Web Development with

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Today

- Iteratively build a full-featured site
- Background for each feature
- Implement a feature
- Review our example solution
  - Keep yours? git show *tag*
  - Follow directly? git reset --hard *tag*

Useful Links

- http://docs.python.org
- https://docs.djangoproject.com
- https://github.com/finiteloopsoftware/django-precompiler/wiki

Let’s Have a Show of Hands...

Django

Django?

Django

Django

- A high-level Python web framework
- Encourages rapid development and clean, pragmatic design
- “For perfectionists with deadlines”
- Focus on automation and DRY
- Widely supported, many deployment options

Perhaps You've Heard Of...

- Disqus
- Instagram
- Mozilla
- OpenStack
- Pinterest
- PolitiFact.com
- Rdio

Django

- ORM
- Automatic admin interface
- Regex-based URL design
- Templating system
- Cache infrastructure
- Internationalization
- Command-line job framework

Python
(the Short-Short Version)

Python is...

- Dynamic
- Interpreted
- Duck-Typed
- Object-Oriented
- Functional
- Strongly-Namespaced
- Exceptional
- Comfortable
- Readable
- Opinionated
- Batteries Included
- Community

Interactive Shell

```
$ python
>>> print "Hello, world!"
Hello, world!
>>>

$ python3
>>> print("Hello, world!")
Hello, world!
>>>
```

Comments

Best. Code. Evar.

Booleans and Null

True

False

None

Strings

'Hello, world!'

"Hello, world!"

"""Hello,
world!"""

u"Hëllö, wörld!"

String Operations

"foo" + "bar"

"foo"[0]

"foo"[:1]

"foo".upper()

"{0}: {1}".format("foo", "bar")

"{foo}: {bar}".format(foo=42, bar=1138)

len("foo")

Numeric Types

42

42.0

42L

Lists, Tuples, and Sets

['a', 'b', 'c']

('Rush', '2112', 5.0)

set(['a', 'b', 'c'])

Sequence Operations

[...][0]

[...][-1]

[...][:1] # same as [...][0:1]

[...].append(4)

[...].extend([4, 5, 6])

[...].pop()

len([...])

Dictionaries

{'key1': 'value1', 'key2': 'value2'}

Dictionary Operations

{...}['key1']

{...}.get('key2', default)

{...}.keys()

{...}.values()

{...}.items()

len({...})

Assignment & Comparison

foo **=** 'bar'

foo **==** 'baz'

foo **!=** 'baz'

foo **is** None

foo **is not** None

Flow Control

if expression:

    ...

elif expression:

    ...

else:

    ...

Flow Control

for item **in** sequence:

    if expression:
        continue

    if expression:
        break

Flow Control

while expression:

    if expression:
        continue

    if expression:
        break

Functions

```
def foo():
    return 42

def foo(bar):
    return bar

def foo(bar, baz='quux'):
    return (bar, baz)

def foo(*args, **kwargs):
    return (args, kwargs)
```

Decorators

```
@bar
def foo():
    return 42

@baz('xyzzy')
def quux():
    return 42
```

Classes

```
class Foo(object):

    def __init__(self, bar):
        self.bar = bar
```

Docstrings

"Modules can have docstrings."

```
class Foo(object):
    "Classes can have docstrings too."

    def __init__(self, bar):
        "So can functions/methods."
```

Exceptions

```
try:
    raise Exception("OH NOES!")

except:
    log_error()
    raise

else:
    do_some_more()

finally:
    clean_up()
```

Namespaces

```
import logging

from datetime import timedelta

from decimal import Decimal as D
```

Introspection

```
>>> dir(Foo)
['__class__', '__delattr__', '__dict__', '__doc__', '__format__',
'__getattribute__', '__hash__', '__init__', '__module__', '__new__',
'__reduce__', '__reduce_ex__', '__repr__', '__setattr__', '__sizeof__',
'__str__', '__subclasshook__', '__weakref__']
```

Introspection

```
>>> help(Foo)
Help on class Foo in module __main__:

class Foo(__builtin__.object)
 |  Classes can have docstrings too.
 |
 |  Methods defined here:
 |
 |  __init__(self, bar)
 |      So can functions/methods.
 |  ...
----------------------------------------------------------
 | Data descriptors defined here:
```

And more...

- Generators
- Generator Expressions
- List Comprehensions
- Set Comprehensions
- Dictionary Comprehensions
- Properties
- Context Managers
- Class Decorators
- Abstract Base Classes
- Metaclasses

Style: PEP-8

- No tabs
- Four-space indents
- Don’t mix tabs & spaces
- lower_case_methods
- CamelCaseClasses
- Line breaks around 78-79 chars
- Some other OCD-pleasing ideas :-)

Setup

Environment Setup

- Mac or Linux? You've already got Python!
- You'll also need Git if you don't have it; download it from http://git-scm.com or use your package manager to install it
- Windows? Well, then...

Windows Setup

- Portable Python and Portable Git
- Won’t modify your system at all
- Can be easily uninstalled
- If you want to permanently install Python and Git you can easily do that too

Portable Python 2.7

- Download http://bit.ly/13eyQGn
  http://ftp.osuosl.org/pub/portablepython/v2.7/PortablePython_2.7.3.1.exe
- Run the .EXE
- Install into c:\django-precompiler
- Download won't work?
  ftp://ftp.codemash.org/webdev_with_django

Portable Git

- Download http://bit.ly/X4dGps
  http://msysgit.googlecode.com/files/Git-1.8.0-preview20121022.exe
- Create a new folder
- Extract archive into a new folder:
  c:\django-precompiler\Portable Git 1.8.0-preview20121022
- Download won't work?
  ftp://ftp.codemash.org/webdev_with_c

Fixing the Path

- Download: https://gist.github.com/4399659
- Save it as a file named run-cmd.bat
- Run it
- Download won't work? ftp://ftp.codemash.org/webdev_with_django

Installing Packages

- easy_install: easy_install *package*
- pip: pip install *package*

Installing Packages

- Installed packages go into a site-packages directory in your Python lib
- That's the "system Python" by default
- But different programs may need different versions of packages...
- So we have virtual environments!

