Simple Django Blog

Why Django?

Django is a Web framework written in Python. A Web framework is a software that supports the development of dynamic Web sites, applications, and services. It provides a set of tools and functionalities that solves many common problems associated with Web development, such as security features, database access, sessions, template processing, URL routing, internationalization, localization, and much more.

Using a Web framework, such as Django, enables us to develop secure and reliable Web applications very quickly in a standardized way, without having to reinvent the wheel.

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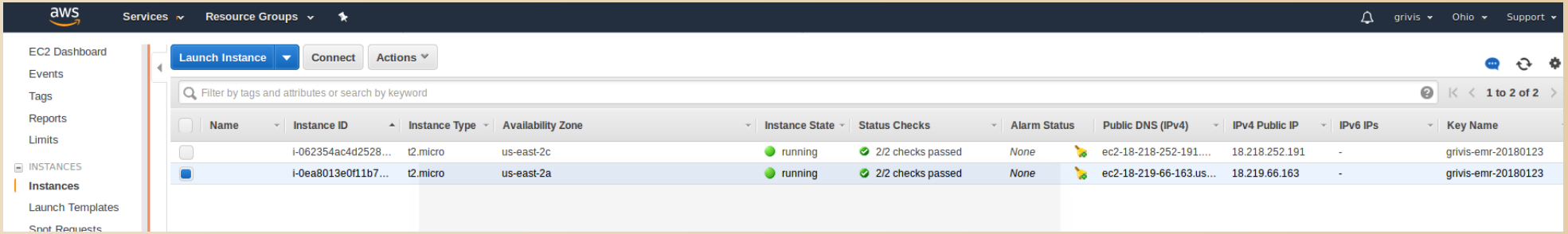
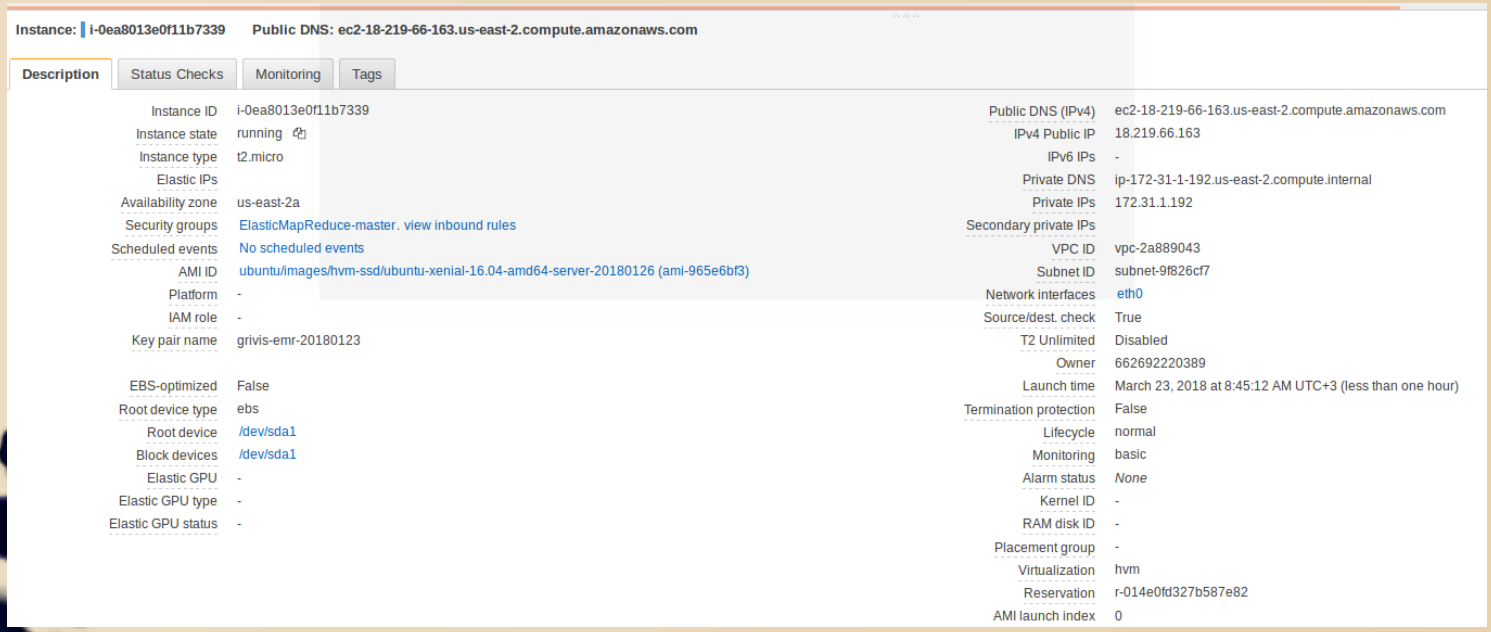
In this tutorial we are going to use AWS instance – a virtual machine, running Ubuntu





