

Purpose

The purpose of this exercise is to configure a LEMP server, then add a Wordpress site. LEMP is an acronym for Linux/nginx/mysql(mariadb)/php, which is a standard configuration for a server that will host a variety of web applications.

Preparation

Start your GCP instance and connect to it using the SSH link. You will need to leave your instance running for at least the next two units. If for some reason you have to reboot your instance, you'll need to do repairs to make your WordPress site work again.

A screenshot of the Google Cloud Platform Compute Engine VM instances page. The page shows a table of VM instances. One instance, named "gcelab2", is selected. An arrow points to the "SSH" button in the "Connect" column for this instance. The table columns are: Name, Zone, Recommendation, In use by, Internal IP, External IP, and Connect. The "External IP" column shows "173.255.116.136 (nic0)". The "Connect" column contains an "SSH" button with a dropdown arrow and a three-dot menu icon.

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
gcelab2	us-central1-c			10.128.0.2 (nic0)	173.255.116.136 (nic0)	SSH ▼ ⋮

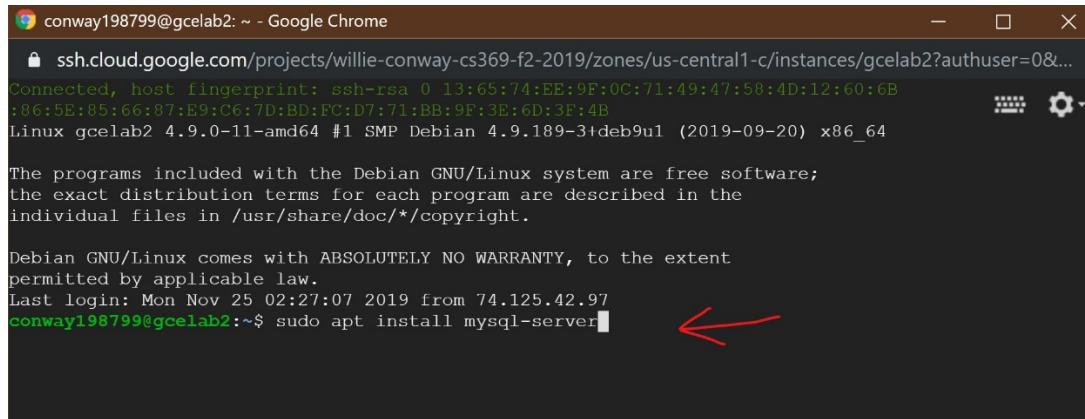
(Starting my GCP instance and connecting to it using the SSH link)

Assignment

Keep a Word document which will show your process.

Your instance already has nginx installed. To install the rest of the LEMP tool, see steps 2-4 of the tutorial [Installing a LEMP Server \(Links to an external site.\)](#) to get MySQL/MariaDB and php up and running.

Step 2 — Installing MySQL to Manage Site Data

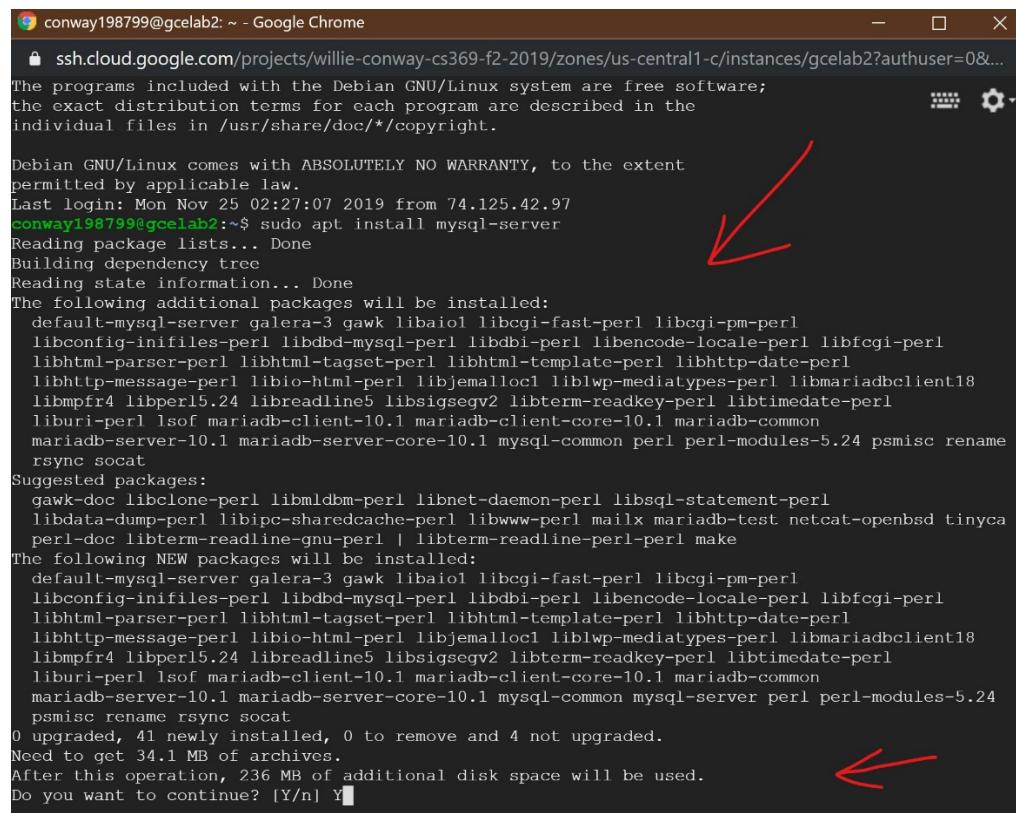


```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Mon Nov 25 02:27:07 2019 from 74.125.42.97
conway198799@gcelab2:~$ sudo apt install mysql-server
```

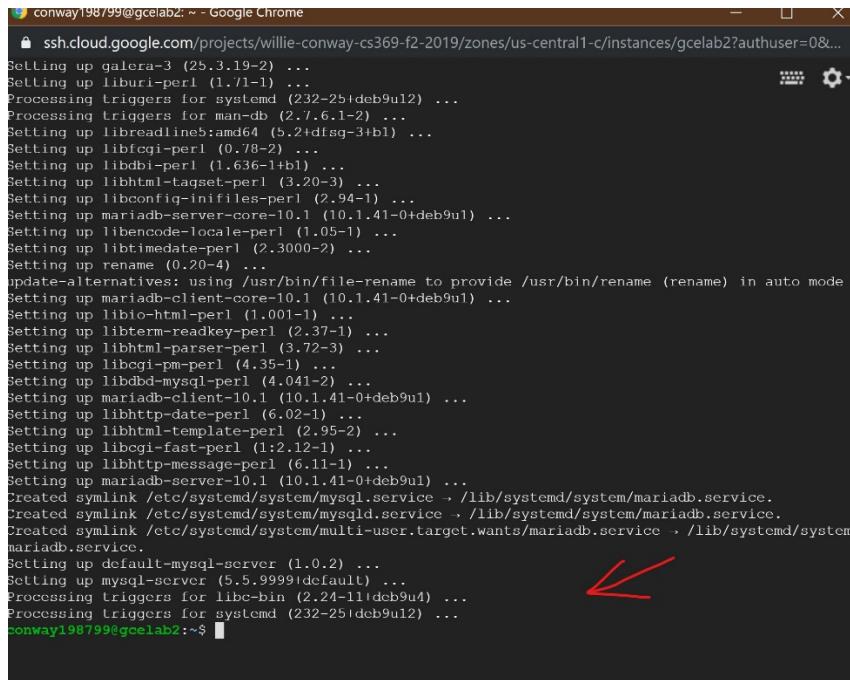
(Since we've already installed Nginx web server previously, we need to install MySQL, a database management system, to store and manage the data for our site. You can install this easily by typing: sudo apt install mysql-server. The MySQL database software is now installed, but its configuration is not complete.)



```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
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individual files in /usr/share/doc/*copyright.

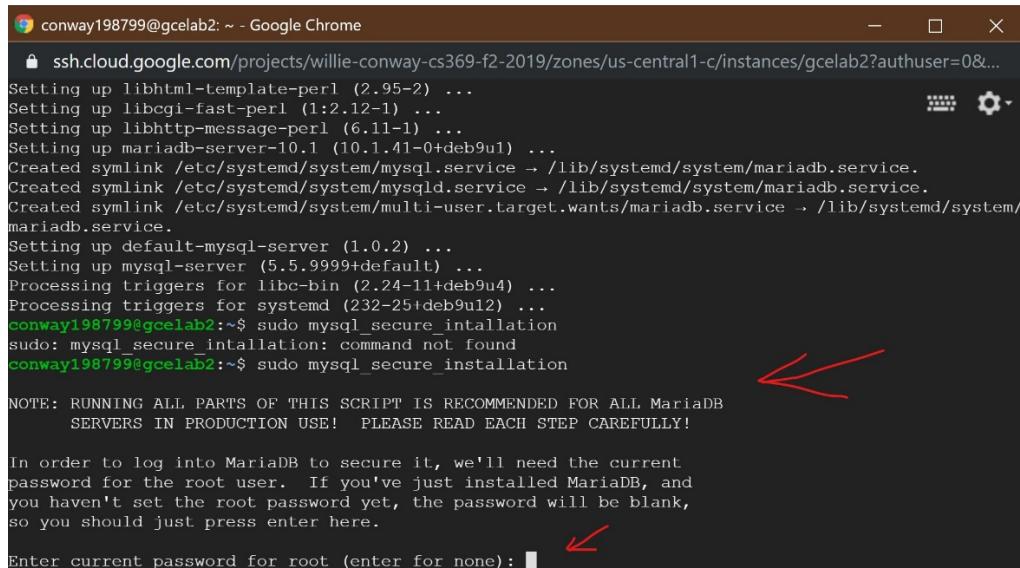
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Nov 25 02:27:07 2019 from 74.125.42.97
conway198799@gcelab2:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  default-mysql-server galera-3 gawk libaiol libcgi-fast-perl libcgipm-perl
  libconfig-inifiles-perl libdbd-mysql-perl libdbi-perl libencode-locale-perl libfcgi-perl
  libhtml-parser-perl libhtml-tagset-perl libhtml-template-perl libhttp-date-perl
  libhttp-message-perl libio-html-perl libjemalloc1 liblwp-mediatypes-perl libmariadbclient18
  libmpfr4 libperl5.24 libreadline5 libsigsegv2 libterm-readkey-perl libtimedate-perl
  liburi-perl lsof mariadb-client-10.1 mariadb-client-core-10.1 mariadb-common
  mariadb-server-10.1 mariadb-server-core-10.1 mysql-common perl perl-modules-5.24 psmisc rename
  rsync socat
Suggested packages:
  gawk-doc libclone-perl libltdbm-perl libnet-daemon-perl libsql-statement-perl
  libdata-dump-perl libipc-sharedcache-perl libwww-perl mailx mariadb-test netcat-openbsd tinyca
  perl-doc libterm-readline-gnu-perl | libterm-readline-perl-perl make
The following NEW packages will be installed:
  default-mysql-server galera-3 gawk libaiol libcgi-fast-perl libcgipm-perl
  libconfig-inifiles-perl libdbd-mysql-perl libdbi-perl libencode-locale-perl libfcgi-perl
  libhtml-parser-perl libhtml-tagset-perl libhtml-template-perl libhttp-date-perl
  libhttp-message-perl libio-html-perl libjemalloc1 liblwp-mediatypes-perl libmariadbclient18
  libmpfr4 libperl5.24 libreadline5 libsigsegv2 libterm-readkey-perl libtimedate-perl
  liburi-perl lsof mariadb-client-10.1 mariadb-client-core-10.1 mariadb-common
  mariadb-server-10.1 mariadb-server-core-10.1 mysql-common mysql-server perl perl-modules-5.24
  psmisc rename rsync socat
0 upgraded, 41 newly installed, 0 to remove and 4 not upgraded.
Need to get 34.1 MB of archives.
After this operation, 236 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

(Installing all the following packages for MySQL database)