Virtual Environments

- virtualenv
- Creates an isolated Python environment with its own site-packages
- Install whatever you want without fouling anything else up

Python 2 or 3?

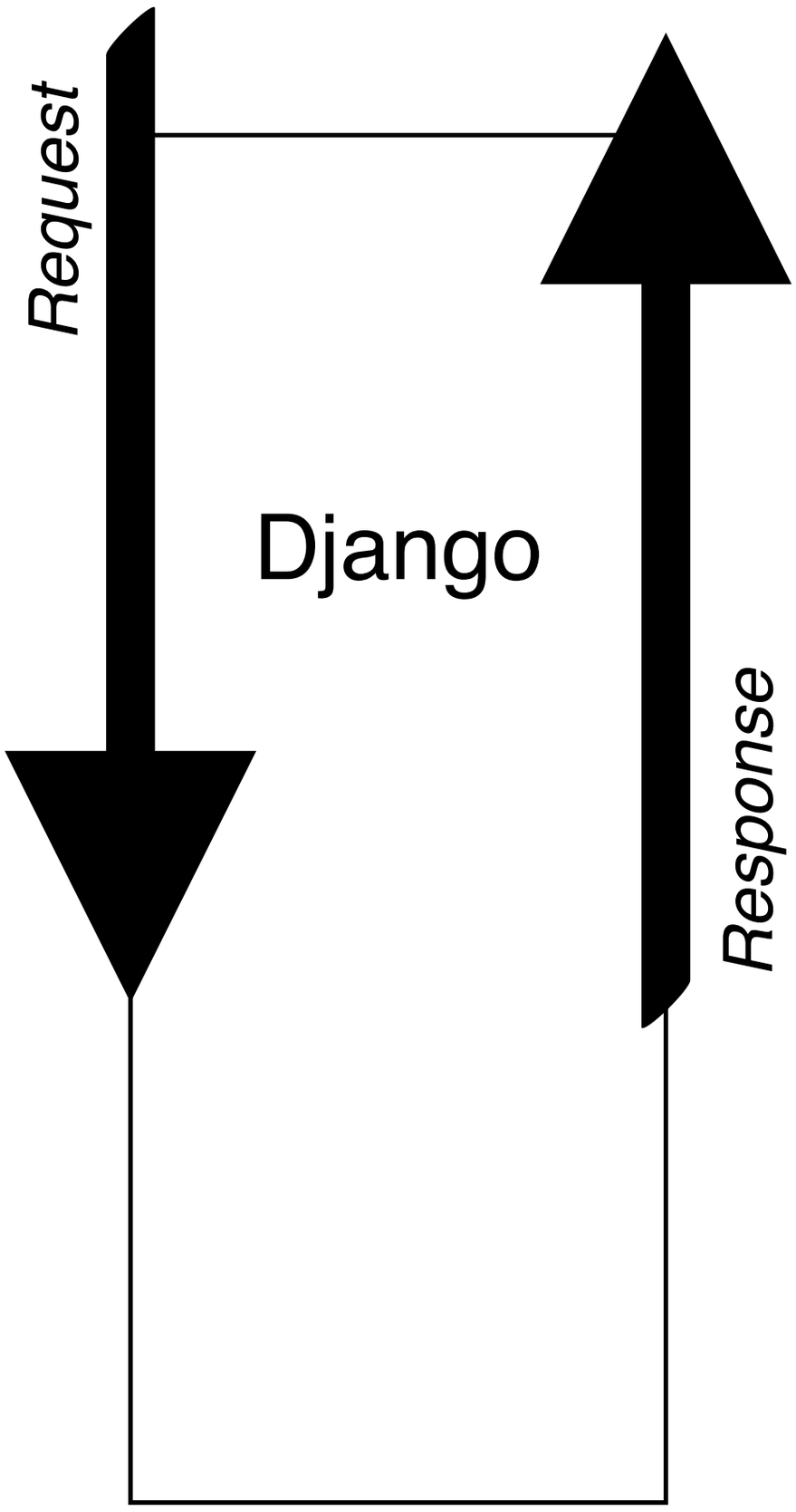
- The future of Python is Python 3
- Django 1.5 has experimental Python 3 support
- Python 2.7 is still recommended for production applications
- Django 1.6 will fully support Python 3