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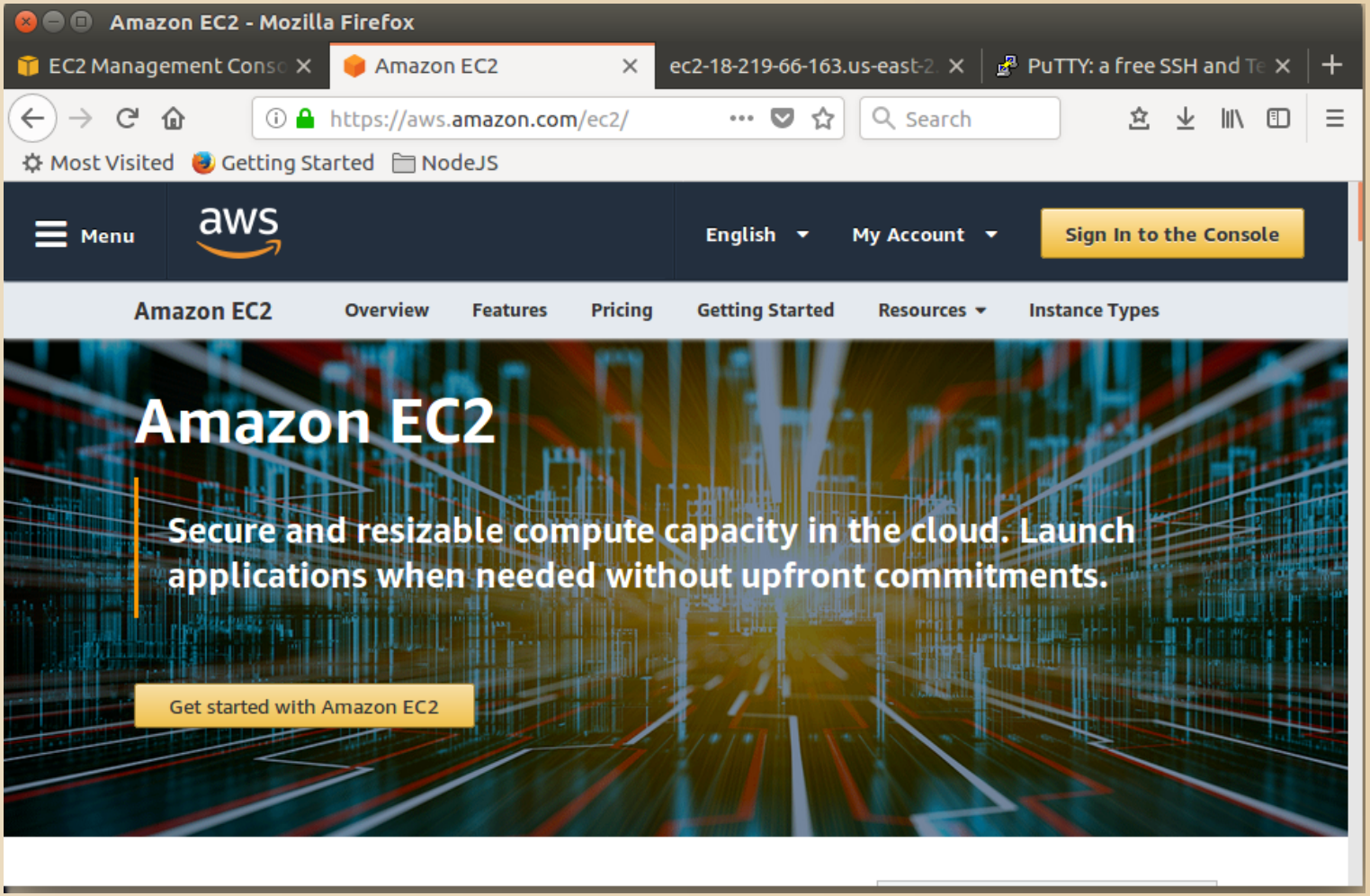
If you are not familiar with AWS, you may read here about Amazon Elastic Cloud and how to create and run instances



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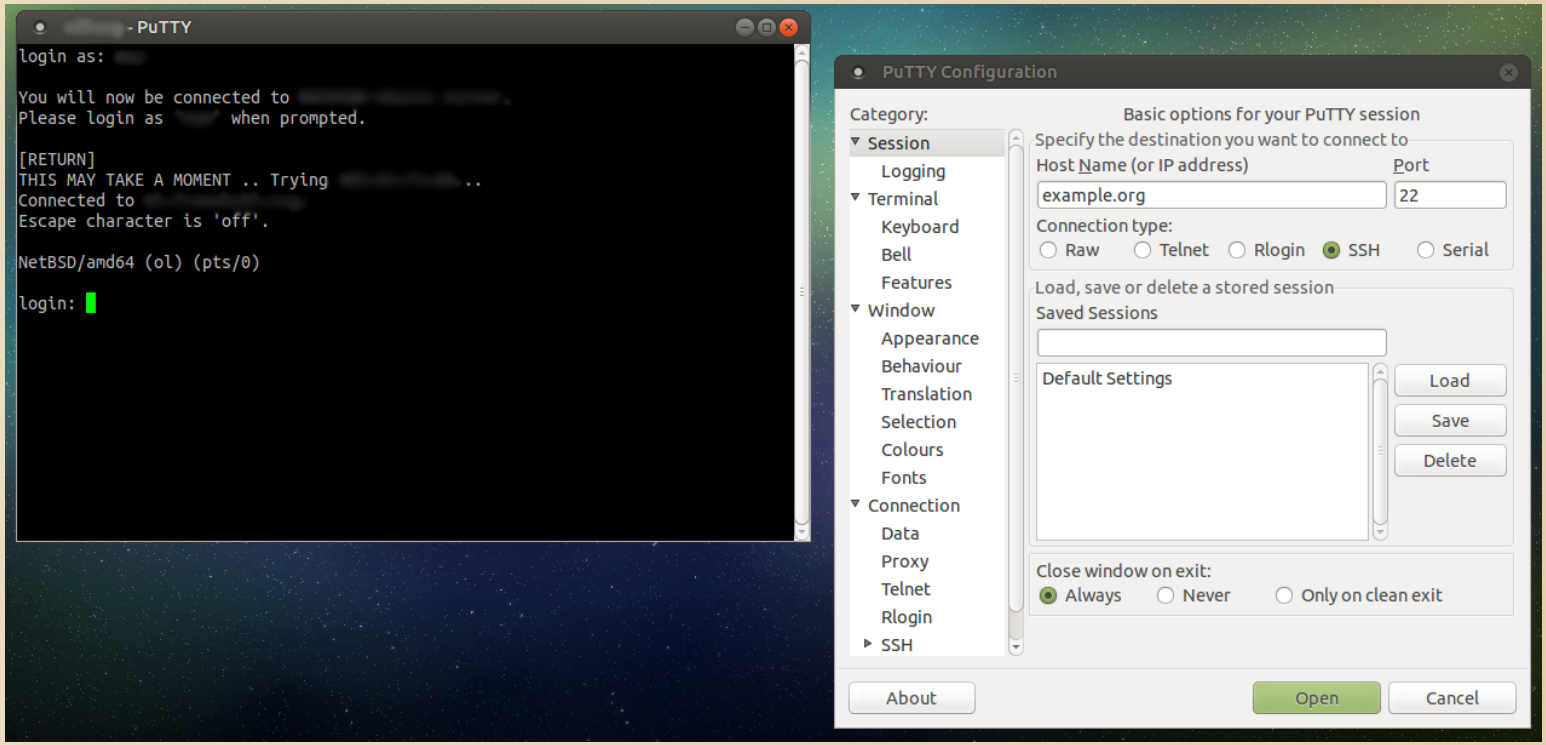
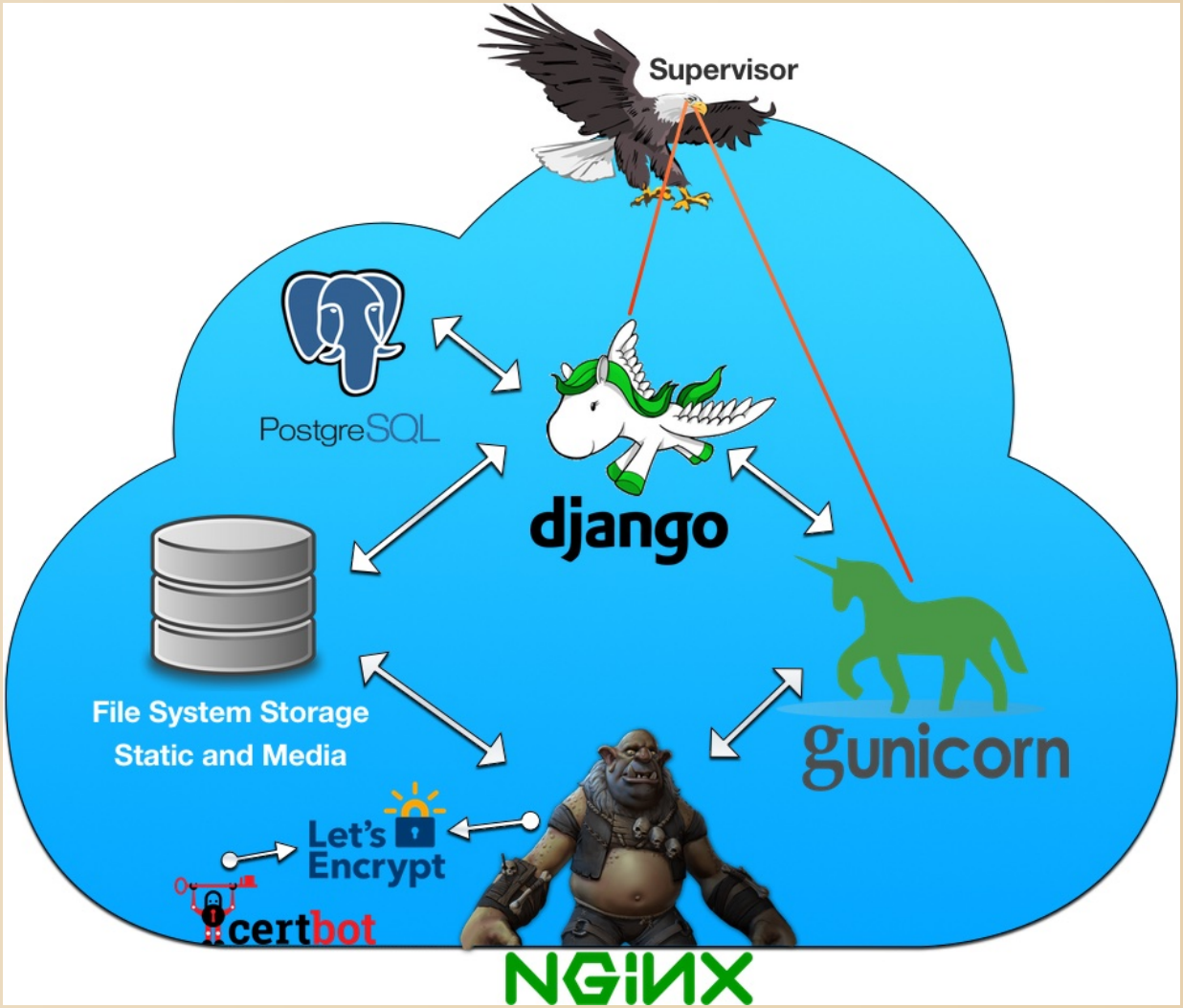
To connect to remote Ubuntu server from Windows environment you can use PuTTY