```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Setting up galera-3 (25.3.19-2) ...
Setting up liburi-perl (1.71-1) ...
Processing triggers for systemd (232-25+deb9u12) ...
Processing triggers for man-db (2.7.6.1-2) ...
Setting up libreadline5:amd64 (5.21dfsg-3+b1) ...
Setting up libfcgi-perl (0.78-2) ...
Setting up libdbi-perl (1.636-1+b1) ...
Setting up libhtml-tagset-perl (3.20-3) ...
Setting up libconfig-inifiles-perl (2.94-1) ...
Setting up mariadb-client-core-10.1 (10.1.41-0+deb9u1) ...
Setting up libencode-locale-perl (1.05-1) ...
Setting up libtime-date-perl (2.3000-2) ...
Setting up rename (0.20-4) ...
update-alternatives: using /usr/bin/file-rename to provide /usr/bin/rename (rename) in auto mode
Setting up mariadb-client-core-10.1 (10.1.41-0+deb9u1) ...
Setting up libio-html-perl (1.001-1) ...
Setting up libterm-readkey-perl (2.37-1) ...
Setting up libhtml-parser-perl (3.72-3) ...
Setting up libcgi-pm-perl (4.35-1) ...
Setting up libdbd-mysql-perl (4.041-2) ...
Setting up mariadb-client-10.1 (10.1.41-0+deb9u1) ...
Setting up libhttp-date-perl (6.02-1) ...
Setting up libhtml-template-perl (2.95-2) ...
Setting up libcgi-fast-perl (1:2.12-1) ...
Setting up libhttp-message-perl (6.11-1) ...
Setting up mariadb-server-10.1 (10.1.41-0+deb9u1) ...
Created symlink /etc/systemd/system/mysql.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /lib/systemd/system/mariadb.service.
Setting up default-mysql-server (1.0.2) ...
Setting up mysql-server (5.5.9999+default) ...
Processing triggers for libc-bin (2.24-11+deb9u4) ...
Processing triggers for systemd (232-25+deb9u12) ...
conway198799@gcelab2:~$
```

(Completion of packages installed to MySQL database)



```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Setting up libhtml-template-perl (2.95-2) ...
Setting up libcgi-fast-perl (1:2.12-1) ...
Setting up libhttp-message-perl (6.11-1) ...
Setting up mariadb-server-10.1 (10.1.41-0+deb9u1) ...
Created symlink /etc/systemd/system/mysql.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /lib/systemd/system/mariadb.service.
Setting up default-mysql-server (1.0.2) ...
Setting up mysql-server (5.5.9999+default) ...
Processing triggers for libc-bin (2.24-11+deb9u4) ...
Processing triggers for systemd (232-25+deb9u12) ...
conway198799@gcelab2:~$ sudo mysql_secure_installation
sudo: mysql_secure_installation: command not found
conway198799@gcelab2:~$ sudo mysql_secure_installation
NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY!
In order to log into MariaDB to secure it, we'll need the current
password for the root user.  If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.
Enter current password for root (enter for none): ↵
```

(To secure the installation, we can run a security script that will ask whether we want to modify some insecure defaults. Begin the script by typing: `sudo mysql_secure_installation`)

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /lib/systemd/system/
mariadb.service.
Setting up default-mysql-server (1.0.2) ...
Setting up mysql-server (5.5.9999+default) ...
Processing triggers for libc-bin (2.24-11+deb9u4) ...
Processing triggers for systemd (232-25+deb9u12) ...
conway198799@gcelab2:~$ sudo mysql_secure_installation
sudo: mysql_secure_installation: command not found
conway198799@gcelab2:~$ sudo mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user.  If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MariaDB
root user without the proper authorisation.

Set root password? [Y/n] ↵
```

(Asked to enter the password for the MySQL root account. I haven't set this yet, so just I hit ENTER. Then I was asked if I want to set that password. Then type y then set a root password.)

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MariaDB
root user without the proper authorisation.

Set root password? [Y/n] y
New password:
Re-enter new password:
Password updated successfully!
Reloading privilege tables...
... Success!

By default, a MariaDB installation has an anonymous user, allowing anyone
to log into MariaDB without having to have a user account created for
them. This is intended only for testing, and to make the installation
go a bit smoother. You should remove them before moving into a
production environment.

Remove anonymous users? [Y/n] y ↵
... Success!

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] y ↵
... Success!

By default, MariaDB comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] y ↵
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] y ↵
... Success!

Cleaning up...

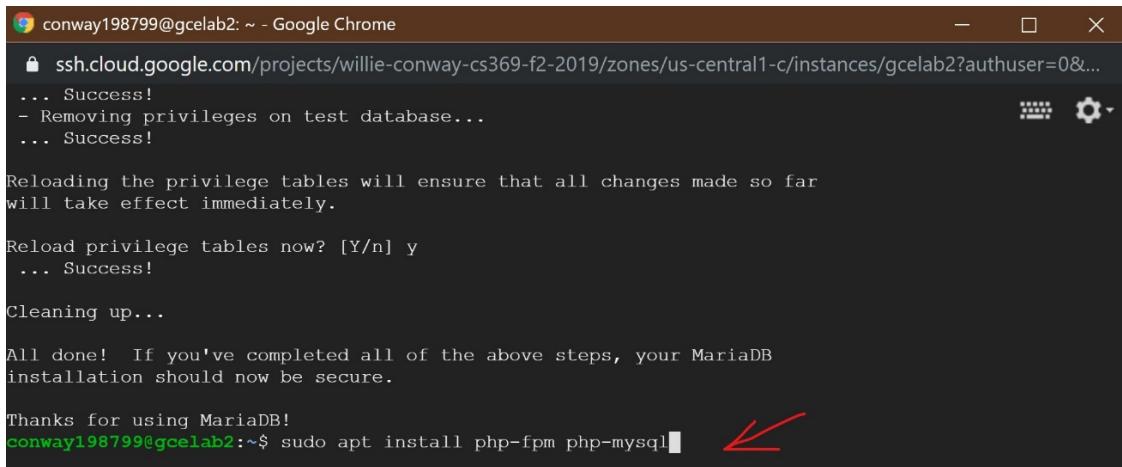
All done!  If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
conway198799@gcelab2:~$
```

(For the rest of the questions the script asks, I pressed y, followed by the ENTER key at each prompt. This will remove some anonymous users and the test database, disable remote root logins, and load these

(new rules so that MySQL immediately respects the changes I have made. At this point, the database system is now set up and secured.)

Step 3 — Installing PHP for Processing



conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

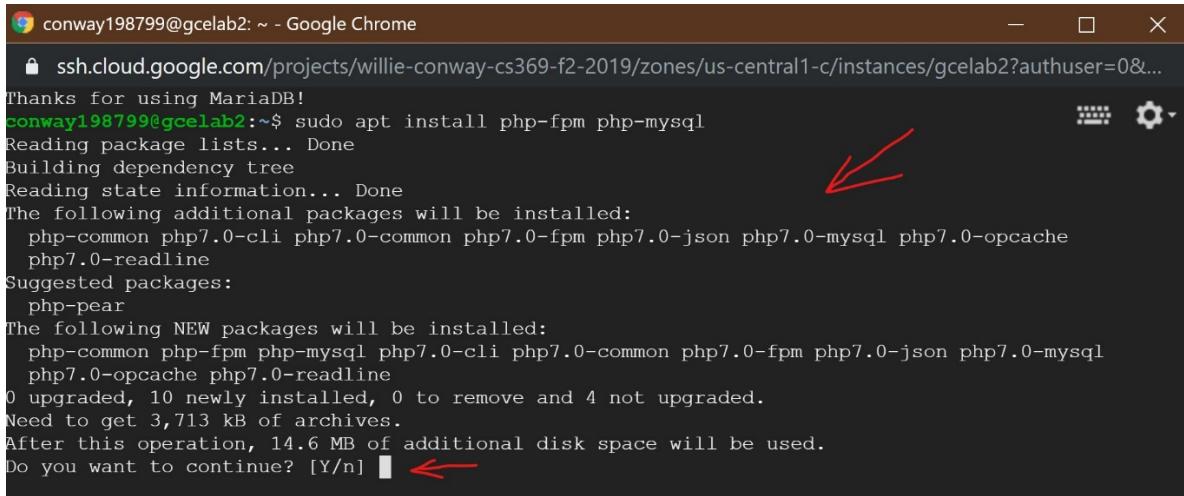
Reload privilege tables now? [Y/n] y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
conway198799@gcelab2:~\$ sudo apt install php-fpm php-mysql

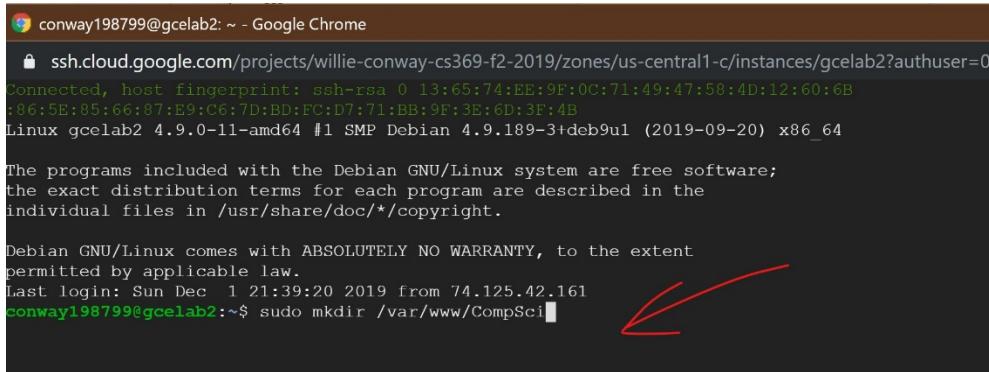
(Installing the php-fpm and php-mysql packages using sudo apt install php-fpm php-mysql)



conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Thanks for using MariaDB!
conway198799@gcelab2:~\$ sudo apt install php-fpm php-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
 php-common php7.0-cli php7.0-common php7.0-fpm php7.0-json php7.0-mysql php7.0-opcache
 php7.0-readline
Suggested packages:
 php-pear
The following NEW packages will be installed:
 php-common php-fpm php-mysql php7.0-cli php7.0-common php7.0-fpm php7.0-json php7.0-mysql
 php7.0-opcache php7.0-readline
0 upgraded, 10 newly installed, 0 to remove and 4 not upgraded.
Need to get 3,713 kB of archives.
After this operation, 14.6 MB of additional disk space will be used.
Do you want to continue? [Y/n]

(Since Nginx does not contain native PHP processing like some other web servers, we will need to install fpm, which stands for “fastCGI process manager”. We will tell Nginx to pass PHP requests to this software for processing. We’ll also install an additional helper package that will allow PHP to communicate with our MySQL database backend. The installation will pull in the necessary PHP core files to make that work. To complete the install I selected y after being prompted. We now have our PHP components installed. Next we’ll configure Nginx to use them.)

Step 4 — Configuring Nginx to Use the PHP Processor



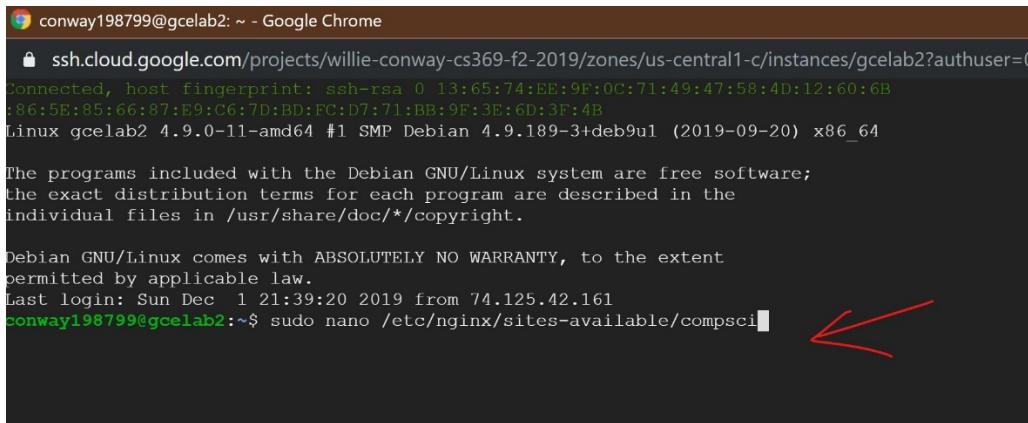
A screenshot of a terminal window titled "conway198799@gcelab2: ~ - Google Chrome". The window shows the command "sudo mkdir /var/www/CompSci" being run. A red arrow points from the text "Creating a new directory in /var/www to hold the PHP site using sudo mkdir /var/www/CompSci." to the command line.

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5B:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo mkdir /var/www/CompSci
```

