box in the Google Cloud console. The dialog box has a title 'New Project'. Below the title, there is a label 'Project name' followed by a question mark icon. Below the label is a text input field containing the text 'helloworld'. Below the input field, there is a line of text: 'Your project ID will be credible-bank-162415' followed by a question mark icon and the word 'Edit'. At the bottom right of the dialog box, there are two buttons: 'CANCEL' and 'CREATE', both in blue text.

- c. In the **New Project** dialog enter a Project name. Notice the **project ID**. Accept the generated project ID or supply your own ID by clicking **Edit**. *This project ID is used as the App Engine application ID.* Note that this ID can only be used once: if you subsequently delete your project, you won't be able to re-use the ID in a new project. Click **CREATE**.

Google Cloud Platform helloworld

App Engine | Your first app with PHP

1 Select a location

In which region would you like to serve your app?

Your app will be served from the selected region. Anyone can use your app, but users closer to the selected region will have lower latency. You can't change the region for this project later.

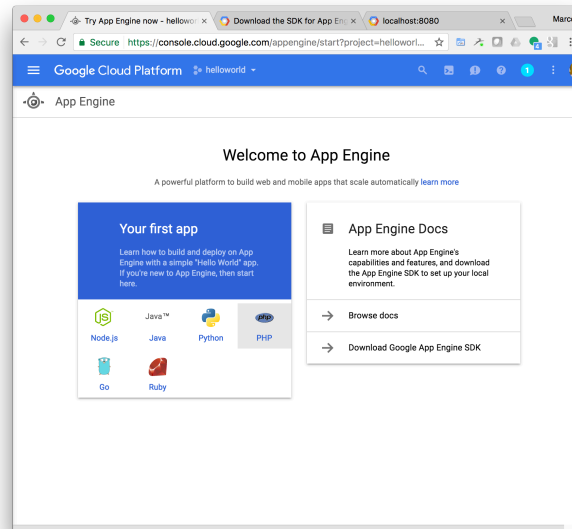
Map showing regions: NORTH AMERICA, EUROPE, ASIA, SOUTH AMERICA, AFRICA, OCEANIA.

Select a region

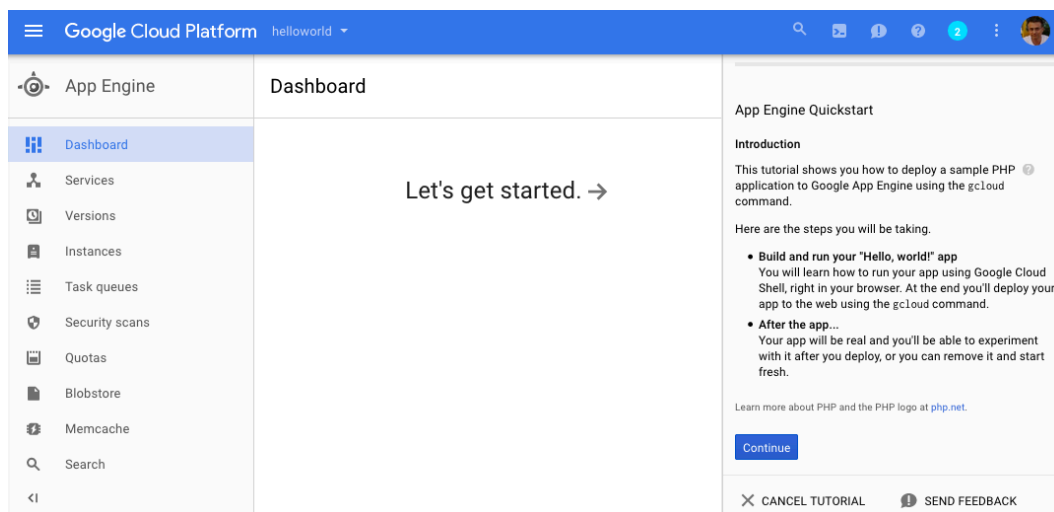
us-central

Next

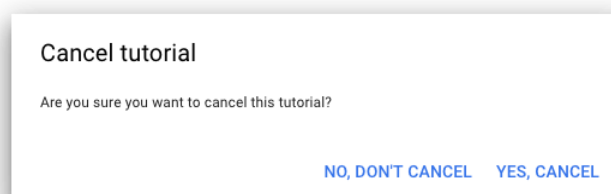
4. You can now **Select a location** for your deployed app. Keep the suggested **us-central**, and click **Next**.
5. The system “Prepares” you App Engine services.