https://www.chiark.greenend.org.uk/~sgtatham/putty/

Simple Django Blog

Our final goal is to create a real web blog in production environment using the most advanced tools

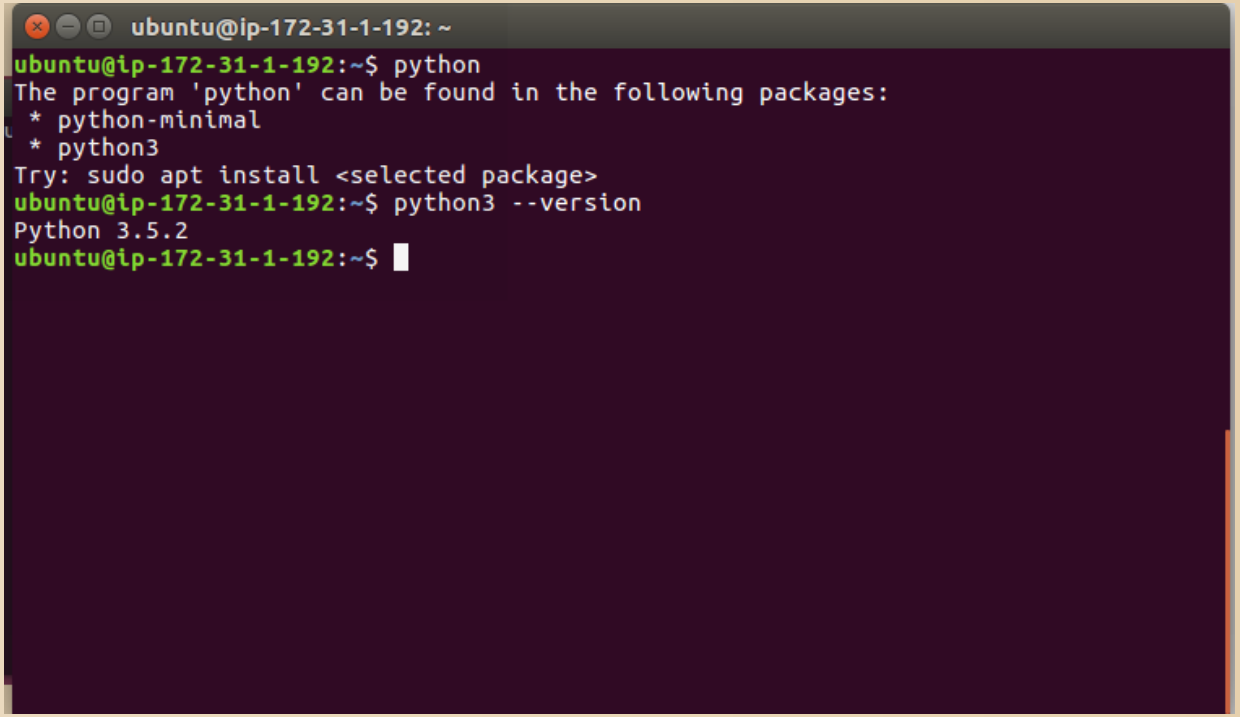


Simple Django Blog

The first thing we need to do is install some programs on our machine so to be able to start playing with Django. The basic setup consists of installing Python, Virtualenv, and Django.