(Creating a new directory in /var/www to hold the PHP site using sudo mkdir /var/www/CompSci.)



A screenshot of a terminal window titled "conway198799@gcelab2: ~ - Google Chrome". The window shows the command "sudo nano /etc/nginx/sites-available/compsci" being run. A red arrow points from the text "Opening a new configuration file in Nginx's sites-available directory using sudo nano /etc/nginx/sites-available/compsci." to the command line.

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5B:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

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Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
```

(Opening a new configuration file in Nginx's sites-available directory using sudo nano /etc/nginx/sites-available/compsci.)



A screenshot of a configuration file for Nginx. The file contains the following code:

```
server {
    listen 8083;
    listen [::]:8083;
    root /var/www/CompSci;
    index index.php index.html index.htm;

    server_name CompSci;

    location / {
        try_files $uri $uri/ =404;
    }

    location ~ \.php$ {
        include snippets/fastcqi-php.conf;
        fastcqi_pass unix:/var/run/php/php7.0-fpm.sock;
    }
}
```

Three red arrows point to the "listen" directive, the "root" directive, and the "server_name" directive, highlighting them for the user.

(This is a very basic configuration that listens on port 8083 and serves files from the web root we just created. It will only respond to requests to the name provided after server_name , and any files ending in .php will be processed by the php-fpm process before Nginx sends the results to the user. Next, I went to go on to save and close the file when you're done customizing it.)

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

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Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo ln -s /etc/nginx/sites-available/compsci /etc/nginx/sites-enabled/
```

*(Activate your configuration by linking to the config file from Nginx's sites-enabled directory using
sudo ln -s /etc/nginx/sites-available/compsci /etc/nginx/sites-enabled/.)*

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectName
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

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Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
conway198799@gcelab2:~$
```

(This will tell Nginx to use the configuration next time it is reloaded. First, test your configuration for syntax errors by using sudo nginx -t.)

```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

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conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
conway198799@gcelab2:~$ sudo systemctl reload nginx

```

(Reload Nginx to make the changes using sudo systemctl reload nginx.)

These instructions are not exact. You do not have your own domain name but instead are using port number 8083, so see your notes from installing and configuring nginx.

After Step 2, Installing MySQL, test your installation by adding a prebuilt database. This is available at <https://dev.mysql.com/doc/index-other.html> ([Links to an external site.](#)), then download the world database and view the HTML Setup Guide.

Title	Download DB	HTML Setup Guide	PDF Setup Guide
employee data (large dataset, includes data and test/verification suite)	GitHub	View	US Ltr A4
world database	Gzip Zip	View	US Ltr
world_x database	TGZ Zip		
sakila database	TGZ Zip	View	US Ltr A4
menagerie database	TGZ Zip		

(Downloading the world sample database Gzip file.)

```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNum...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sat Nov 30 22:02:28 2019 from 74.125.177.37
conway198799@gcelab2:~$ ls
ccsc.tar default qcelab2.py qcelab3.py index.nginx-debian.html output.txt
conway198799@gcelab2:~$ ls
ccsc.tar default qcelab2.py qcelab3.py index.nginx-ddebian.html output.txt world.sql.gz ←
conway198799@gcelab2:~$ sudo cp world.sql.gz /tmp
conway198799@gcelab2:~$ ls /tmp
foo ssh-0YqmvWHPB ssh-ZgoGDFV7ti world.sql.gz ←
conway198799@gcelab2:~$ 

```

(Uploaded the world sample database Gzip file world.sql.gz to /home/conway198799, then use cd command to change to the /tmp directory to extract the Gzip file.)

A screenshot of a terminal window titled "conway198799@gcelab2: /tmp - Google Chrome". The terminal shows the following session:

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNum...  
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B  
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B  
Linux gcelab2 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.  
Last login: Sat Nov 30 23:23:20 2019 from 74.125.177.164  
conway198799@gcelab2:~$ cd /tmp  
conway198799@gcelab2:/tmp$ ls  
foo ssh-RyKvnLCFXf ssh-ZgoGDFV7ti world.sql.gz ←  
conway198799@gcelab2:/tmp$ sudo gunzip world.sql.gz ←  
conway198799@gcelab2:/tmp$ ls  
foo ssh-RyKvnLCFXf ssh-ZgoGDFV7ti world.sql ←  
conway198799@gcelab2:/tmp$
```

Three red arrows point to the command "ls", the file "world.sql.gz", and the file "world.sql".

(Using gunzip command. Also using ls command to confirm the extracted file is in the /tmp directory.
Now I have the world.sql file.)

A screenshot of a terminal window titled "conway198799@gcelab2: /tmp - Google Chrome". The terminal shows the following session:

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNum...  
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B  
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B  
Linux gcelab2 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.  
Last login: Sat Nov 30 23:35:56 2019 from 74.125.42.37  
conway198799@gcelab2:~$ cd /tmp  
conway198799@gcelab2:/tmp$ ls  
foo ssh-yhWbcKynxs ssh-ZgoGDFV7ti world.sql ←  
conway198799@gcelab2:/tmp$ sudo mysql -u root -p ←  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 12  
Server version: 10.1.41-MariaDB-0+deb9u1 Debian 9.9  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
MariaDB [(none)]> SOURCE /tmp/world.sql; ←
```

A red arrow points to the command "SOURCE /tmp/world.sql;".

(Connect to the MySQL server using the mysql command-line client with the following command

using mysql -u root -p. Enter your password when prompted. A non-root account can be used as long as the account has privileges to create new databases. Execute the world.sql script to create the database structure, and insert the data, by using the following command SOURCE /tmp/world.sql;.)