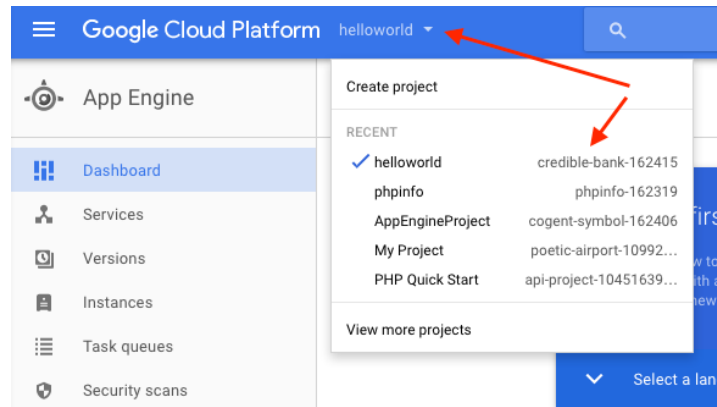
6. Select **PHP** in the **Select a language** dropdown.



7. Your project and basic App Engine app (helloworld) have been created. You can start the Tutorial by clicking **Continue**, or you can simply **CANCEL TUTORIAL**.



8. Click **YES, CANCEL**. If you click in the project dropdown, you will see your Project / app name and its corresponding **project ID** from step 5.3.b. Make a note of it.



9. You are now ready to Upload and **Deploy** your finished application to Google App Engine by invoking the following command. This opens a browser window for you to sign in using your Google account. You'll be providing the **project ID** as the argument for **-A**.

Note: Make sure you run this command in the parent directory where you created helloworld. Otherwise, give the full path to the helloworld folder.

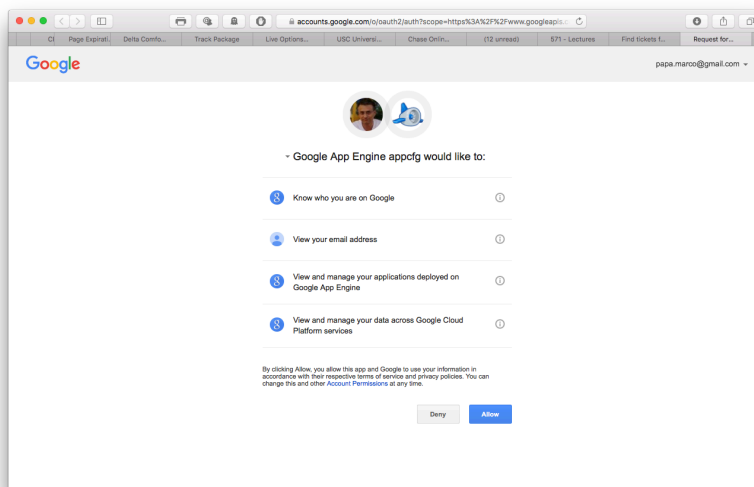
In OS X enter:

```
/usr/local/google_appengine/appcfg.py -A YOUR_PROJECT_ID update helloworld/
```

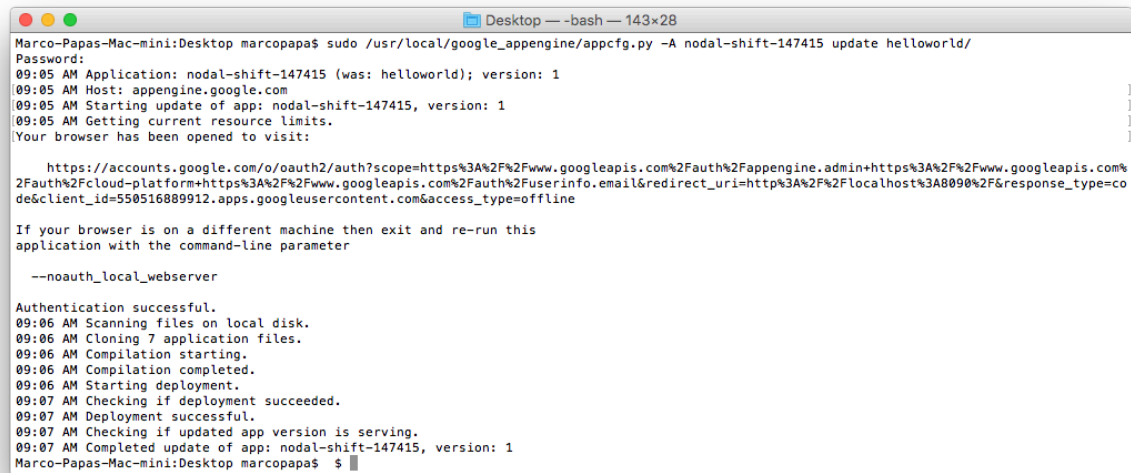
In Windows enter:

```
python appcfg.py -A YOUR_PROJECT_ID update helloworld/
```