Simple Django Blog

For this tutorial, we will be using Ubuntu 16.04 as an example. Ubuntu 16.04 already comes with both Python 2 (available as python), and Python 3 (available as python3) installed. We can test the installation by opening the Terminal and checking the versions:



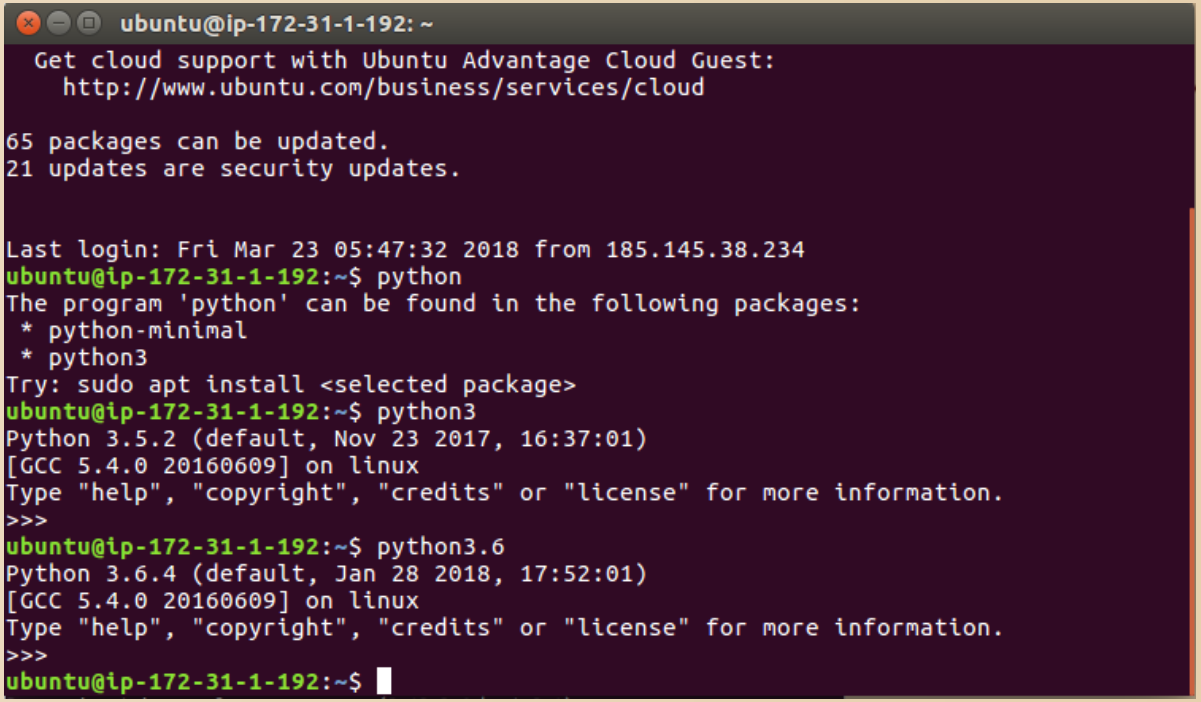
If you are using Ubuntu 16.04 or an older version, first add the following repository:

sudo add-apt-repository ppa:deadsnakes/ppa

If you are using Ubuntu 16.10, 17.04 or 17.10 you don't need to perform the step above.
Now everyone executes the following commands to install the latest Python 3 distribution:

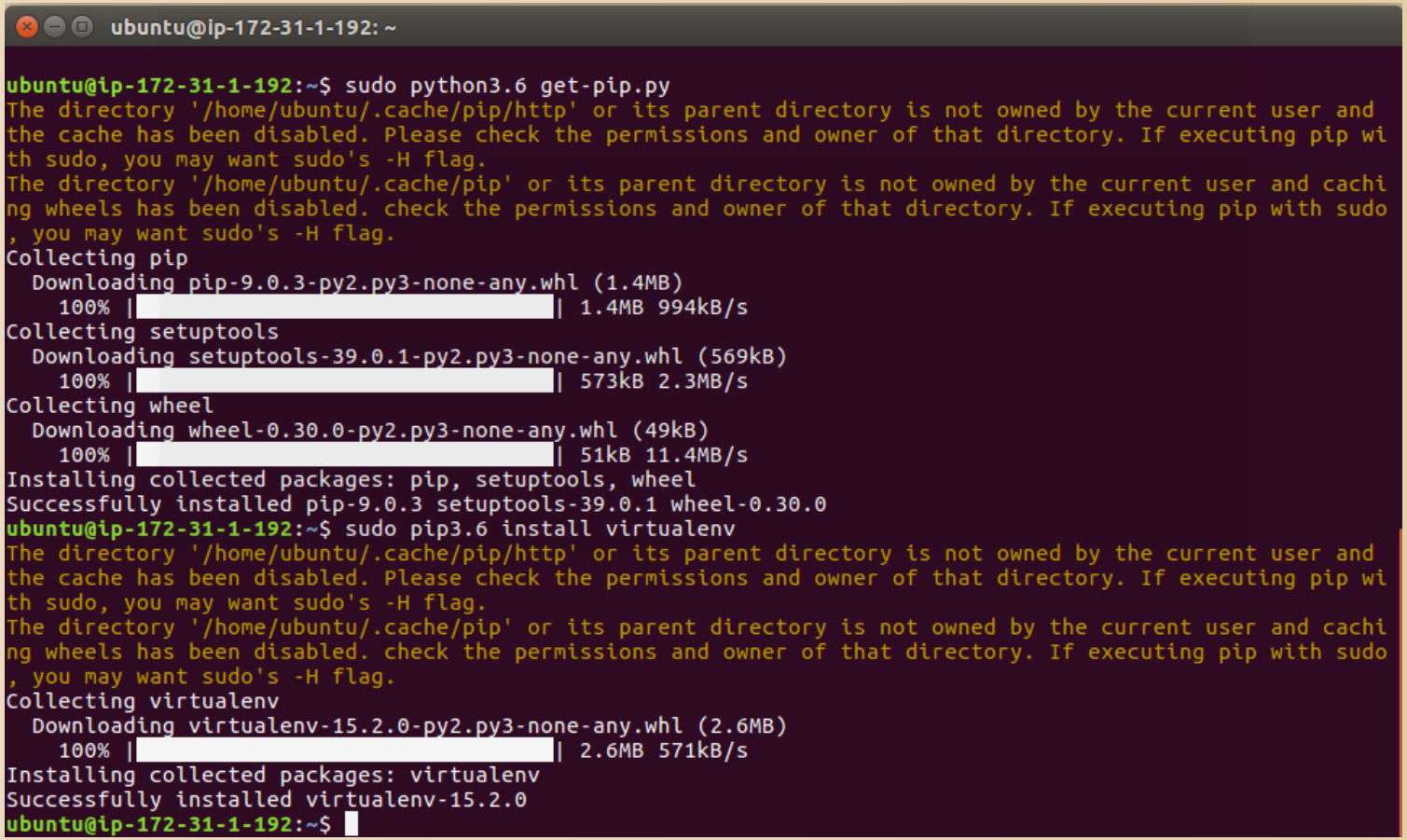
sudo apt-get update
sudo apt-get install python3.6