```
conway198799@gcelab2: /tmp - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US

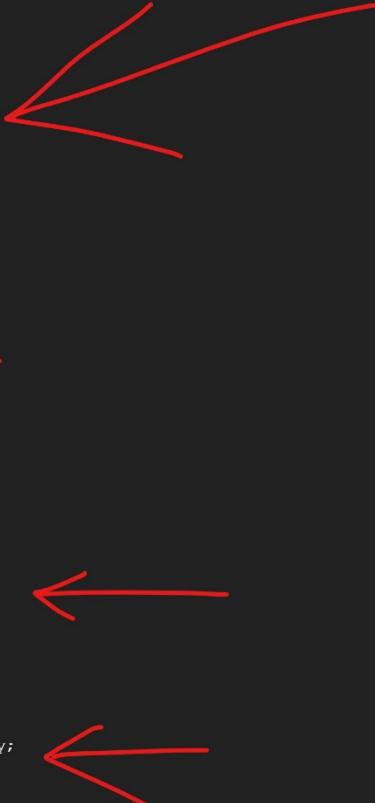
Query OK, 1 row affected (0.00 sec)
Query OK, 1 row affected (0.00 sec)
Query OK, 0 rows affected (0.04 sec)
Query OK, 0 rows affected (0.00 sec)

MariaDB [world]> USE world;
Database changed
MariaDB [world]> SHOW TABLES;
+-----+
| Tables_in_world |
+-----+
| city           |
| country        |
| countrylanguage |
+-----+
3 rows in set (0.00 sec)

MariaDB [world]> SELECT COUNT(*) FROM city;
+-----+
| COUNT(*) |
+-----+
| 4079 |
+-----+
1 row in set (0.00 sec)

MariaDB [world]> SELECT COUNT(*) FROM country;
+-----+
| COUNT(*) |
+-----+
| 239 |
+-----+
1 row in set (0.00 sec)

MariaDB [world]>
```



(Confirm that the sample world database is installed correctly. Execute the following statements as shown in the tutorial.)

Once you finish this, you should follow the instructions [How to Install WordPress \(Links to an external site.\)](#). Again, you have to make some adjustments since you do not have a domain. It would be good to document any changes you make more thoroughly. Also, you do not need to worry about installing an SSL certificate and using https. Wordpress will work without it, though you would definitely want to do this for a real site.

Step 1 — Creating a MySQL Database and User for WordPress

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&p
:86:5E:85:66:87:19:66:D1:BD:FC:D7:71:BB:9F:3E:6D:3E:4B
Linux gcelab2 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.
Last login: Sun Dec 1 01:43:07 2019 from 74.125.177.162
conway198799@gcelab2:~$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 15
Server version: 10.1.41-MariaDB-0+deb9u1 Debian 9.9

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> CREATE DATABASE CompSci DEFAULT CHARACTER SET utf8 COLLATE utf8_unicode_ci;
Query OK, 1 row affected (0.03 sec)

MariaDB [(none)]>
```



(Creating a separate database called *CompSci* that WordPress can control.)

```
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 355
Server version: 10.1.41-MariaDB-0+deb9u1 Debian 9.9

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> GRANT ALL ON CompSci.* TO 'wordpressuser'@'localhost' IDENTIFIED By '1234'
```



(Creating account, setting a password (1234), and granting access to the database we created.)

```
MariaDB [(none)]> Grant ALL ON CompSci.* TO 'wordpressuser'@'localhost' IDENTIFIED BY
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]>
```



(Flush the privileges so that the current instance of MySQL knows about the recent changes we've made.)

```
MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> EXIT;
Bye
conway198799@gcelab2:~$
```



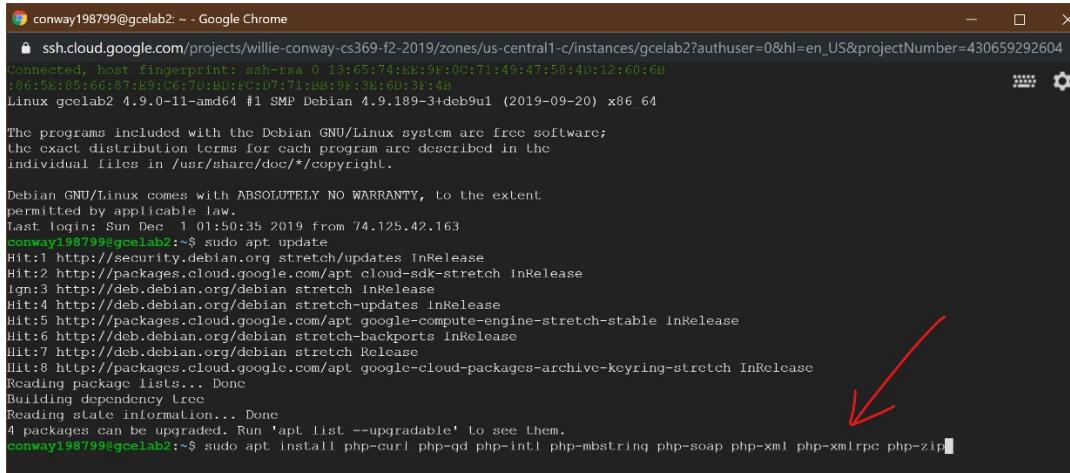
```
MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> EXIT;
Bye
conway198799@gcelab2:~$
```



(Exit out of MySQL.)

Step 2 — Installing Additional PHP Extensions

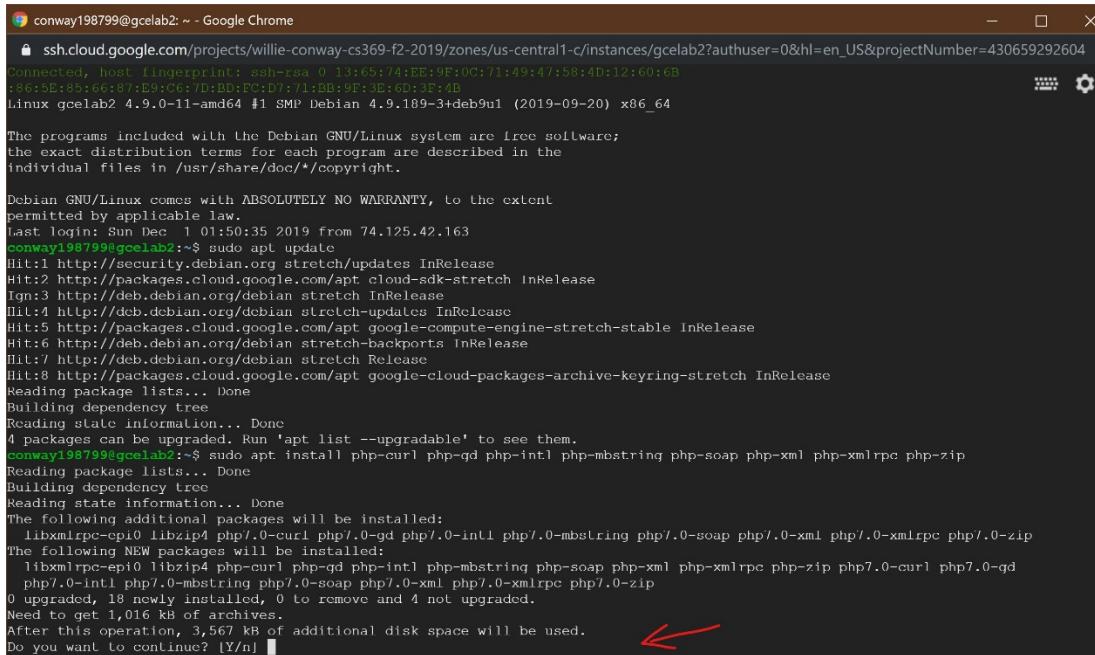


```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNumber=430659292604
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 01:50:35 2019 from 74.125.42.163
conway198799@gcelab2:~$ sudo apt update
Hit:1 http://security.debian.org stretch/updates InRelease
Hit:2 http://packages.cloud.google.com/apt cloud-sdk-stretch InRelease
Ign:3 http://deb.debian.org/debian stretch InRelease
Hit:4 http://deb.debian.org/debian stretch-updates InRelease
Hit:5 http://packages.cloud.google.com/apt google-compute-engine-stretch-stable InRelease
Hit:6 http://deb.debian.org/debian stretch-backports InRelease
Hit:7 http://deb.debian.org/debian stretch Release
Hit:8 http://packages.cloud.google.com/apt google-cloud-packages-archive-keyring-stretch InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
conway198799@gcelab2:~$ sudo apt install php-curl php-gd php-intl php-mbstring php-soap php-xml php-xmlrpc php-zip
```

(Download and install some of the most popular PHP extensions for use with WordPress by typing `sudo apt update` then `sudo apt install php-curl php-gd php-intl php-mbstring php-soap php-xml php-xmlrpc php-zip`)



```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNumber=430659292604
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 01:50:35 2019 from 74.125.42.163
conway198799@gcelab2:~$ sudo apt update
Hit:1 http://security.debian.org stretch/updates InRelease
Hit:2 http://packages.cloud.google.com/apt cloud-sdk-stretch InRelease
Ign:3 http://deb.debian.org/debian stretch InRelease
Hit:4 http://deb.debian.org/debian stretch-updates InRelease
Hit:5 http://packages.cloud.google.com/apt google-compute-engine-stretch-stable InRelease
Hit:6 http://deb.debian.org/debian stretch-backports InRelease
Hit:7 http://deb.debian.org/debian stretch Release
Hit:8 http://packages.cloud.google.com/apt google-cloud-packages-archive-keyring-stretch InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
conway198799@gcelab2:~$ sudo apt install php-curl php-gd php-intl php-mbstring php-soap php-xml php-xmlrpc php-zip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
 libxmlrpc-epi0 libzip4 php7.0-curl php7.0-gd php7.0-intl php7.0-mbstring php7.0-soap php7.0-xml php7.0-xmlrpc php7.0-zip
The following NEW packages will be installed:
 libxmlrpc-epi0 libzip4 php-curl php-gd php-intl php-mbstring php-soap php-xml php-xmlrpc php-zip php7.0-curl php7.0-gd
 php7.0-intl php7.0-mbstring php7.0-soap php7.0-xml php7.0-xmlrpc php7.0-zip
0 upgraded, 18 newly installed, 0 to remove and 4 not upgraded.
Need to get 1,016 kB of archives.
After this operation, 3,567 kB of additional disk space will be used.
Do you want to continue? [Y/n] ↵
```

(Continuing to download and install PHP extensions.)

```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=...
Setting up libzip4:amd64 (1.1.2-1.1+b1) ...
Setting up php7.0-zip (7.0.33-0+deb9u6) ...

Creating config file /etc/php/7.0/mods-available/zip.ini with new version
Setting up libxmlrpc-epi0:amd64 (0.54.2-1.2) ...
Processing triggers for libc-bin (2.24-11+deb9u4) ...
Setting up php-mbstring (1:7.0+49) ...
Setting up php-qd (1:7.0+49) ...
Setting up php7.0-xml (7.0.33-0+deb9u6) ...

Creating config file /etc/php/7.0/mods-available/dom.ini with new version
Creating config file /etc/php/7.0/mods-available/simplexml.ini with new version
Creating config file /etc/php/7.0/mods-available/wddx.ini with new version
Creating config file /etc/php/7.0/mods-available/xml.ini with new version
Creating config file /etc/php/7.0/mods-available/xmlreader.ini with new version
Creating config file /etc/php/7.0/mods-available/xmlwriter.ini with new version
Creating config file /etc/php/7.0/mods-available/xsl.ini with new version
Setting up php7.0-intl (7.0.33-0+deb9u6) ...

Creating config file /etc/php/7.0/mods-available/intl.ini with new version
Setting up php-intl (1:7.0+49) ...
Setting up php7.0-soap (7.0.33-0+deb9u6) ...

Creating config file /etc/php/7.0/mods-available/soap.ini with new version
Setting up php-soap (1:7.0+49) ...
Setting up php-curl (1:7.0+49) ...
Setting up php-zip (1:7.0+49) ...
Setting up php-xml (1:7.0+49) ...
Setting up php7.0-xmlrpc (7.0.33-0+deb9u6) ...

Creating config file /etc/php/7.0/mods-available/xmlrpc.ini with new version
Setting up php-xmlrpc (1:7.0+49) ...
Processing triggers for php7.0-fpm (7.0.33-0+deb9u6) ...
conway198799@gcelab2:~$ sudo systemctl restart php7.0-fpm
conway198799@gcelab2:~$ █

```

(After finished installing the extensions, restarting the PHP-FPM process so that the running PHP processor can leverage the newly installed features using sudo systemctl restart php7.0-fpm.)

