



Introduction to Database Systems: CS312

Setting Up the Django Web Server

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- People use online data
 - Purchasing: www.amazon.com
 - Entertainment: www.netflix.com
 - Social media: www.myspace.com
 - just kidding: www.facebook.com
 - Research: www.uniprot.org
 - Weather: www.accuweather.com
 - And many other forms of information are online!

Where is the Database?

Humans indirectly use them

Introduction

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NewFiles

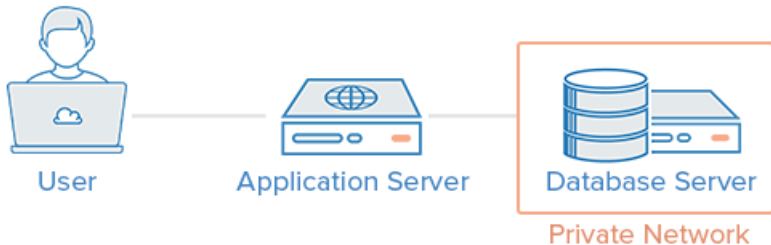
Output

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Separate Database Server



Where is the Database?

Computers use them

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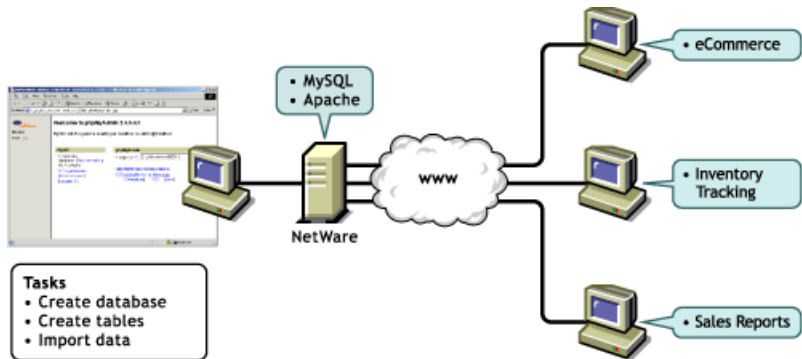
NewFiles

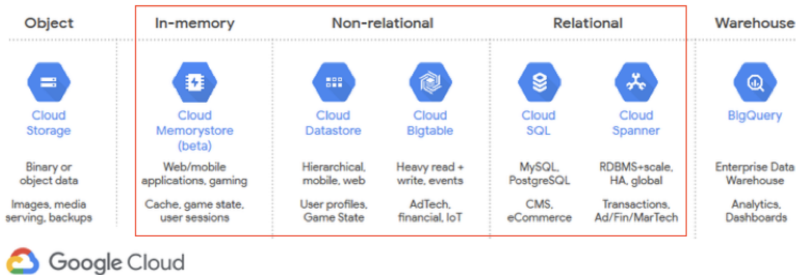
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- Cloud technologies rely on databases



django

- <https://www.djangoproject.com/>

Django: web server

Easy to build better Web apps more quickly and with less code.

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- Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design.
- Built by experienced developers, it takes care of much of the hassle of Web development, so you can focus on writing your app without needing to reinvent the wheel.
- It's free and open source.

Django: a sophisticated web server

Easy to build better Web apps more quickly and with less code.

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- Designed for rapid development of applications with quick concept to completion.
- Includes dozens of extras:
 - common Web development tasks
 - user authentication
 - content administration
 - site maps
 - RSS feeds
 - DATABASE SUPPORT (more about that later)

Who Uses Django?

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• Users

- Companies, organizations and governments
- Content management systems
- Social networks
- Scientific computing platforms ... *and more!*
- Specifically...
 - `https://www.google.com/`
 - `https://www.youtube.com/`
 - `https://www.instagram.com/`
 - `https://www.spotify.com/`
 - `https://www.washingtonpost.com/` *and many others!*

Check out:

`https://www.shuup.com/en/blog/
25-of-the-most-popular-python-and-django-websites/`

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- We are going to install a virtual environment, from which to work
- Then install Django and setup an initial-state demo.

