**Created by JICHUNYANG LI**

Created date: 18/09/2022

==**Note: This tips documentation is created based on VM, if you are using Mac terminal, you may need to modify some codes.**==

Step 1: Create an EC2 instance

[1] You can use an instance you created before this lab (for example, already created an EC2 instance in lab 2 or lab 5) and SSH into it. If you don't create an EC2 instance and SSH into it in this lab, please put comments in your lab note.

If you need to create a new EC2 instance, you need to use terminal, boto3, or console (if you want to use console, please select ubuntu)
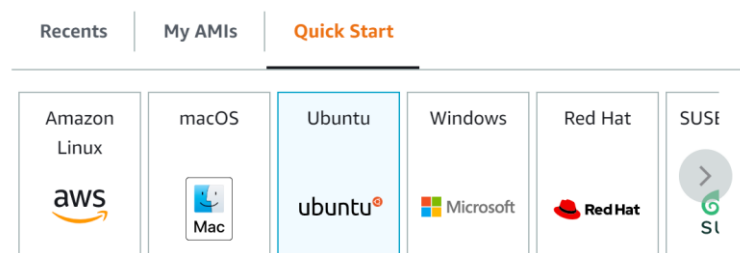
and SSH into it. You need to show the code for creating and SSH in your lab note.

Then update package and install python venv.

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install python3-venv
```

Escalate to root access so that don't need to use sudo each time

```
sudo bash
```

[2] If you haven't installed python pip, please install python pip first

apt install python3-pip

Create a directory with a path /opt/wwc/mysites and cd into that. Set up a virtual environment

mkdir -p /opt/wwc/mysites

SELF-CHECK:

Type ls, you will find a directory named **snap** (in blue).

Then cd /opt/wwc/

SELF-CHECK:

Type ls, you will find a directory named **mysites** (in blue).

After that cd mysites/

Under mysites run: python3 -m venv venv

SELF-CHECK:

Type ls, you will find a directory named **venv** (in blue).

Activate your virtual environment:

source venv/bin/activate

Finally, use pip to install Django under **mysites**

pip3 install django

django-admin startproject lab (This is used to create a project named lab using Django.)

python3 manage.py startapp polls (This is used to create a web architecture.)

SELF-CHECK:

After run python3 manage.py startapp polls, type ls, you will see there are 3 items, lab, manage.py and polls under the lab project. If you cd polls, and then ls, you will see __init__.py, admin.py, apps.py, migrations, models.py, tests.py and views.py
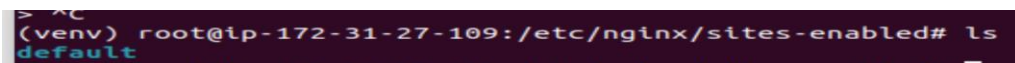
Step 2: Install and configure nginx (under polls)

apt install nginx

Get into the path '/etc/nginx/sites-enabled' and exit the default file contents

SEFL-CHECK:

Type ls, you will find a file named default.

```
        location / {
                # First attempt to serve request as file, then
                # as directory, then fall back to displaying a 404.
                #try_files $uri $uri/ =404;
                proxy_set_header X-Forwarded-Host $host;
                proxy_set_header X-Real-IP $remote_addr;

                proxy_pass http://127.0.0.1:8000;
        }       #
        #       # With php-fpm (or other unix sockets):
        #       fastcgi_pass unix:/run/php/php7.4-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 {
        #       deny all;
        #}
}
```

Restart your nginx

```
service nginx restart
```

Then go back to the path opt/wwc/mysites/lab and start your server with port 8000.

```
python3 manage.py runserver 8000
```

```
System check identified no issues (0 silenced).