The new installation will be available under python3.6, which is fine:



We are going to use pip, a tool to manage and install Python packages, to install virtualenv. First let's install pip for our Python 3.6.2 version:

wget https://bootstrap.pypa.io/get-pip.py
sudo python3.6 get-pip.py
Now we can install virtualenv:
sudo pip3.6 install virtualenv



Simple Django Blog

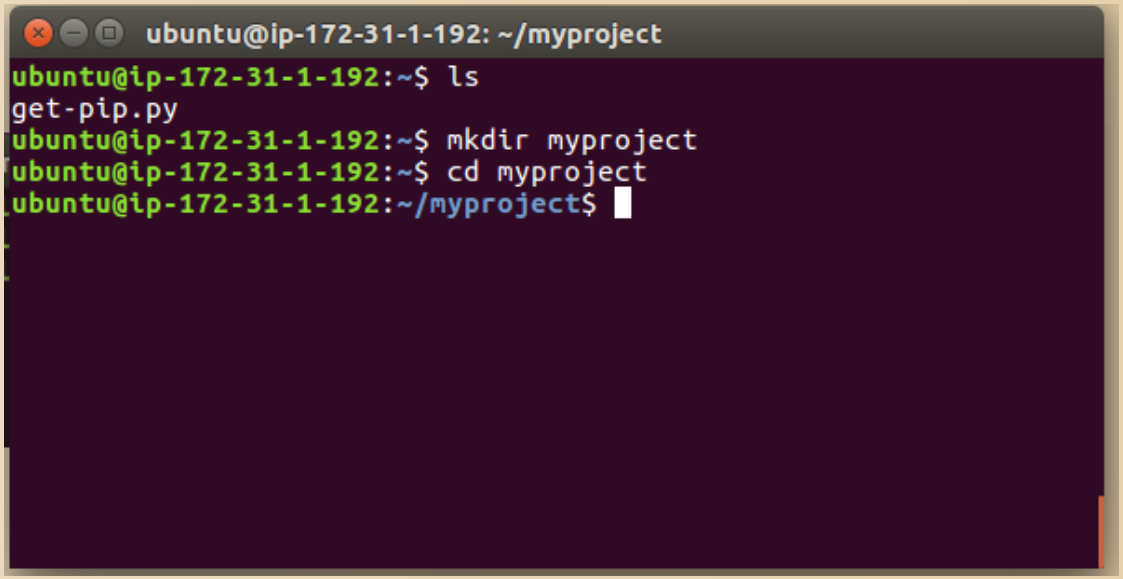
All installations that we performed were system-wide. From now on, everything we install, including Django itself, will be installed inside a Virtual Environment.

Think of it like this: for each Django project you start, you will first create a Virtual Environment for it. It's like having a sandbox for each Django project. So you can play around, install packages, uninstall packages without breaking anything.

We suggest to create a folder named Development on my personal computer. Then, we use it to organize all my projects and websites. But you can follow the next steps creating the directories wherever it feels right for you.

Usually, we start by creating a new folder with the project name inside my Development folder. Since this is going to be our very first project, we don't need to pick a fancy name or anything. For now, we can call it myproject.

mkdir myproject
cd myproject



Simple Django Blog

We start by creating our very first virtual environment and installing Django.

Inside the myproject folder:

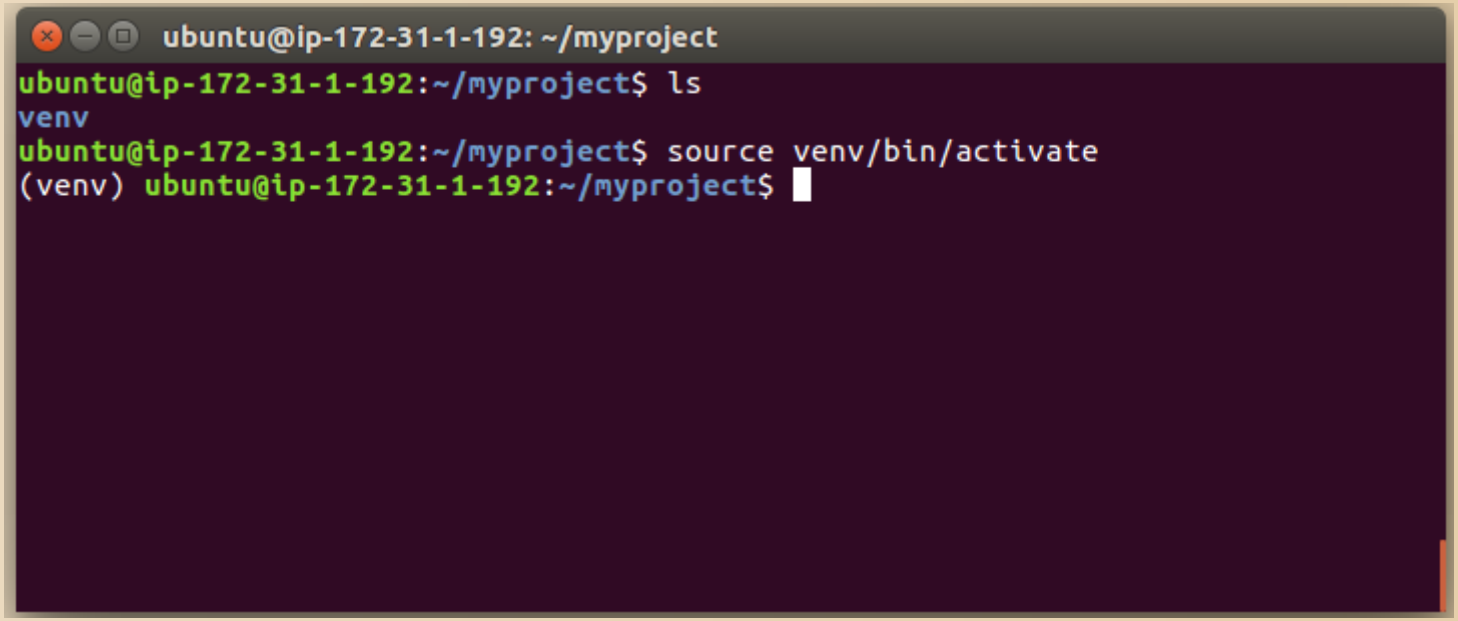
virtualenv venv -p python3.6

```
ubuntu@ip-172-31-1-192: ~/myproject
ubuntu@ip-172-31-1-192:~$ ls
get-pip.py
ubuntu@ip-172-31-1-192:~$ mkdir myproject
ubuntu@ip-172-31-1-192:~$ cd myproject
ubuntu@ip-172-31-1-192:~/myproject$ virtualenv venv -p python3.6
Already using interpreter /usr/bin/python3.6
Using base prefix '/usr'
New python executable in /home/ubuntu/myproject/venv/bin/python3.6
Also creating executable in /home/ubuntu/myproject/venv/bin/python
Installing setuptools, pip, wheel...done.
ubuntu@ip-172-31-1-192:~/myproject$
```