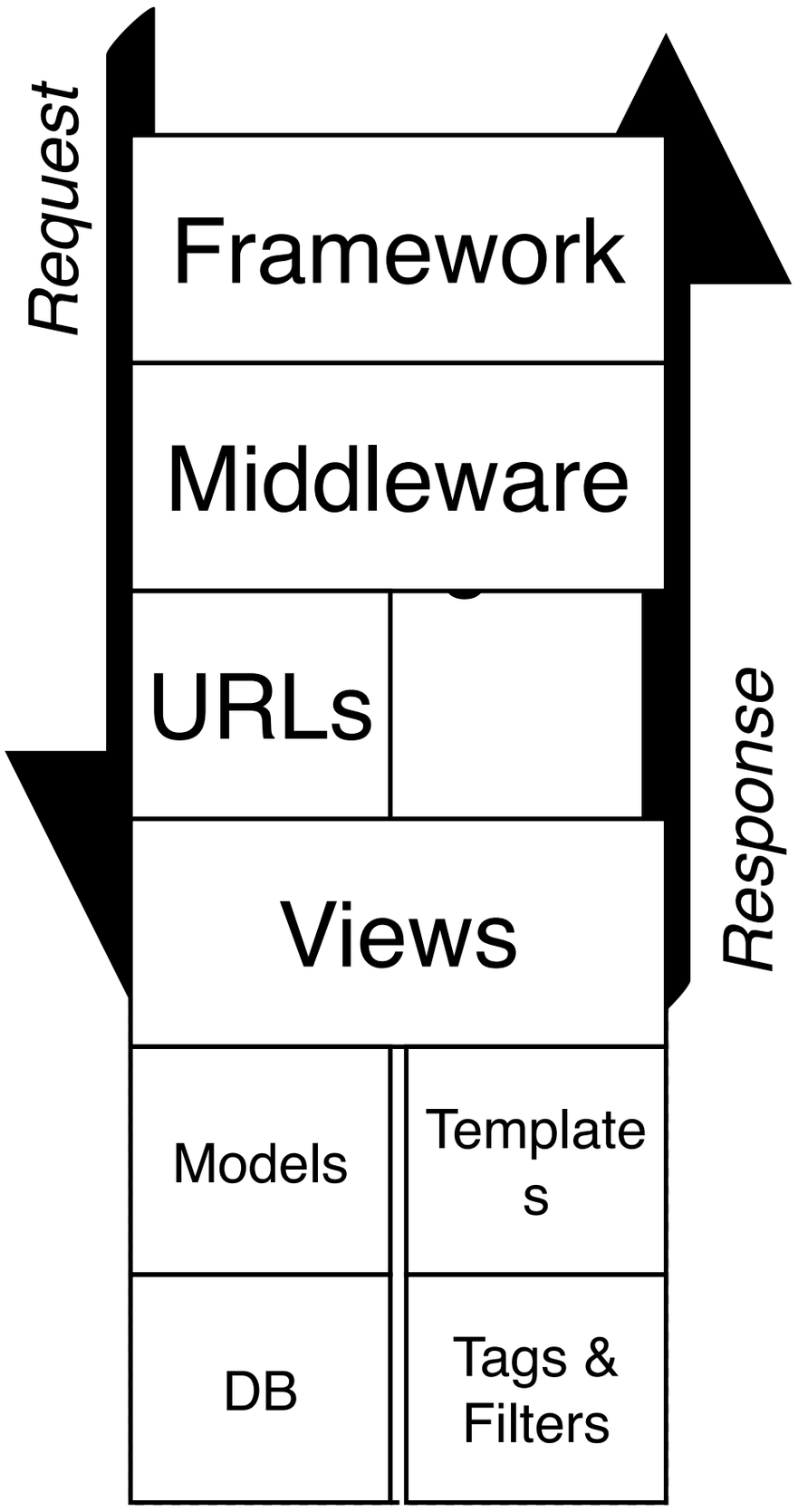
Activate the Virtual Environment

```
# Mac/Linux/etc...

$ virtualenv django-precompiler
$ cd django-precompiler
$ source bin/activate
```

```
# Windows

> python virtualenv django-precompiler
> cd django-precompiler
> Scripts/activate.bat
```

The Django Stack

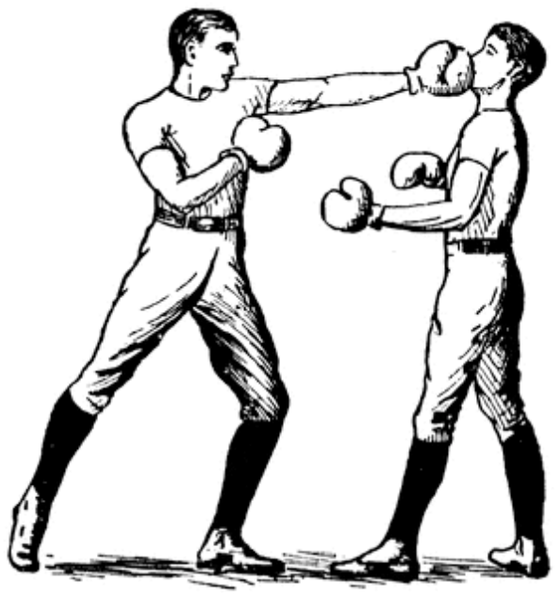

Request
Django
Response


Request
Framework
Middleware
URLs
Views
Models
Templates
DB
Tags & Filters
Response

The Project...

CODE SMASH!

- Code Smash is a fictional software development conference for people who need to punch out awesome code
- It needs a website!
- We’re going to build one



Starting a Project

```
# Normally...
$ git init src

# Today...
$ git clone https://github.com/finiteloopsoftware/django-precompiler.git src

$ cd src

$ git reset --hard ex00
```

Defining Requirements

- requirements.txt
- A basic example:

```
MyApp
Framework==0.9.4
Library>=0.2
http://someserver.org/packages/MyPackage-3.0.tar.gz
```

Requirements

- Create a requirements.txt
- Require Django version 1.5; use:
  https://www.djangoproject.com/download/1.5c1/tarball/

Installing Requirements

```
$ pip install -r requirements.txt
```

Starting a Project

```
# Mac/Linux/etc.

$ django-admin.py startproject codesmash ./
$ python manage.py runserver

# Windows

> python Scripts/django-admin.py startproject codesmash
> python manage.py runserver
```

New Project Contents

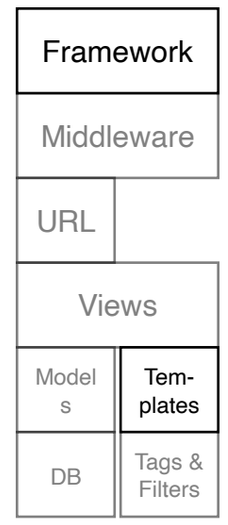
src/
    codesmash/
        __init__.py
        settings.py
        urls.py
        wsgi.py

manage.py

A Static Home Page

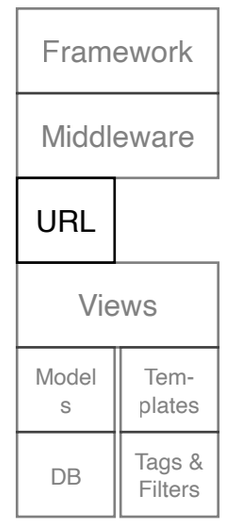
Templates

- Make a templates directory under src:
  $ mkdir templates
- Update settings to tell Django where to find the templates
- Put an HTML file in the templates directory