Step 3 — Configuring Nginx

```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectName=gcelab2
connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:07:71:BB:9B:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
conway198799@gcelab2:~$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 355
Server version: 10.1.41-MariaDB-0+deb9u1 Debian 9.9

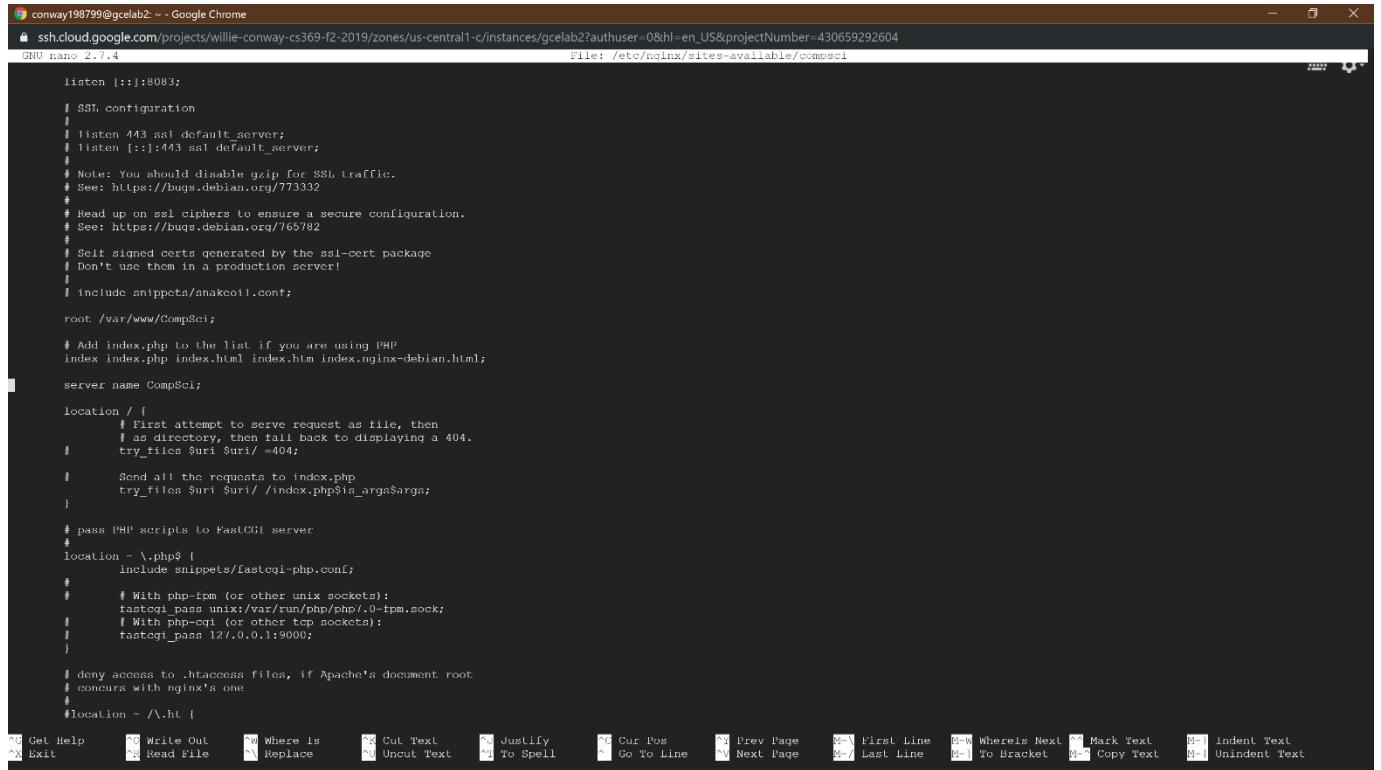
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> EXIT;
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci █

```

(Opening my site's Nginx configuration file with sudo privileges to begin.)



```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNumber=430659292604
File: /etc/nginx/sites-available/CompSci

GNU nano 2.7.4

listen [::]:8083;
# SSL configuration
listen 443 ssl default_server;
listen [::]:443 ssl default_server;
# Note: You should disable gzip for SSL traffic.
# See: https://bugs.debian.org/773332
# Read up on ssl ciphers to ensure a secure configuration.
# See: https://bugs.debian.org/765782
# Self signed certs generated by the ssl-cert package
# Don't use them in a production server!
# include snippets/snakeoil.conf;
root /var/www/CompSci;

# Add index.php to the list if you are using PHP
index index.php index.html index.htm index.nginx-debian.html;

server name CompSci;
location / {
    # First attempt to serve request as file, then
    # as directory, then fall back to displaying a 404.
    try_files $uri $uri/ =404;
    # Send all the requests to index.php
    try_files $uri $uri/ /index.php$is_args$args;
}

# pass PHP scripts to FastCGI server
location ~ \.php$ {
    include snippets/fastcgi-php.conf;
    # With php-fpm (or other unix sockets):
    fastcgi_pass unix:/var/run/php/php7.0-fpm.sock;
    # With php-cgi (or other tcp sockets):
    fastcgi_pass 127.0.0.1:9000;
}

# deny access to .htaccess files, if Apache's document root
# concurs with nginx's one
location ~ /\.ht[.] {
```

(Adding a few location directives within my main server block. Start by creating exact-matching location blocks for requests to /favicon.ico and /robots.txt, both of which we do not want to log requests for.)

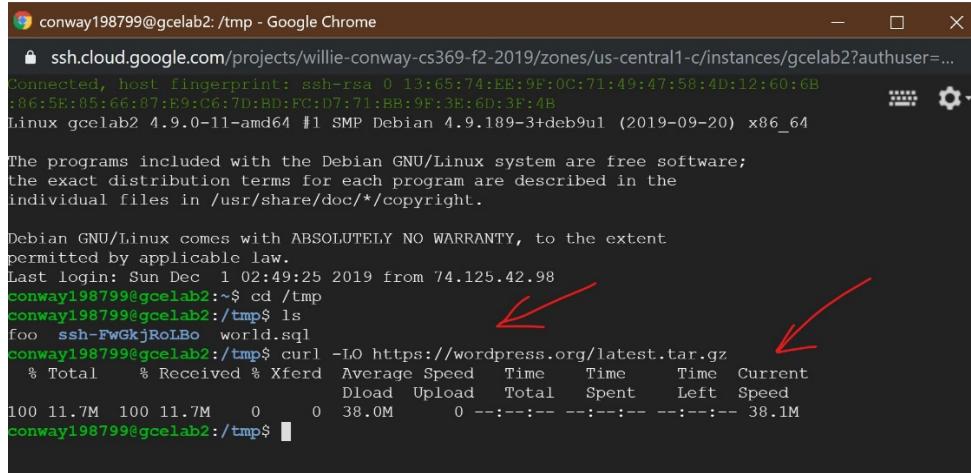
(I used a regular expression location to match any requests for static files. We will again turn off the logging for these requests and will mark them as highly cacheable since these are typically expensive resources to serve.)

(Inside of the existing location / block, we need to adjust the try_files list so that instead of returning a 404 error as the default option, control is passed to the index.php file with the request arguments.)

```
conway198799@gcelab2:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
conway198799@gcelab2:~$ sudo systemctl reload nginx
```

(Checking configuration for errors and reloading Nginx server.)

Step 4 — Downloading WordPress



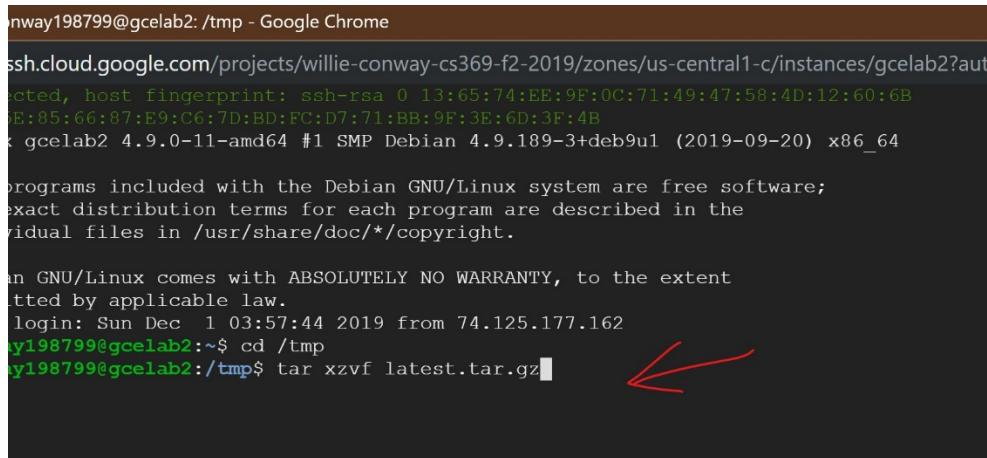
conway198799@gcelab2: /tmp - Google Chrome