Our virtual environment is created. Now before we start using it, we need to activate:

source venv/bin/activate

You will know it worked if you see (venv) in front of the command line, like this:



When we have the venv activated, we will use the command python (instead of python3.6) to refer to Python 3.6.2, and just pip (instead of pip3.6) to install packages.

By the way, to deactivate the venv run the command below:

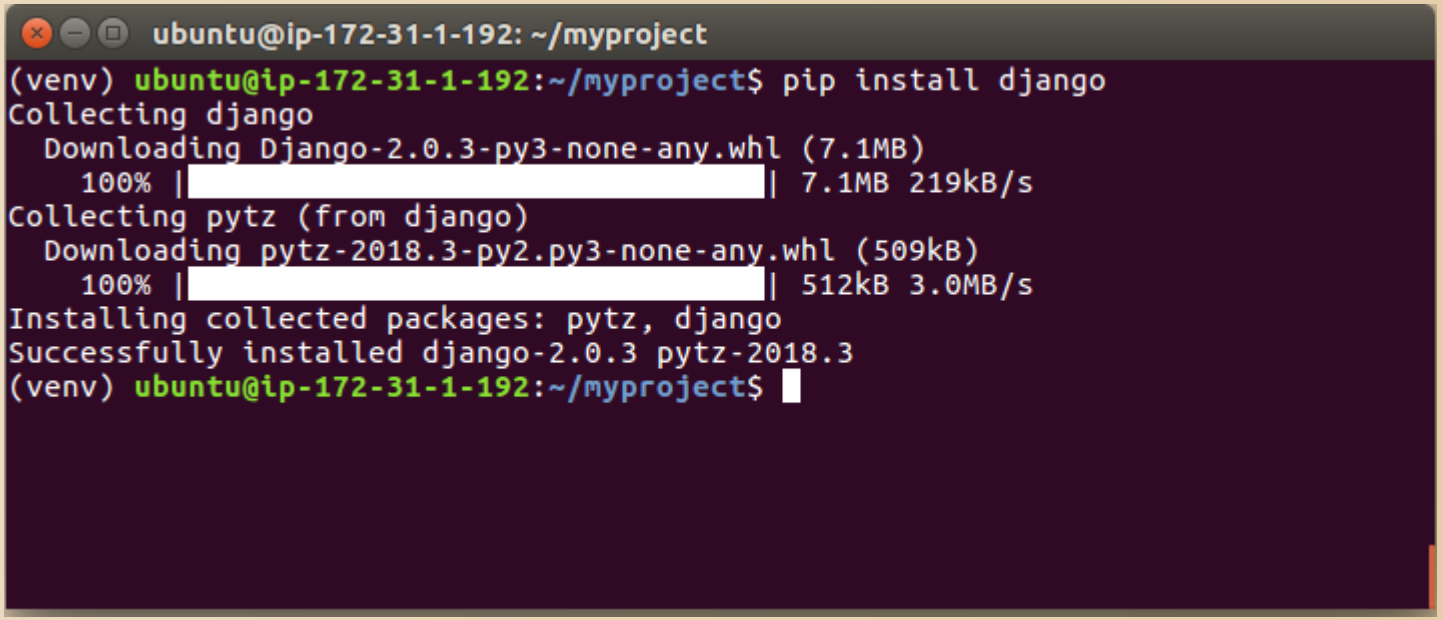
deactivate

But let's keep it activated for the next steps.

Installing Django

It's very straightforward. Now that we have the venv activated, run the following command to install Django:

pip install django



Installing Django

Another useful utility is tree:

```
ubuntu@ip-172-31-1-192: ~/myproject

(venv) ubuntu@ip-172-31-1-192:~/myproject$ sudo apt-get install tree
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  tree
0 upgraded, 1 newly installed, 0 to remove and 62 not upgraded.
Need to get 40.6 kB of archives.
After this operation, 138 kB of additional disk space will be used.
Get:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu xenial/universe amd64 tre
e amd64 1.7.0-3 [40.6 kB]
Fetched 40.6 kB in 0s (3516 kB/s)
perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
```

Starting a New Project

To create a new Django project, run the command below:

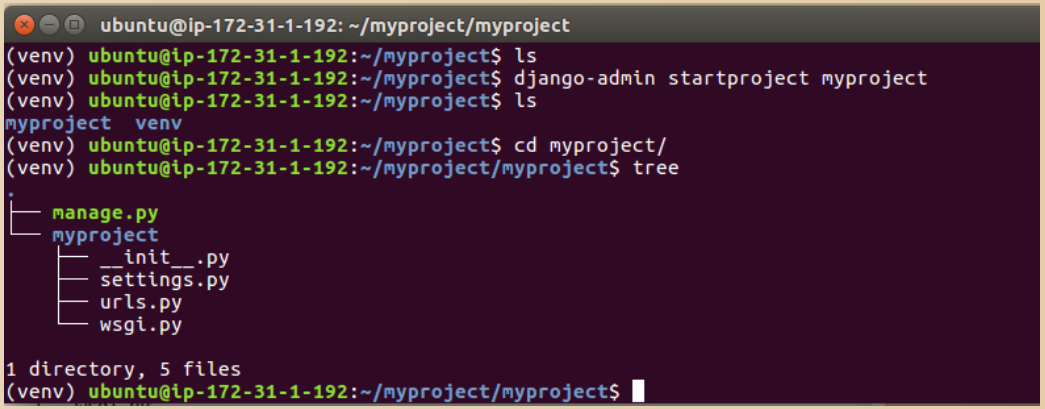
django-admin startproject myproject

The command-line utility django-admin is automatically installed with Django.

After we run the command above, it will generate the base folder structure for a Django project.