URLs

- Map URLs in requests to code that can be executed
- Regular expressions!
- Subsections of your site can have their own urls.py modules (more on this later)

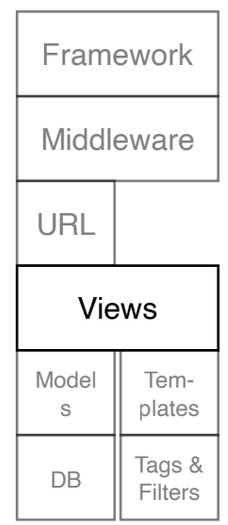


URLs

```
from django.conf.urls import patterns, include, url


urlpatterns = patterns('',
    url(r'^$', 'codesmash.views.home', name='home'),
)
```

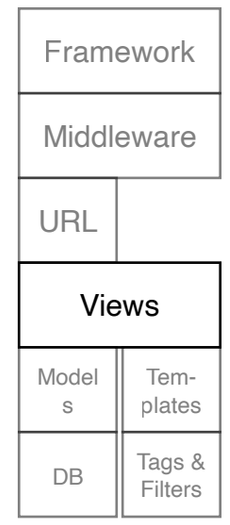
Views

- Code that handles requests
- Other frameworks often call these “controllers”
- Basically a function that:
  - gets a request passed to it
  - returns text or a response



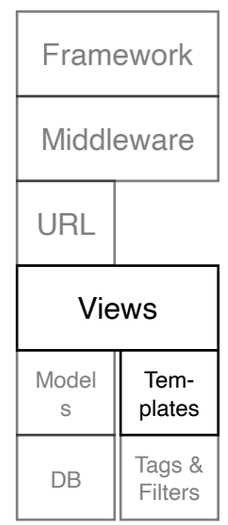
Views

```
from django.http import HttpResponse


def my_view(request):
    return HttpResponse("Hello, world!")
```



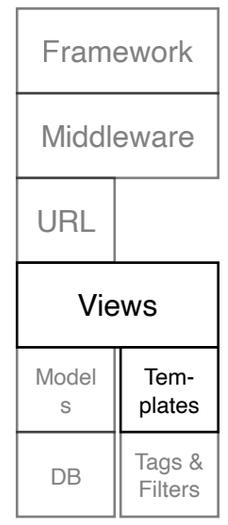
Views

```
from django.http import HttpResponse
from django.template import Context, loader


def my_view(request):
template = loader.get_template('template.html')
context = Context({ ... })
return HttpResponse(template.render(context))
```



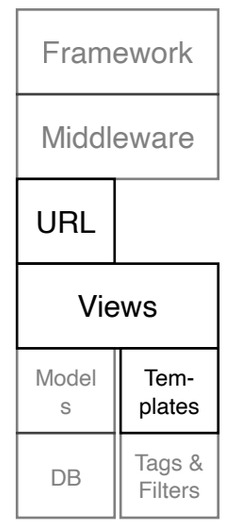
Views

```
from django.shortcuts import render

def my_view(request):
    return render(request, 'template.html', {...})
```



Exercise 1

- Create a template for the homepage
- Create a view that will respond with the rendered template
- Connect the / URL to the view



Let’s see the code!

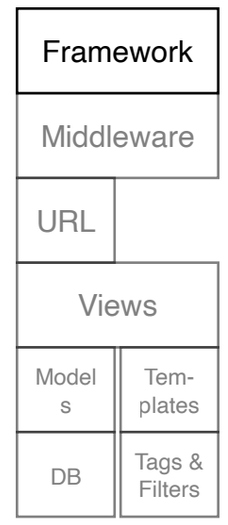
git reset --hard ex01

Contact Form

Apps

- Django believes strongly in separating chunks of a site into apps that can be reused
- Ecosystem of reusable apps available
- Create an app; from the src directory:

```
$ django-admin.py startapp myapp

> python Scripts/django-admin.py startapp myapp
```



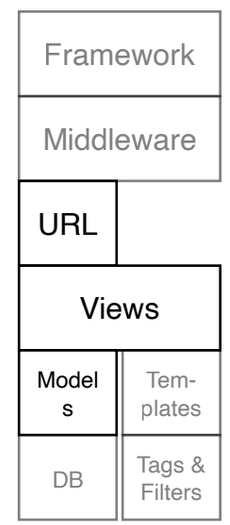
New App Contents

src/
    codesmash/

    myapp/
        __init__.py
        models.py
        tests.py <-- you should write them!
        views.py

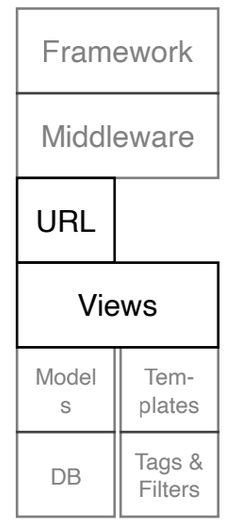
        urls.py   <-- you'll want to make one of these
        forms.py <-- one of these too

templates/



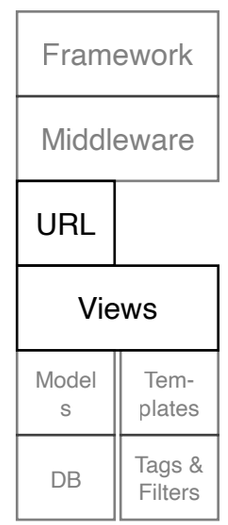
App URLs

```
from django.conf.urls import patterns, include, url


urlpatterns = patterns('myapp.views',
    url(r'^$', 'my_view', name='my_form'),
    ...
)
```



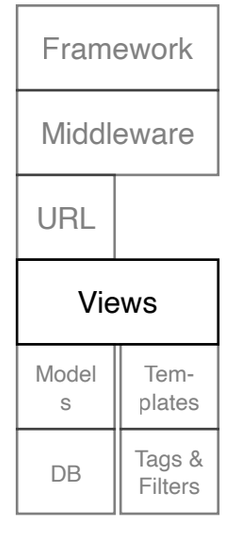
Connecting App URLs

```
# Use include to connect a regex to an app's urls.py
# Use namespace to keep app URL names nicely isolated

urlpatterns = patterns('',
    (r'^myapp/',
        include('myapp.urls', namespace='myapp')),
    ...
)
```