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 02:49:25 2019 from 74.125.42.98
conway198799@gcelab2:~$ cd /tmp
conway198799@gcelab2:/tmp$ ls
foo ssh-FwGkjRoLB0 world.sql
conway198799@gcelab2:/tmp$ curl -LO https://wordpress.org/latest.tar.gz
  % Total    % Received % Xferd  Average Speed   Time   Time  Current
     0     0      0      0      0      0      0      0 --:--:-- --:--:-- --:--:-- 38.1M
conway198799@gcelab2:/tmp$
```

(Changing into a writable directory /tmp and then download the compressed release for the latest.tar.gz.)



conway198799@gcelab2: /tmp - Google Chrome

```
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.
Last login: Sun Dec 1 03:57:44 2019 from 74.125.177.162
conway198799@gcelab2:~$ cd /tmp
conway198799@gcelab2:/tmp$ tar xzvf latest.tar.gz
```

(Extract the compressed file to create the WordPress directory structure using tar xzvf latest.tar.gz.)

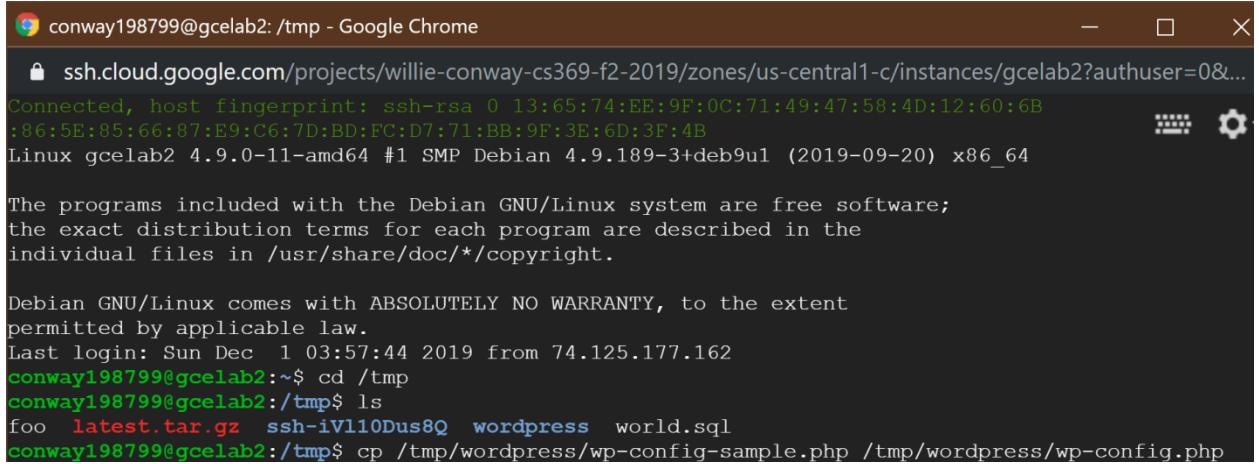
conway198799@gcelab2: /tmp - Google Chrome

ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1

```
wordpress/wp-admin/js/theme-plugin-editor.js
wordpress/wp-admin/js/nav-menu.min.js
wordpress/wp-admin/js/image-edit.js
wordpress/wp-admin/js/custom-background.min.js
wordpress/wp-admin/js/user-profile.min.js
wordpress/wp-admin/js/wp-fullscreen-stub.min.js
wordpress/wp-admin/js/svg-painter.js
wordpress/wp-admin/js/link.js
wordpress/wp-admin/js/custom-header.js
wordpress/wp-admin/js/widgets.js
wordpress/wp-admin/js/gallery.js
wordpress/wp-admin/js/word-count.js
wordpress/wp-admin/js/accordion.min.js
wordpress/wp-admin/js/inline-edit-post.min.js
wordpress/wp-admin/js/customize-widgets.min.js
wordpress/wp-admin/js/inline-edit-post.js
wordpress/wp-admin/js/updates.js
wordpress/wp-admin/js/media-upload.js
wordpress/wp-admin/js/media.js
wordpress/wp-admin/js/editor-expand.min.js
wordpress/wp-admin/js/media-gallery.min.js
wordpress/wp-admin/js/common.min.js
wordpress/wp-admin/js/tags-box.min.js
wordpress/wp-admin/js/svg-painter.min.js
wordpress/wp-admin/js/custom-background.js
wordpress/wp-admin/js/color-picker.min.js
wordpress/wp-admin/js/code-editor.js
wordpress/wp-admin/js/common.js
wordpress/wp-admin/js/set-post-thumbnail.min.js
wordpress/wp-admin/js/postbox.min.js
wordpress/wp-admin/js/color-picker.js
wordpress/wp-admin/js/password-strength-meter.js
wordpress/wp-admin/js/customize-nav-menus.js
wordpress/wp-admin/js/editor-expand.js
wordpress/wp-admin/js/code-editor.min.js
wordpress/wp-admin/js/set-post-thumbnail.js
wordpress/wp-admin/options-permalink.php
wordpress/wp-admin/widgets.php
wordpress/wp-admin/setup-config.php
wordpress/wp-admin/install.php
wordpress/wp-admin/admin-header.php
wordpress/wp-admin/post-new.php
wordpress/wp-admin/themes.php
wordpress/wp-admin/options-reading.php
wordpress/wp-trackback.php
wordpress/wp-comments-post.php
conway198799@gcelab2:/tmp$
```



(End of extraction.)

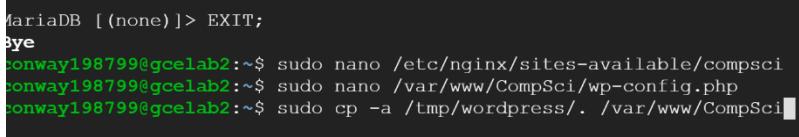


```
conway198799@gcelab2: /tmp - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 4.9.0-11-amd64 #1 SMP Debian 4.9.189-3+deb9u1 (2019-09-20) x86_64

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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.
Last login: Sun Dec 1 03:57:44 2019 from 74.125.177.162
conway198799@gcelab2:~$ cd /tmp
conway198799@gcelab2:/tmp$ ls
foo latest.tar.gz ssh-iV110Dus8Q wordpress world.sql
conway198799@gcelab2:/tmp$ cp /tmp/wordpress/wp-config-sample.php /tmp/wordpress/wp-config.php
```

(Copying over the sample configuration file to the filename that WordPress actually reads.)



```
mariadb [(none)]> EXIT;
Bye
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /var/www/CompSci/wp-config.php
conway198799@gcelab2:~$ sudo cp -a /tmp/wordpress/. /var/www/CompSci/
```

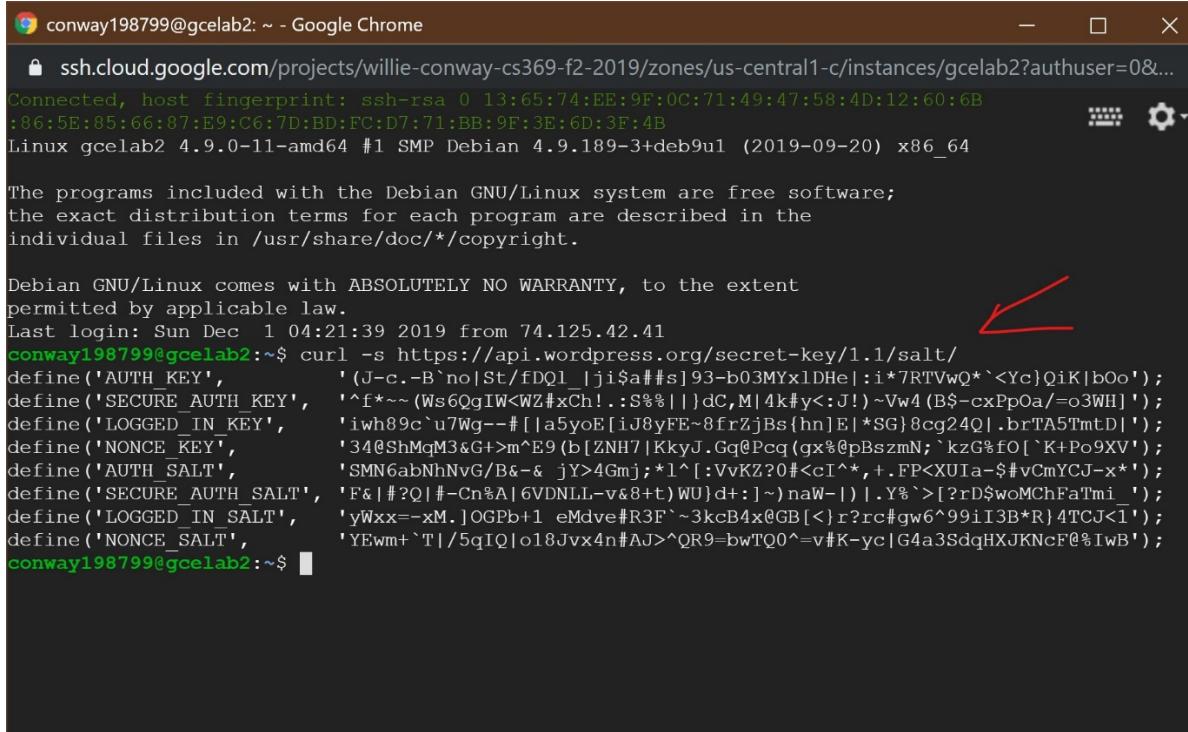
(Now, we can copy the entire contents of the directory into our document root. We are using the -a flag to make sure our permissions are maintained. We are using a dot at the end of our source directory to indicate that everything within the directory should be copied, including any hidden files)



```
Bye
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsci
conway198799@gcelab2:~$ sudo nano /var/www/CompSci/wp-config.php
conway198799@gcelab2:~$ sudo chown -R www-data:www-data /var/www/CompSci/
```

(Now that our files are in place, we'll assign ownership them to the www-data user and group. This is the user and group that Nginx runs as, and Nginx will need to be able to read and write WordPress files in order to serve the website and perform automatic updates.)

Step 5 — Setting up the WordPress Configuration File



```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&...
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.