You have 18 unapplied migration(s). Your project may not work properly until you apply
the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.
September 19, 2022 - 11:32:32
Django version 4.1.1, using settings 'lab.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
```

Don't worry these red lines, just leave them there, and then go to a borowser.

Now, if you go to a browser (whatever on your VM or host) and use the ip address of your ec2 instance, you should see

The install worked successfully! Congratulations!

You are seeing this page because DEBUG=True is in your
settings file and you have not configured any URLs.

Step 3: Changing the code

Edit polls/views.py (just an example)

Under lab type vim polls/views.py

```
from django.shortcuts import render

# Create your views here.
from django.http import HttpResponse

def index(request):
    return HttpResponse("Hello world!")
~
```

Edit polls/urls.py

Under lab, type vim polls/urls.py

```
from django.urls import path
from . import views

urlpatterns = [
        path('',views.index,name = 'index'),
    ]
~
```

Edit lab/urls.py

Under lab, type vim lab/urls.py

```
"""lab URL Configuration

The `urlpatterns` list routes URLs to views. For more information please see:
    https://docs.djangoproject.com/en/4.1/topics/http/urls/
Examples:
Function views
    1. Add an import:  from my_app import views
    2. Add a URL to urlpatterns:  path('', views.home, name='home')
Class-based views
    1. Add an import:  from other_app.views import Home
    2. Add a URL to urlpatterns:  path('', Home.as_view(), name='home')
Including another URLconf
    1. Import the include() function: from django.urls import include, path
    2. Add a URL to urlpatterns:  path('blog/', include('blog.urls'))
"""
from django.urls import include, path
from django.contrib import admin

urlpatterns = [
    path('polls/', include('polls.urls')),
    path('admin/', admin.site.urls),
]

"lab/urls.py" 22L, 797B                                           22,1            All
```
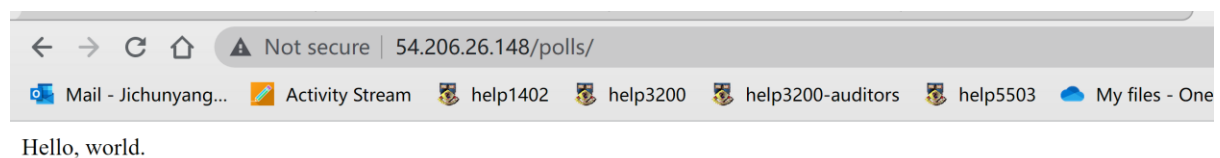
Now run

```
python3 manage.py runserver 8000
```

and check that you get Hello, world. when you type the url http://<ip address>/polls/

Hello, world.

Step 4: Create a load balancer

For this step, you can use AWS console or python boto3 to create a load balancer.

NOTE: the path in health checks should be **/polls/**

You can access your website use the url: **<your load balancer dns name>/polls/**

The health status of the registered targets should be **healthy**.

Details

arn:aws:elasticloadbalancing:ap-southeast-2:523265914192:targetgroup/00108973-lab6/e89bd39a2dee7253

Target type	Protocol : Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-0b754f714cd1af245
IP address type	Load balancer		
IPv4	00108973-lab6		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
1	⊘ 1	⊗ 0	⊖ 0	⊘ 0	⊖ 0

Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (1)

Q Filter resources by property or value

☐	Instance ID	Name	Port	Zone	Health status	Health status details
☐	i-000e8f645c66c03d5	00108973_lab6	80	ap-southeast-2c	⊘ healthy	

```
[18/Sep/2022 16:15:03] "GET /polls/ HTTP/1.0" 200 13
[18/Sep/2022 16:15:34] "GET /polls/ HTTP/1.0" 200 13
[18/Sep/2022 16:15:37] "GET /polls/ HTTP/1.0" 200 13
[18/Sep/2022 16:16:03] "GET /polls/ HTTP/1.0" 200 13
[18/Sep/2022 16:16:07] "GET /polls/ HTTP/1.0" 200 13
[18/Sep/2022 16:16:33] "GET /polls/ HTTP/1.0" 200 13
```

Extension Step: This is a bonus step, you need to create a Dynamodb table, then put an element to the table. The expected output is that display your element on a webpage. You must show the steps including create a table (or use the table that was created in lab 3), show the elements in the table, and final web page. Successfully complete this step can earn 1 mark for your lab marks. No penalty if you do not do this step or unsuccessfully complete this step. **NOTE: 1) You can't get any supports from any lab facilitator; 2) Your maximum lab mark is 20.**