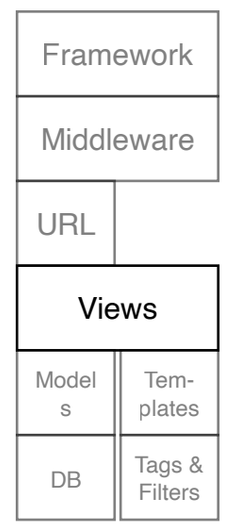
Form Validation

- Why?
- Classes for each kind of input field
- Form class to gather input fields
- View method uses the form class to validate inputs



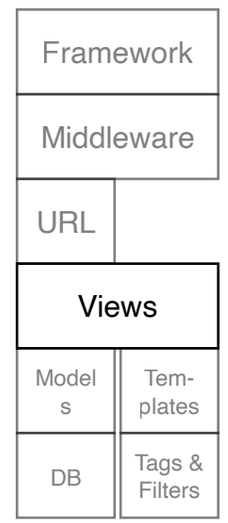
A Very Simple Form

```
from django import forms


class MyForm(forms.Form):
    name = forms.CharField(max_length=30)
    email = forms.EmailField()
```



Using a Form in a View

```
from myapp.forms import MyForm

def my_view(request):
    form = MyForm(request.POST or None)
    if request.method == "POST" and form.is_valid():
        name = form.cleaned_data['name']
        email = form.cleaned_data['email']
        # do something great with that data

return render(request, 'myapp/myform.html', {
    'form': form
})
```



Django Template Language

- Call a function or do logic:

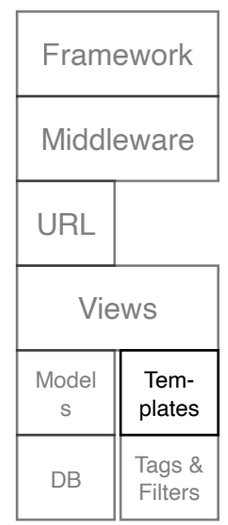
  {% ... %}

- Variable substitution:

  {{ bar }}

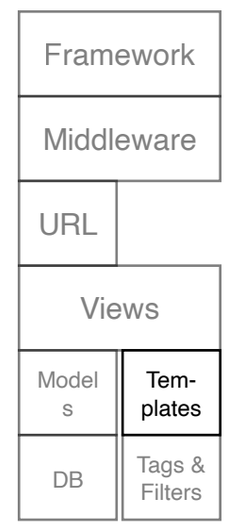
- Filters:

  {{ foolbar }}



Forms in Templates

```
<html>
...
    <body>

        <form action="{% url 'myapp:my_form' %}"
          method="post">
            {% csrf_token %}
            {{ form.as_p }}
            <button type="submit">Go!</button>
        </form>

    </body>
</html>
```



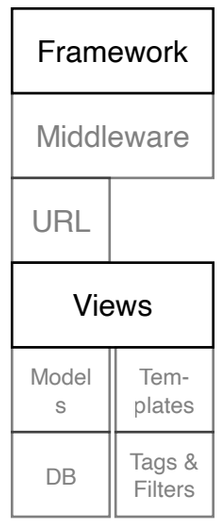
Sending Mail

- Add an EMAIL_BACKEND in settings.py

```
EMAIL_BACKEND = \
    'django.core.mail.backends.console.EmailBackend'
```

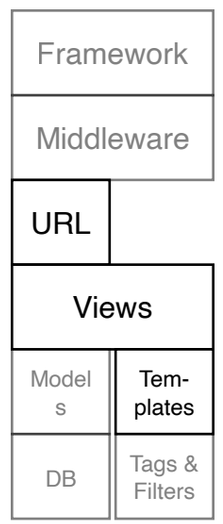
- Import and use

```
from django.core.mail import send_mail

send_mail('subject', 'message', 'sender',
        ['recipient', ...])
```



Exercise 2

- Create a contact app
- Create a contact form with subject, message, and sender's email address
- Create view to display and process the form and "send" the message
- Connect the view to "/contact" URL

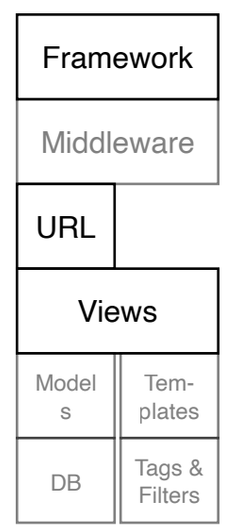


Let’s see the code!

git reset --hard ex02

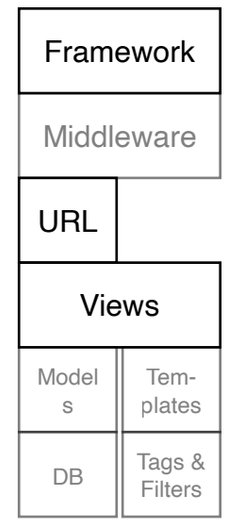
Redirecting on Success

- Make the POST action redirect with a GET on successful processing
- Avoid “resubmit form” issues when reloading or returning to success page (browser back button)



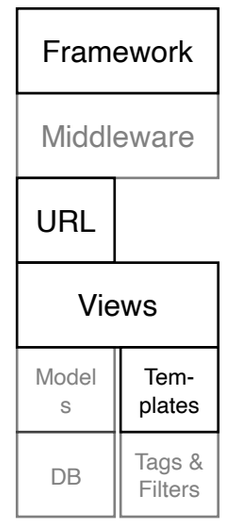
Redirecting

```
from django.shortcuts import redirect

def my_view(request):
    ...
    return redirect('namespace:name')
```