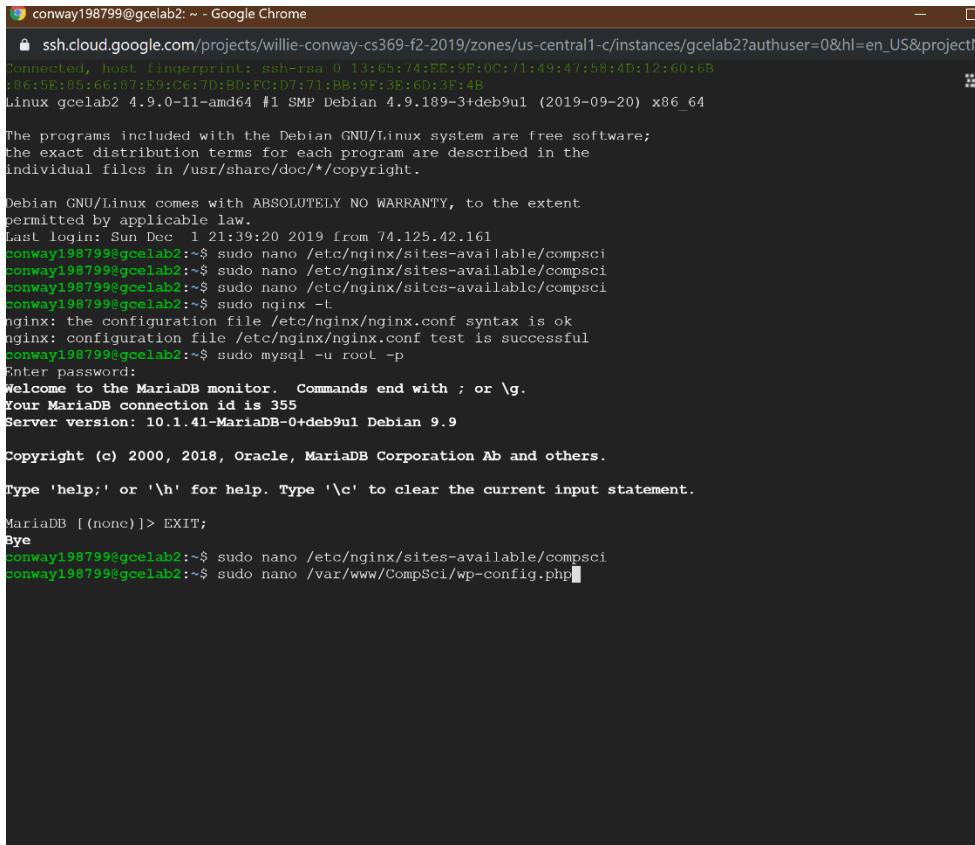
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

Last login: Sun Dec 1 04:21:39 2019 from 74.125.42.41
conway198799@gcelab2:~$ curl -s https://api.wordpress.org/secret-key/1.1/salt/
define('AUTH_KEY',           '(J-c.-B`no|St/fDQ1_|ji$a#\$i93-b03MYx1DHel:i*7RTWwQ*<Yc]QiK|bOo');
define('SECURE_AUTH_KEY',    '^f*~~(Ws6QgIW<WZ#xCh!..:S%%||}dC,M|4k#y<:J!)~Vw4(B$-cxPpOa/=o3WH]');
define('LOGGED_IN_KEY',      'iwh89c`u7Wq--#[|a5yoE[iJ8yFE~8frZjBs{hn]E]*SG}8cg24Q|.brTA5TmtD!');
define('NONCE_KEY',          '34@ShMqM3+G>m^E9(b[ZNH7|KkyJ.Gq@Pcq(qx%@pBszmN; kzG%fO[K+Po9XV');
define('AUTH_SALT',           'SMN6abNhNvG/B-& jY>4Gmj;*1^[:VvKZ?0#<cI^*,+FP<XUIa-$#vCnYCJ-x*');
define('SECURE_AUTH_SALT',   'F&|#?Q|-Cn%A|6VDNLL-v&8+t)WU)d+:]~)naW-|)|.Y%^>[?rD$woMChFaTmi ');
define('LOGGED_IN_SALT',     'yWxx=-xM.)OGPb+1 eMdve#R3F`~3kcB4x@GB[<]r?rc#gw6^99iI3B*R)4TCJ<1');
define('NONCE_SALT',         'YEwm+`T|/5qIQ)o18Jvx4n#Aj>^QR9=bwTQ0^=v#K-yC[G4a3SdqHXJKNcF@%IwB');

conway198799@gcelab2:~$ █

```

(Grabbing secure values from the WordPress secret key generator.)



```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectNu
Connected, host fingerprint: ssh-rsa 0 13:65:74:EE:9F:0C:71:49:47:58:4D:12:60:6B
:86:5E:85:66:87:E9:C6:7D:BD:FC:D7:71:BB:9F:3E:6D:3F:4B
Linux gcelab2 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.

Last login: Sun Dec 1 21:39:20 2019 from 74.125.42.161
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsc
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsc
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsc
conway198799@gcelab2:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
conway198799@gcelab2:~$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 355
Server version: 10.1.41-MariaDB-0+deb9u1 Debian 9.9

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> EXIT;
Bye
conway198799@gcelab2:~$ sudo nano /etc/nginx/sites-available/compsc
conway198799@gcelab2:~$ sudo nano /var/www/CompSci/wp-config.php █

```

(Opening the WordPress configuration file.)

```
conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectName=gcelab2
GNU nano 2.7.4
File: /var/www/CompSci/wp-config.php

?:php
/** 
 * The base configuration for WordPress
 *
 * The wp-config.php creation script uses this file during the
 * installation. You don't have to use the web site, you can
 * copy this file to "wp-config.php" and fill in the values.
 *
 * This file contains the following configurations:
 *
 * * MySQL settings
 * * Secret keys
 * * Database table prefix
 * * ABSPATH
 *
 * @link https://codex.wordpress.org/Editing_wp-config.php
 *
 * @package WordPress
 */

/* ** MySQL settings - You can get this info from your web host ** */
/** The name of the database for WordPress */
define( 'DB_NAME', 'CompSci' );

/** MySQL database username */
define( 'DB_USER', 'wordpressuser' );

/** MySQL database password */
define( 'DB_PASSWORD', '1234' );

/** MySQL hostname */
define( 'DB_HOST', 'localhost' );

/** Database Charset to use in creating database tables. */
define( 'DB_CHARSET', 'utf8' );

/** The Database Collate type. Don't change this if in doubt. */
define( 'DB_COLLATE', '' );
define('FS_METHOD', 'direct');

/**#@+
 * Authentication Unique Keys and Salts.
 *
 [ Read 90 lines (Converted from DOS format) ]
^G Get Help      ^C Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos    ^Y Prev Page
^X Exit          ^R Read File   ^\ Replace     ^U Uncut Text  ^T To Spell   ^L Go To Line  ^V Next Page
```

(Modifying some of the database connection settings at the beginning of the file. You need to adjust the database name, the database user, and the associated password that we configured within MySQL.)

```

conway198799@gcelab2: ~ - Google Chrome
ssh.cloud.google.com/projects/willie-conway-cs369-f2-2019/zones/us-central1-c/instances/gcelab2?authuser=0&hl=en_US&projectN
GNU nano 2.7.4
File: /var/www/CompSci/wp-config.php

define( 'DB_NAME', 'CompSci' );
/** MySQL database username */
define( 'DB_USER', 'wordpressuser' );
/** MySQL database password */
define( 'DB_PASSWORD', '1234' );
/** MySQL hostname */
define( 'DB_HOST', 'localhost' );
/** Database Charset to use in creating database tables. */
define( 'DB_CHARSET', 'utf8' );
/** The Database Collate type. Don't change this if in doubt. */
define( 'DB_COLLATE', '' );
define('FS_METHOD', 'direct');
/**#@+
 * Authentication Unique Keys and Salts.
 *
 * Change these to different unique phrases!
 * You can generate these using the {@link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.org secret-
 * You can change these at any point in time to invalidate all existing cookies. This will force all users to h
 *
 * @since 2.6.0
 */
define( 'AUTH_KEY', 'J-c.-B`no|St/fDQl_||ji$@#s]93-b03MYxlDH@:i*7RTVwQ*`<Yc)QiK|bOoi' );
define( 'SECURE_AUTH_KEY', ''f*~~(W$6QgTW<WZ#xCh!.:S%|||dC,M|4k#y<:J1)~Vw4(B$-cxPp0a=/o3WH|' );
define( 'LOGGED_IN_KEY', 'iwh89c`u7Wg--#[|a5yoE|iJ8yEE-8frZjBs{hn]E]*SG}8cg24Q|.brTA5TmLD|' );
define( 'NONCE_KEY', '34@ShMqM3&Gt>m^E9(b[2NIH7|KkyJ.Gq@Pcq(gx%@pBszmN; kzG%fo|`K1Po9XV' );
define( 'AUTH_SALT', 'SMN6abNhNvG/B&-& jY>4Gm;*l`{:VvKZ20#<c1^*,+.FP>XUla-$#vCmYCJ-x*' );
define( 'SECURE_AUTH_SALT', 'F6|#?Q|#-Cn&A|6VDNL,-v&8*t)WU)d+:]~)naW-)I,Y%>[?rD$wMChFaTmi' );
define( 'LOGGED_IN_SALT', 'ywxx-xM.l0GPb+l eMdve#R3F`~3kB4x@GB[<]r?rc#gw6^99113B*R)4TCJ<1' );
define( 'NONCE_SALT', 'YEwm+`T|/5qTQ|o18Jvx4n||A>J>^QR9=bwTQ0^=v#K-y[G4a3SdqHXJKNcF@%TwB' );