Right now, our myproject directory looks like this:

```
myproject/                  <-- higher level folder
 |-- myproject/             <-- django project folder
 |    |-- myproject/
 |    |    |-- __init__.py
 |    |    |-- settings.py
 |    |    |-- urls.py
 |    |    |-- wsgi.py
 |    +-- manage.py
 +-- venv/                  <-- virtual environment folder
```



Starting a New Project

Our initial project structure is composed of five files:

- **manage.py**: a shortcut to use the **django-admin** command-line utility. It's used to run management commands related to our project. We will use it to run the development server, run tests, create migrations and much more.
- **__init__.py**: this empty file tells Python that this folder is a Python package.
- **settings.py**: this file contains all the project's configuration. We will refer to this file all the time!
- **urls.py**: this file is responsible for mapping the routes and paths in our project. For example, if you want to show something in the URL `/about/`, you have to map it here first.
- **wsgi.py**: this file is a simple gateway interface used for deployment. You don't have to bother about it. Just let it be for now.

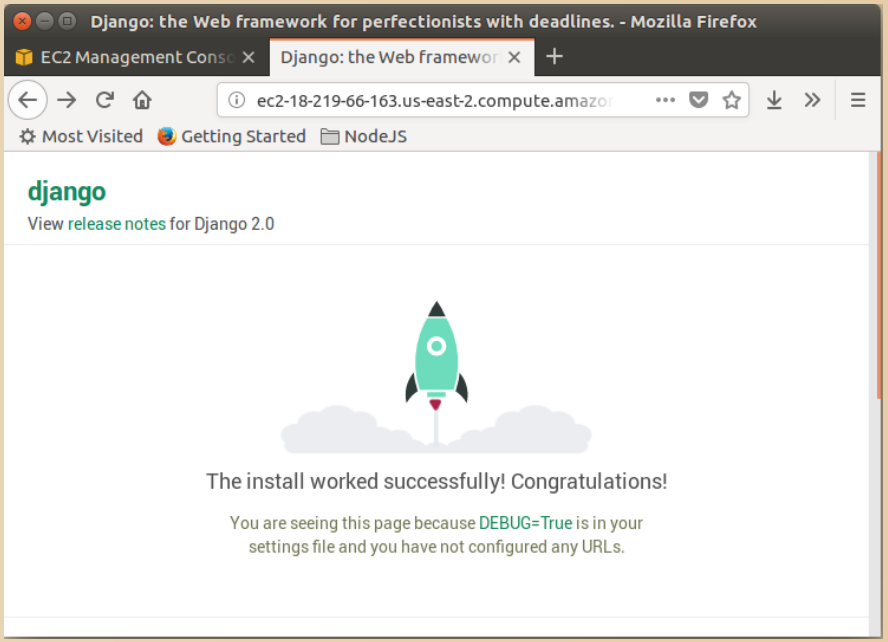
Starting a New Project

Django comes with a simple web server installed. It's very convenient during the development, so we don't have to install anything else to run the project locally. We can test it by executing the command:

python manage.py runserver 0.0.0.0:8000

For now, you can ignore the migration errors; we will get to that later.

Now open the following URL in a Web browser:
http://ec2-18-219-66-163.us-east-2.compute.amazonaws.com:8000/
and you should see the following page:



Django Apps

In the Django philosophy we have two important concepts:

- **app**: is a Web application that does something. An app usually is composed of a set of models (database tables), views, templates, tests.
- **project**: is a collection of configurations and apps. One project can be composed of multiple apps, or a single app.

It's important to note that you can't run a Django **app** without a **project**. Simple websites like a blog can be written entirely inside a single app, which could be named **blog** or **weblog** for example.

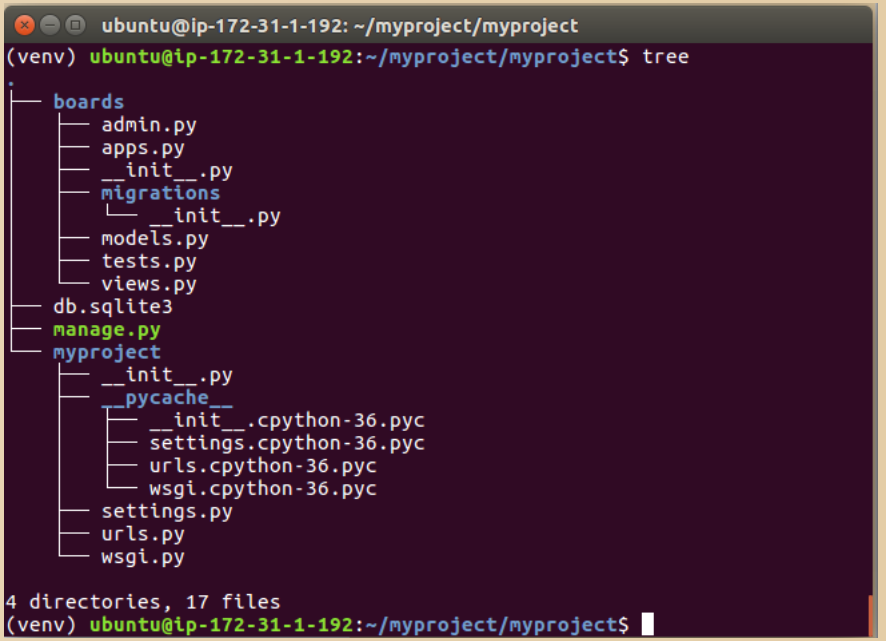
Django Apps

To illustrate let's create a simple Web Forum or Discussion Board. To create our first app, go to the directory where the manage.py file is and executes the following command:

django-admin startapp boards

Notice that we used the command startapp this time.

```
myproject/
 |-- myproject/
 |    |-- boards/               <-- our new django app!
 |    |    |-- migrations/
 |    |    |    +-- __init__.py
 |    |    |-- __init__.py
 |    |    |-- admin.py
 |    |    |-- apps.py
 |    |    |-- models.py
 |    |    |-- tests.py
 |    |    +-- views.py
 |    |-- myproject/
 |    |    |-- __init__.py
 |    |    |-- settings.py
 |    |    |-- urls.py
 |    |    |-- wsgi.py
 |    +-- manage.py
 +-- venv/
```