Exercise 3

- Make a separate contact form URL and template for displaying a success message
- Update the POST handler to redirect to the success page



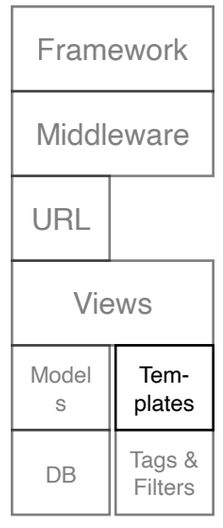
Let’s see the code!

git reset --hard ex03

A Consistent Appearance

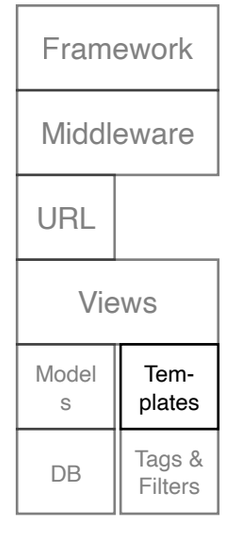
Template Inheritance

- Define a base template for the site
- Other templates extend the base template
- Blocks allow child templates to inject content into areas of the parent template



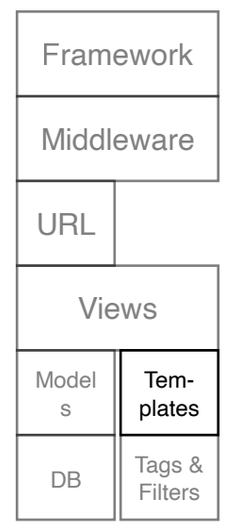
base.html

```
<!DOCTYPE html>
<html>
    <head>
        <meta name="..." content="...">
        <title>{% block title %}My Site{% endblock %}</title>
    </head>
    <body>
        {% block content %}
        {% endblock %}
    </body>
</html>
```



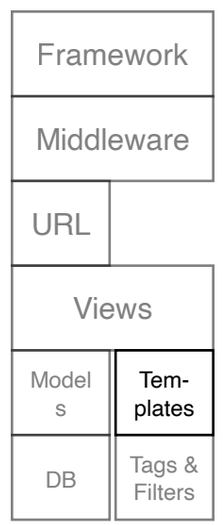
helloworld.html

```
{% extends "base.html" %}

{% block title %}Hello, World{% endblock %}

{% block content %}
    <h1>Hey! Great!</h1>
    <p>Sure is some lovely content right here.</p>
    <p>Yup.</p>
{% endblock %}
```



Exercise 4

- Refactor those templates!
- Make a base.html with appropriate blocks
- Make other templates extend it and fill in the blocks



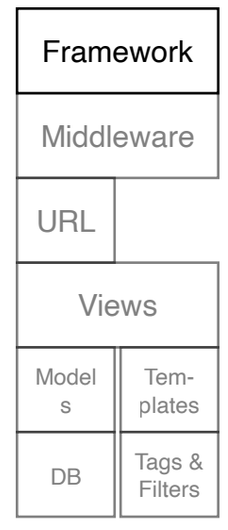
Let’s see the code!

git reset --hard ex04

User Registration

No Need to Reinvent

- Django comes with a robust user framework: django.contrib.auth
- Registration
- Login/Logout
- Password Recovery
- Etc.

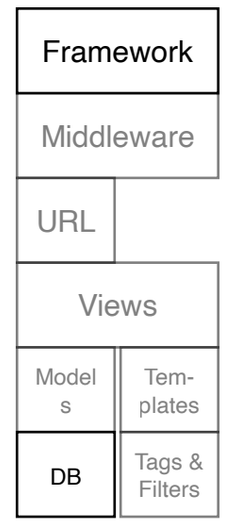


Database Settings

```
import os


PROJECT_ROOT = os.path.abspath(
        os.path.join(os.path.dirname(__file__), ".."))

DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.sqlite3',
        'NAME': os.path.join(
                PROJECT_ROOT, "database.db")
    }
}
```

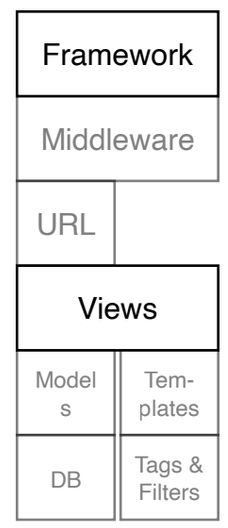
Create the Database

```
$ python manage.py syncdb
```



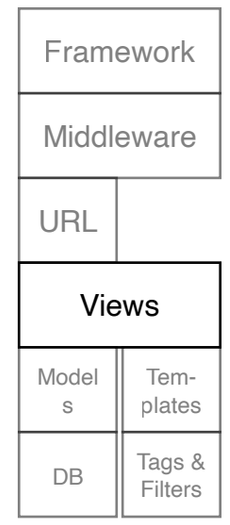
Extend the UserCreationForm

```
from django.contrib.auth.forms import UserCreationForm


class RegistrationForm(UserCreationForm):

    class Meta(UserCreationForm.Meta):
        fields = ("username", "email")
```



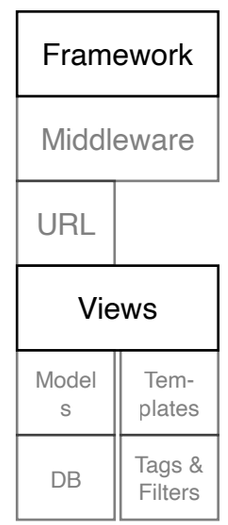
Register the User

```
form = RegistrationForm(request.POST)

if form.is_valid():
    form.save()
```



Login After Registration

```
from django.contrib.auth import authenticate, login


user = authenticate(
    username=form.cleaned_data['username'],
    password=form.cleaned_data['password1'])

login(request, user)
```