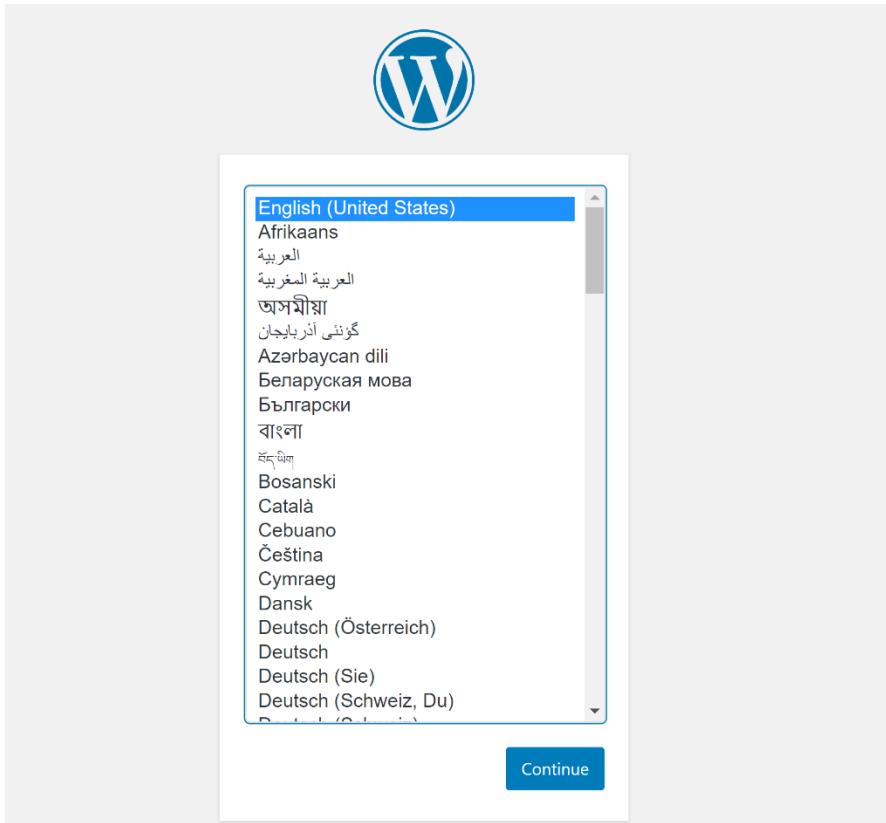
/**#@-*/
/** 
 * WordPress Database Table prefix.
 *
 * You can have multiple installations in one database if you give each
 * a unique prefix. Only numbers, letters, and underscores please!
 */

^G Get Help      ^O Write Out    ^W Where Is     ^X Cut Text      ^J Justify      ^C Cur Pos      ^Y Prev Page
^X Exit         ^R Read File   ^A Replace       ^U Uncut Text    ^I To Spell    ^F Go To Line   ^V Next Page

```

(Deleting previous lines and pasting in the values I copied from the command line.)

Step 6 — Completing the Installation Through the Web Interface

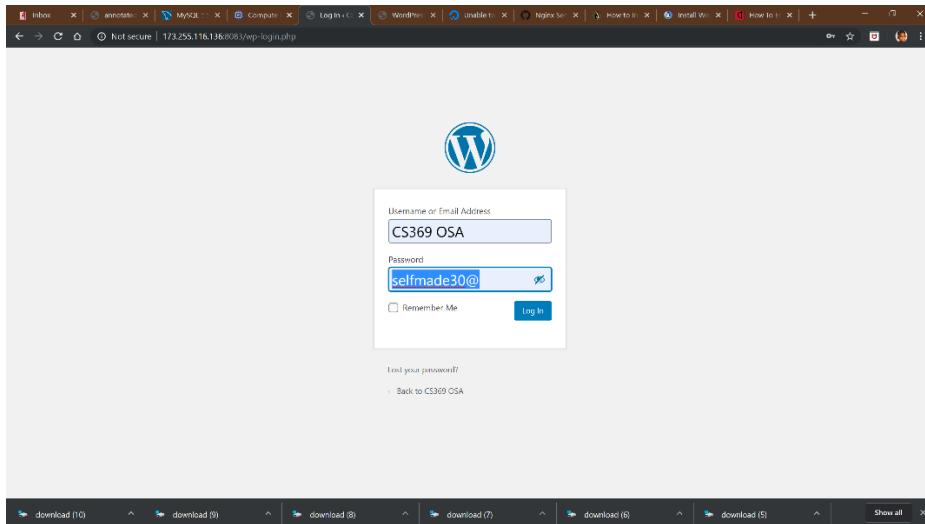


(Access to WordPress.)

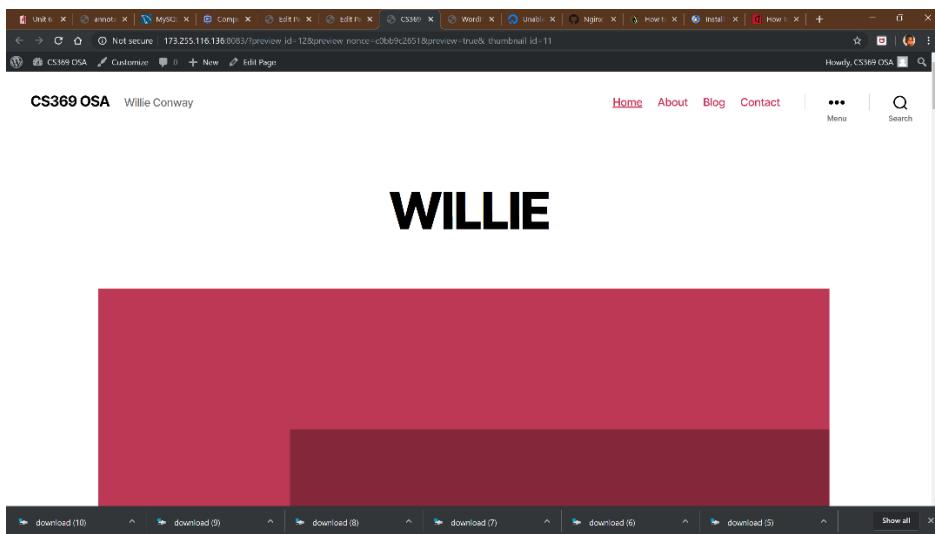
A screenshot of the WordPress dashboard. The top navigation bar shows the URL as 'Not secure | 173.255.116.136:8083/wp-admin/'. The dashboard title 'Dashboard' is at the top left. On the left is a dark sidebar with links: Home, Posts, Media, Pages, Comments, Appearance, Plugins, Users, Tools, Settings, and a 'Collapse menu' option. The main content area has a 'Welcome to WordPress!' message. It features three columns: 'Get Started' with 'Customize Your Site' and 'Next Steps' (Edit your front page, Add additional pages, Add a blog post, View your site); 'More Actions' (Manage widgets or menus, Turn comments on or off, Learn more about getting started); and a 'Quick Draft' section with a title input field, content rich-text editor, and a 'Save Draft' button. A large, empty dashed box labeled 'Drag boxes here' is positioned to the right of the draft section. The bottom of the screen shows a horizontal toolbar with download links numbered 16 through 11, and a 'Show all' link.

(Viewing Dashboard.)

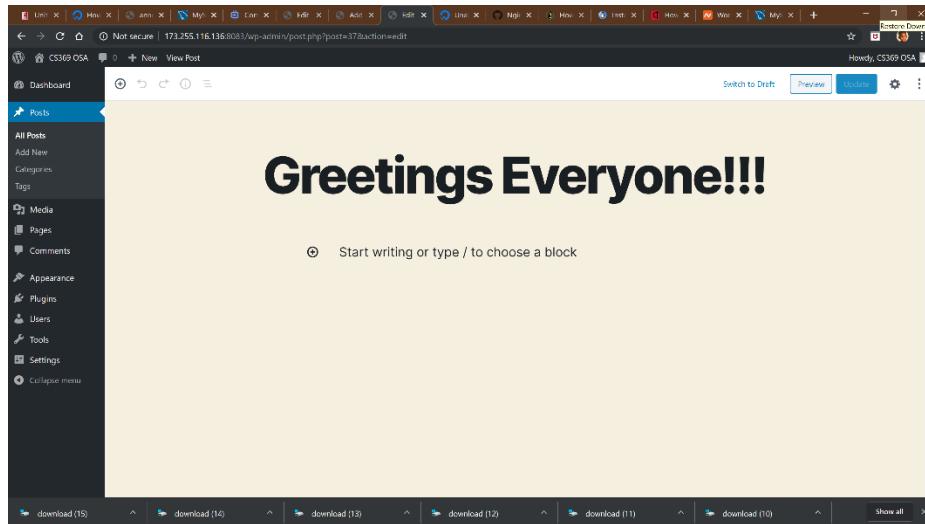
Once your site is working, log in to Wordpress and change the opening page to include your name. Also make a post on your site.



(Logging in to wordpress.)



(Changing opening page to show name.)



(Creating a post.)

Once your site is working, log in to Wordpress and change the opening page to include your name. Also make a post on your site.

In addition to showing the steps you took in getting the tools to run, answer the following questions about the installation process:

1. The name of your database for WordPress

CompSci

2. The location of the WordPress files

/var/www/CompSci

3. The URL for reaching your WordPress site

<http://173.255.116.136:8083/wp-admin/>

4. List all the users/accounts you created and what each one is for.

*(MySQL user was created through downloading the MySQL server and the root@localhost
wordpressuser was created through creating a database for WordPress.*

When you first install MySQL, there is a default root account. It's a superuser account that has god-like privileges in all the MySQL databases. The initial root account password is empty by default, so anyone can connect to the MySQL server as root without a password and be granted all privileges. The root@localhost account is a default account in MySQL. A user account in MySQL consists of a user name and host name parts. ... In the command above the hostname part is set to localhost , which means that the user will be able to connect to the MySQL server only from the localhost (i.e from the system where MySQL Server runs)

Reflection

At the end of your Word document, include the answers to the following questions:

1. In a sentence or two, what did you learn? *This was difficult homework assignment, I spent a whole day trying to figure out why I couldn't get WordPress to cooperate with my configuration file. After looking over the file and trying different alternatives I learned that I needed to also edit my wp-config.php file also. My password field was incorrect and differed from the one I created when I was in MYSQL Maria DB. Overall, I learned how to operate MYSQL and utilize commands to check for creation of databases and tables. It was a unique experience downloading a database and creating a database for the first time. I remember in my Database Management class I would have to research about databases and how many companies store there annua information on databases. This also opened up my mind to how to use a MYSQL server on the Debian 9 operating system.*
2. In a sentence or two, what did you like about this project? *When it comes to this project, I would have to say the completion of actually downloading the Wordpress site. I felt like that was the biggest challenge for me. I view many sources and was doused in confusion. I how this project challenged me in formulating different task throughout MySQL and my instance. There was a lot of changing back and forth for me, as I like to always double check.*
3. In a sentence or two, what did you find confusing or would like to see done differently regarding this project? *The beginning of the tutorial was very common to understand, from doing various Linux commands to downloading the world database. I did have a confusing moment when I tried to unzip the GZIP file from the word database link. I had to search various resources to find out that I had to use the Linux gunzip command to unzip the file. This assignment would've taken me longer if I didn't back trace my steps. I was also confused about my config file that contained my contents for hosting Wordpress on port 8083. In the previous weeks I only modified port numbers to host different websites using the firewall rules. This was different adding php into the configuration.*