10. The first time you execute this script, you may be asked to *Allow* the appcfg.py script, as shown below:



11. You will receive a message in the browser that “The authentication flow has completed.” Your app is now deployed and ready for use! If everything went well, you will receive a message “Deployment successful” on the terminal console, as shown below.



```
Marco-Papas-Mac-mini:Desktop marcopapa$ sudo /usr/local/google_appengine/appcfg.py -A nodal-shift-147415 update helloworld/
Password:
09:05 AM Application: nodal-shift-147415 (was: helloworld); version: 1
09:05 AM Host: appengine.google.com
09:05 AM Starting update of app: nodal-shift-147415, version: 1
09:05 AM Getting current resource limits.
Your browser has been opened to visit:
https://accounts.google.com/o/oauth2/auth?scope=https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email&redirect_uri=http%3A%2F%2Flocalhost%3A8090%2F&response_type=code&client_id=550516889912.apps.googleusercontent.com&access_type=offline

If your browser is on a different machine then exit and re-run this
application with the command-line parameter

--noauth_local_webserver

Authentication successful.
09:06 AM Scanning files on local disk.
09:06 AM Cloning 7 application files.
09:06 AM Compilation starting.
09:06 AM Compilation completed.
09:06 AM Starting deployment.
09:07 AM Checking if deployment succeeded.
09:07 AM Deployment successful.
09:07 AM Checking if updated app version is serving.
09:07 AM Completed update of app: nodal-shift-147415, version: 1
Marco-Papas-Mac-mini:Desktop marcopapa$
```

12. The full URL for your application is http://<YOUR_PROJECT_ID>.appspot.com/.

6. Check PHP Info

To find out the capability and installed options of the PHP component on Google Engine, you need to be able to execute the `phpinfo()` API. Unfortunately this feature is turned off by default on the Google Cloud Platform.

To enable `phpinfo()`, you need to create a file named `php.ini` inside the `helloworld` folder, containing the following:

```
google_app_engine.enable_functions = "phpinfo, php_uname, php_sapi_name,
phpversion"

google_app_engine.enable_curl_lite = "1"
```

Then update your `main.php` script with the code:

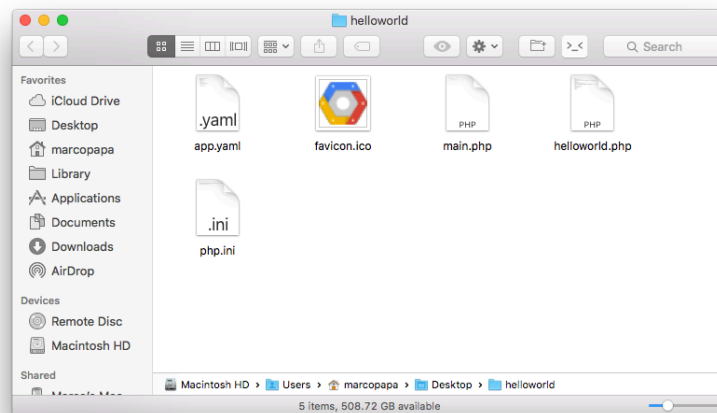
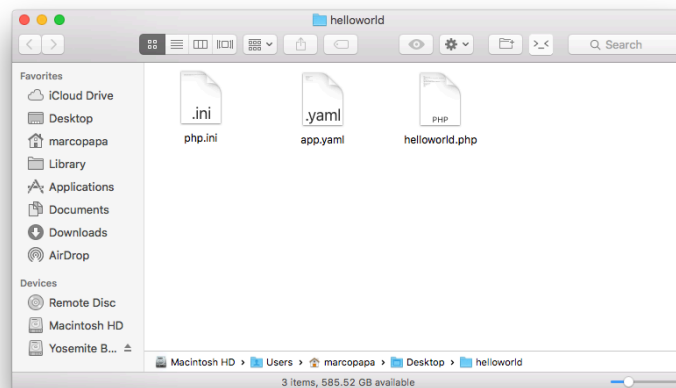
```
<html>
<head>
<title>PHP Test</title>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
</head>
<body>
<h1>PHP Test</h1>
```

```

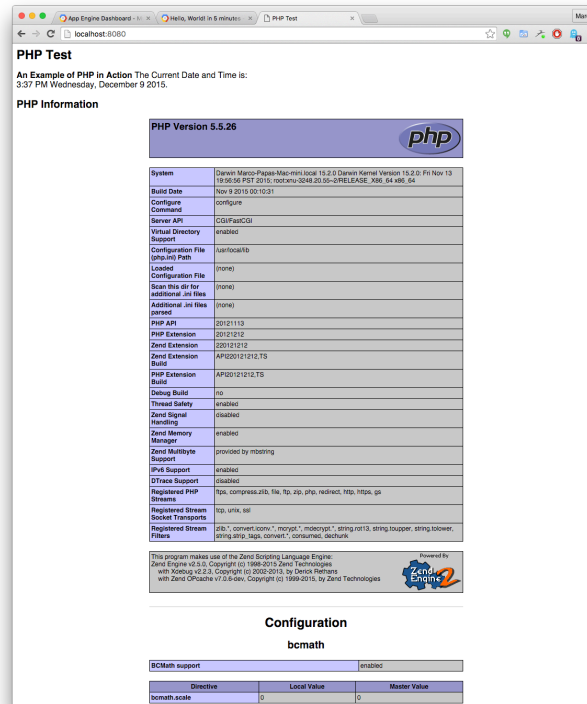
<p>
<b>An Example of PHP in Action</b>
<?php date_default_timezone_set('America/Los_Angeles');?>
<?php echo "The Current Date and Time is: "; echo date("g:i A l, F j Y.");?>
</p>
<h2>PHP Information</h2>
<p>
<?php phpversion(); ?>
<?php phpinfo(); ?>
</p>
</body>
</html>