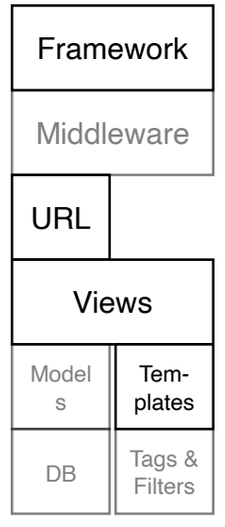


The User Object

- Always have one in every request
- Always available to templates
- Can be anonymous or populated depending on whether the user has authenticated

Exercise 5

- Start a new app called “accounts”
- Set up a UserCreationForm subclass in accounts.forms with username and email
- Set up a view that displays the form on GET
- Make the view handle POSTs – check the form, register the user, log in, and redirect to a user profile page
- Profile page should just display username and email
- Set up templates for the form and profile page in templates/accounts/



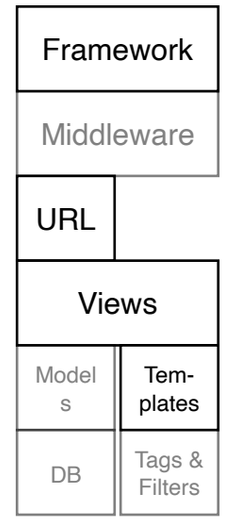
Let’s see the code!

git reset --hard ex05

User Login & Logout

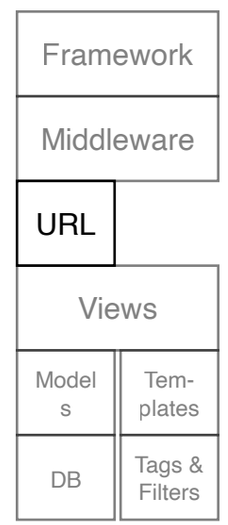
More Reusable Goodness

- django.contrib.auth provides URLs and views for login and logout
- Will want to provide our own templates



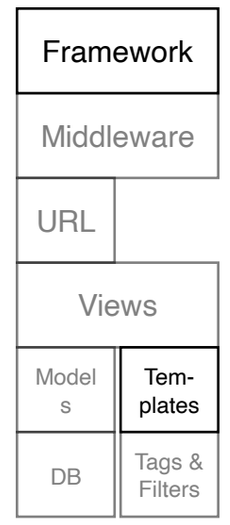
URLs

```
urlpatterns = patterns('',
    ...
    (r'auth/', include('django.contrib.auth.urls',
            namespace='auth')),
    ...
)
```



Templates to Override

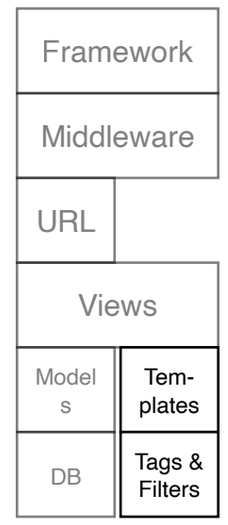
- templates/registration/login.html
- templates/registration/logged_out.html



Login/Logout Links

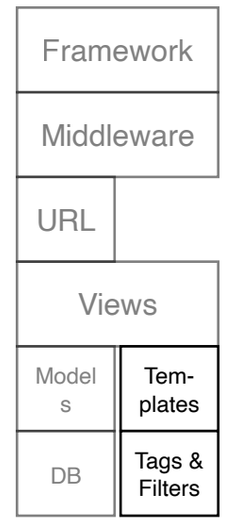
{% url 'auth:login' %}

{% url 'auth:logout' %}



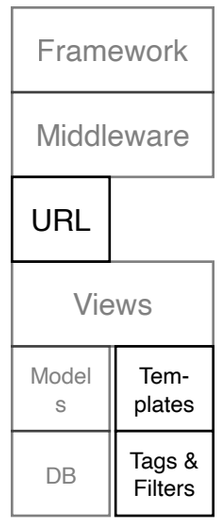
Differentiate Logged In/Out

```
{% if user.is_authenticated %}
    ...
{% else %}
    ...
{% endif %}
```



Exercise 6

- Enable auth URLs
- Add login and logout links to the site header
- Show login when user is logged out, logout when user is logged in
- Show username in header when user is logged in
- Link to user profile when user is logged in
- Customize login and logout pages



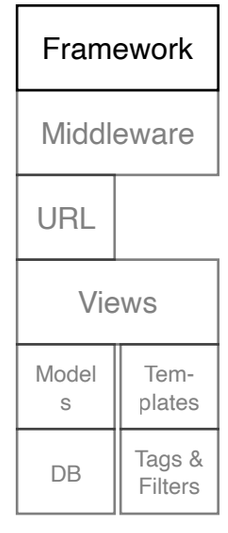
Let’s see the code!

git reset --hard ex06

Django Admin

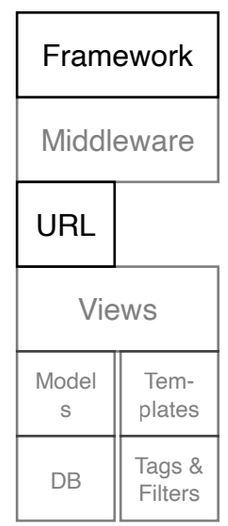
Django Admin

- Free CRUD!
- Navigate database data by model
- Make changes
- Highly customizable



Enabling the Admin App

- Uncomment admin lines from INSTALLED_APPS in settings.py
- Uncomment admin lines from the project's urls.py
- Mini-exercise: go do that :-)



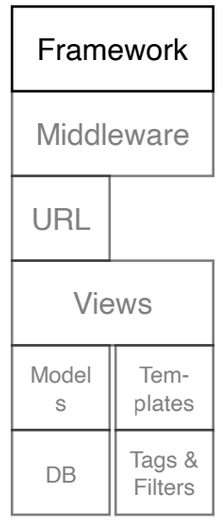
Demo Time!

git reset --hard ex07

CMS Pages

django.contrib.flatpages

- Store simple “flat” HTML pages in the database
- Has a URL, title, and content
- Useful for one-off pages with no logic that don’t deserve full apps
- Add/edit content via the admin app
- Let’s enable it now!