Django Apps

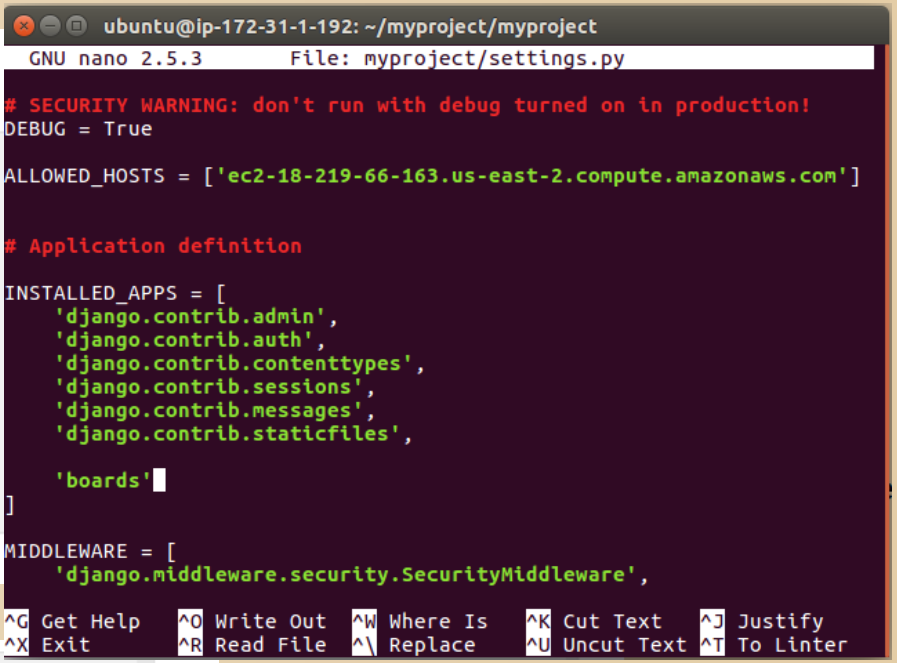
- **migrations/**: here Django store some files to keep track of the changes you create in the **models.py** file, so to keep the database and the **models.py** synchronized.
- **admin.py**: this is a configuration file for a built-in Django app called **Django Admin**.
- **apps.py**: this is a configuration file of the app itself.
- **models.py**: here is where we define the entities of our Web application. The models are translated automatically by Django into database tables.
- **tests.py**: this file is used to write unit tests for the app.
- **views.py**: this is the file where we handle the request/response cycle of our Web application.

Django Apps

Now open the settings.py and try to find the INSTALLED_APPS variable:

settings.py

```
INSTALLED_APPS = [
    'django.contrib.admin',
    'django.contrib.auth',
    'django.contrib.contenttypes',
    'django.contrib.sessions',
    'django.contrib.messages',
    'django.contrib.staticfiles',
]
```




```
INSTALLED_APPS = [
    'django.contrib.admin',
    'django.contrib.auth',
    'django.contrib.contenttypes',
    'django.contrib.sessions',
    'django.contrib.messages',
    'django.contrib.staticfiles',

    'boards',
]
```

We added a new application

Hello, World!

Let's write our first view. We will explore it in great detail in the next tutorial. But for now, let's just experiment how it looks like to create a new page with Django.

views.py

```
from django.http import HttpResponse

def home(request):
    return HttpResponse('Hello, World!')
```

urls.py

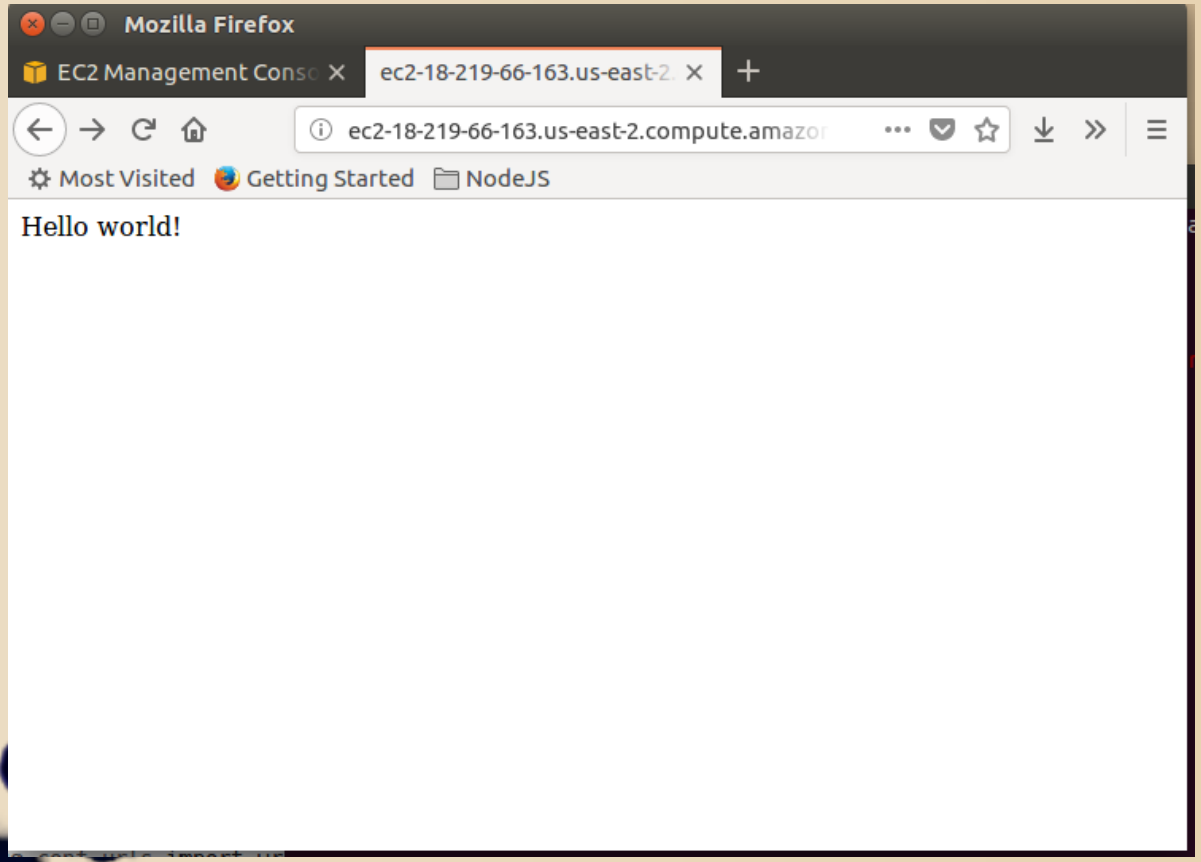
```
from django.conf.urls import url
from django.contrib import admin

from boards import views

urlpatterns = [
    url(r'^$', views.home, name='home'),
    url(r'^admin/', admin.site.urls),
]
```

Hello, World!

No we can run our server again:

python manage.py runserver 0.0.0.0:8000

In a Web browser, open the http://ec2-18-219-66-163.us-east-2.compute.amazonaws.com:8000/:



The End of Part One