```

The **helloworld** folder will now contain 3 (or 4) files, as shown below (this assumes you have renamed `main.php`, as `helloworld.php` in `app.yaml`).



You can now “update” your app by invoking the `appcfg.py` script from section 5.4 above. If all goes well, you’ll see the following new home page:

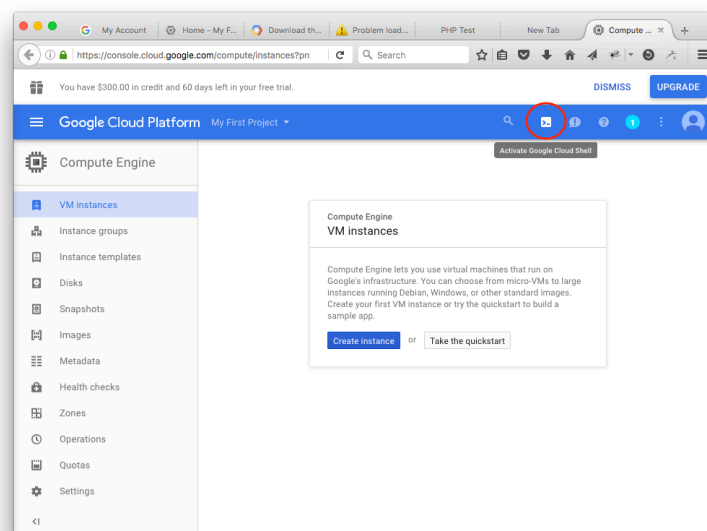


7. Set up Exploring Your instance (Optional)

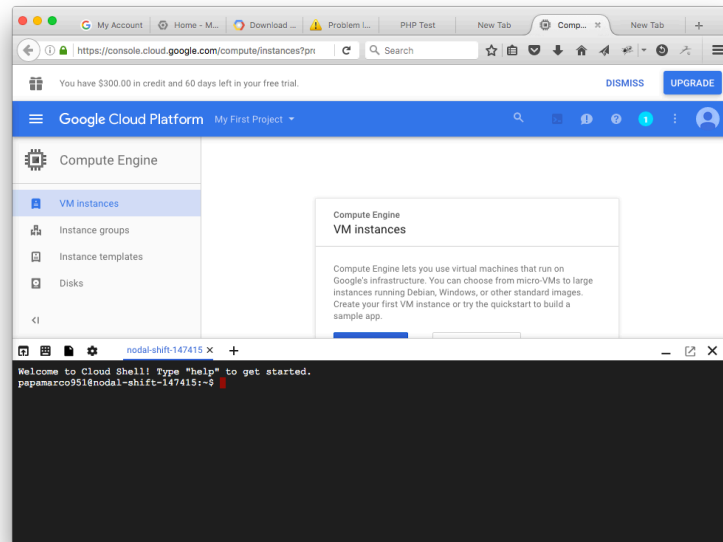
If you want to explore your server instance you can activate the **Google Cloud Shell**.