Pip: Used to install project software packages

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Pip: the Python package installer

- The latest versions of Python (ver 3) come with pip
- To see if pip is already installed on your machine, type `piphelp`
- If pip is not already installed, try upgrading your Python to get a newer version.
- Alternatively, install pip yourself from source:
<https://bootstrap.pypa.io/get-pip.py>



Steps to set up a project

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Steps

- Get into a *working* directory.
- Use pip to install virtual environment software to build a working space
- Setup a virtual environment in which to work
- Activate the virtual environment
- Use pip to install Django to build project
- Use Django to build a project
- Run the project

Get into a *working* directory

```
mkdir ~/djangoWorking/  
cd ~/djangoWorking/
```

Python Virtual Environments

Another way to set up a virtual environment (called, "myvenv")

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Some versions of Python already have *virtualizing* software already installed

- `python -m venv myvenv`
- or, `python3 -m venv myvenv`

If not ...

If not then keep reading to see how to install a virtualizing package for Python.

Steps to Set Up a Virtual Environment

MacOS and Linux Commands

Some commands may require `sudo` for *superuser*

- Install the virtual environment software. Done once.
- `pip install virtualenv`
- or, `pip3 install virtualenv`
- Setup: Create an environment `myenv` for use with `python3`
- `virtualenv myenv --p python3`
- Activate the environment
- `source myenv/bin/activate`
- Install the Django software packages. Done once for each env.
- `pip install django`
- or, `pip3 install django`

Steps to Set Up a Virtual Environment

Windows Commands

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- Install the virtual environment software. Done once.

- `pip install virtualenv`

- Setup: Create an environment `myenv` for use with `python3`

- `virtualenv myenv --p python3`

- Activate the environment

- `cd myenv/Scripts/`

- Execute: `activate`

- Install the Django software packages. Done once for each env.

- `pip install django`

Setting-up Django

Your terminal should now say, (myenv)

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Install Django in your virtualenv

```
python -m django --version # check version  
#or, python3 -m django --version # check version
```

Create your first Django project!

```
django-admin startproject mysite
```

Use manage.py to run the webserver to see your project!

```
cd mysite/  
# we are now in: djangoWorking/myenv/mysite  
python manage.py runserver  
# or, python3 manage.py runserver
```

Use your browser to check your work

```
http://127.0.0.1:8000/  
Control-c to exit
```


The Files of Your Project

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```
find . -not -path '*/\.*'
```

```
./mysite
```

```
./mysite/manage.py
```

```
./mysite/mysite
```

```
./mysite/mysite/__init__.py
```

```
./mysite/mysite/settings.py
```

```
./mysite/mysite/urls.py
```

```
./mysite/mysite/wsgi.py
```

Notable Files

- `manage.py`: used to run the server
- `settings.py`: configuration file
- `urls.py`: used to connect url addresses to pages
- `wsgi.py`: web server gateway interface utils

The Output From manage.py

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```
Watching for file changes with StatReloader
Performing system checks...
```

```
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.
October 12, 2020 - 06:09:31
```

```
Django version 3.1.2, using settings 'mysite.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
```



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.

Rats! It Did Not Work!

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This site can't be reached

127.0.0.1 refused to connect.

Try:

- Checking the connection
- [Checking the proxy and the firewall](#)

ERR_CONNECTION_REFUSED

- See: <https://docs.djangoproject.com/en/3.1/> or
- <https://www.djangoproject.com/start/>

Create a Super User to View Database

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- Need to make a user for the site.

```
python3 manage.py migrate  
python3 manage.py createsuperuser
```

- Migrate is to connect a database to the project to hold user (admin) data
- Username (leave blank to use 'user'): admin
- Email address: studentID@allegheny.edu
- Password: *"pass1234"*
- Password (again): *"pass1234"*
- Superuser created successfully.
- Now, look around the admin page,
<http://127.0.0.1:8000/admin>

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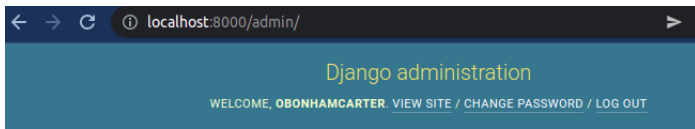
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- Let's take a look at the "stuff" that Django built to manage the website!
- Visit the Admin controls at `http://localhost:8000/admin/`
- Then visit the File `mysite/db.sqlite3` to check the database.



Site administration

AUTHENTICATION AND AUTHORIZATION

Groups

+ Add Change

Users

+ Add Change

Recent actions

My actions

What could you do with a DB on a website!?!

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