<https://console.cloud.google.com/compute>

Select the **helloworld** project (or My First Project) from the dropdown. Now click on the **Activate Google Cloud Shell** icon next to **helloworld**.



After waiting a few minutes for Google to establish the connection, you will see the shell appear at the bottom of the browser window. You can now use Linux commands to manage your Cloud Platform Console projects and resources.

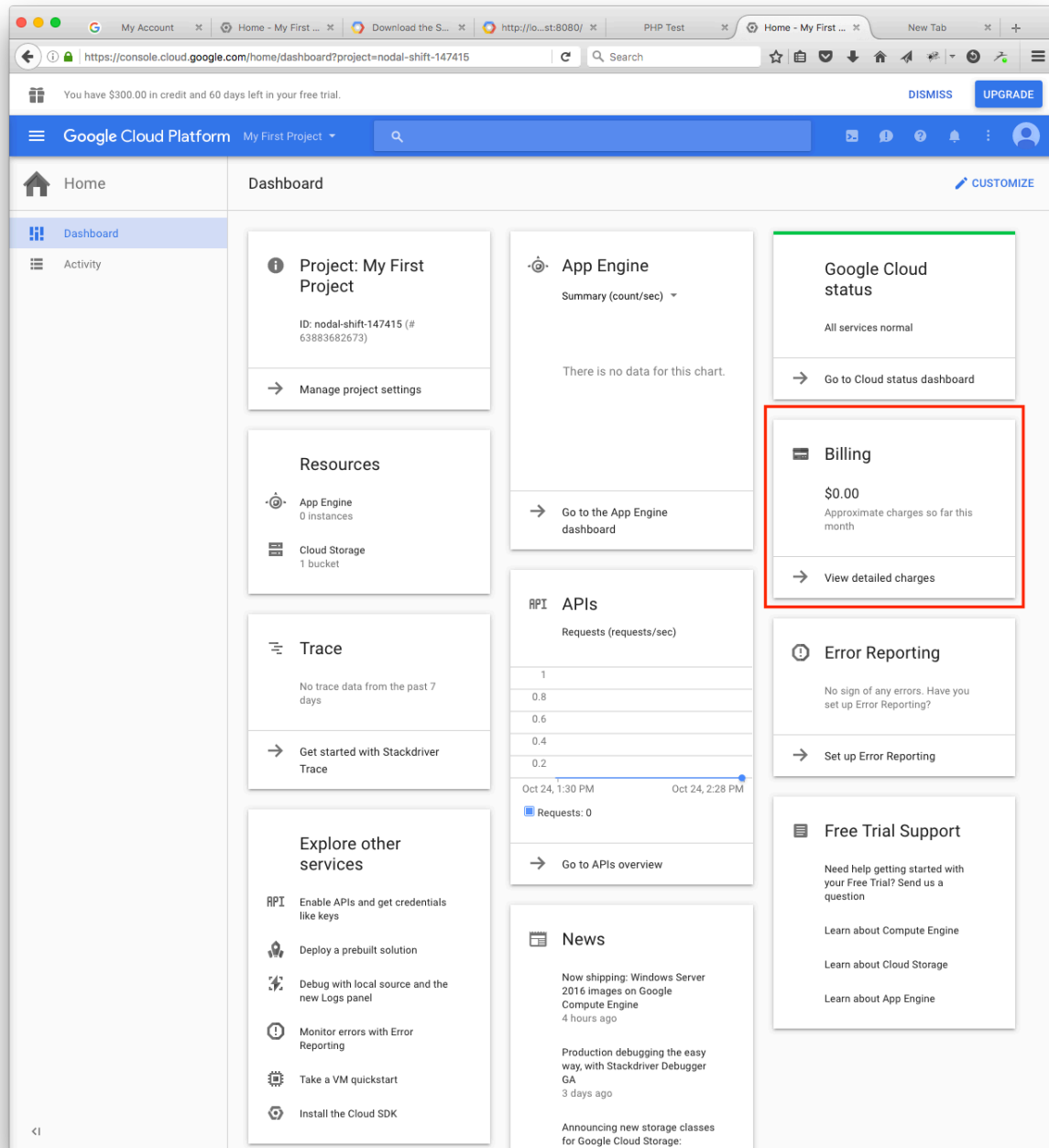


You can read more about the **Google Cloud Shell** here:

<https://cloud.google.com/cloud-shell/docs/>

8. Monitoring your instance and you Bill

Select Google Cloud Platform and go to the Dashboard. Under **Billing** you will see if you are incurring any charges.



Have fun exploring Google Cloud Platform!!