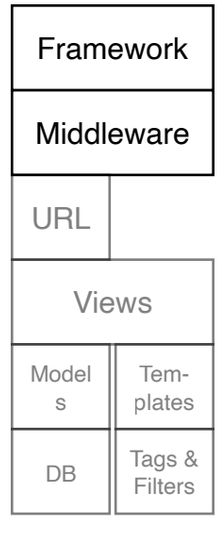
settings.py

- Add to INSTALLED_APPS:

django.contrib.flatpages

- Add to MIDDLEWARE_CLASSES:

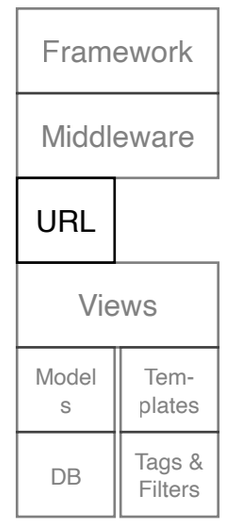
django.contrib.flatpages.middleware.FlatpageFallbackMiddleware



urls.py

- Change root URL to use flatpage:

```
url(r'^$', 'django.contrib.flatpages.views.flatpage',
        {'url': '/' }, name='home')
```



Make a Flatpage Template

- Put it in templates/flatpages/default.html
- In the title block, add:

  {{ flatpage.title }}

- In the content block, add:

  {{ flatpage.content }}

Let’s see the code!

git reset --hard ex08

Meanwhile, in the admin app...

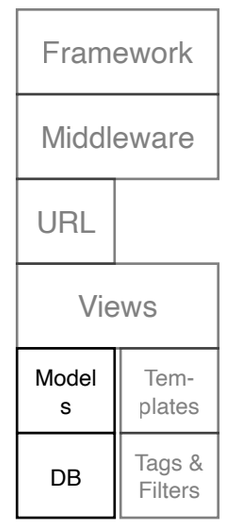
Conference Talks: An App with a Custom Data Model

Models

- Model classes are the nouns of the system
- Used to create database tables
- Integrated with the ORM to interact with the database
- Need to `python manage.py syncdb` when adding a new model class

Models

```
from django.db import models

class Thingy(models.Model):
    name = models.CharField(max_length=255)
    awesome = models.BooleanField(default=True)
    description = models.TextField(blank=True)

    def __str__(self):
        return self.name

    def __unicode__(self):    # note: not in Python 3
        return unicode(str(self))
```



Exercise 9

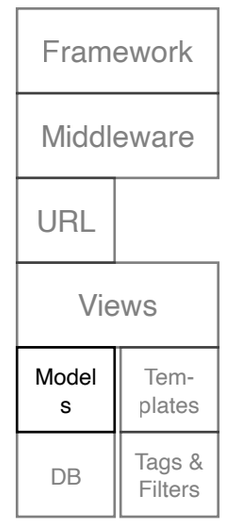
- Create a “talks” app to manage talks
- Create a Talk model; it should have:
  - title - up to 255 characters
  - approved - true or false, default false
  - recording_release - true or false, default false
  - abstract - text describing the talk
  - outline - text outlining the talk
  - notes - text about the talk that won't be public

Let’s see the code!

git reset --hard ex09

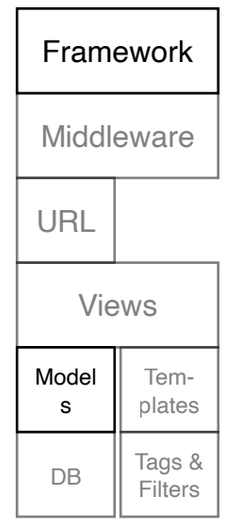
Wiring the Model for Admin Access

- Each app manages its own admin wiring
- Goes into an admin.py within the app



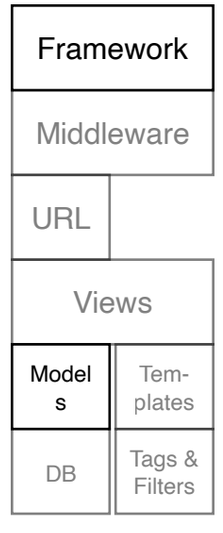
admin.py

```
from django.contrib import admin
from myapp.models import Thingy

admin.site.register(Thingy)
```



Exercise 10

- Create an admin.py for the talks app
- Register the Talk model
- Start up the admin app and verify that Talks appears

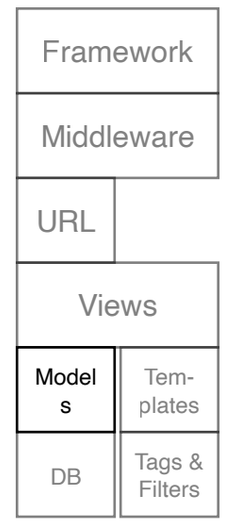


Let’s see the code!

git reset --hard ex10

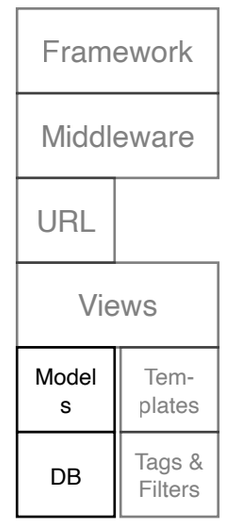
Pluralize All the Thingys!

```
class Thingy(model.models):
    ...

    class Meta:
        verbose_name_plural = "Thingies"
```



Relations

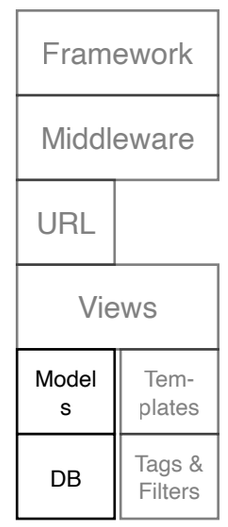
- Foreign key (one-to-many)
- Many-to-many



Foreign Key Relations

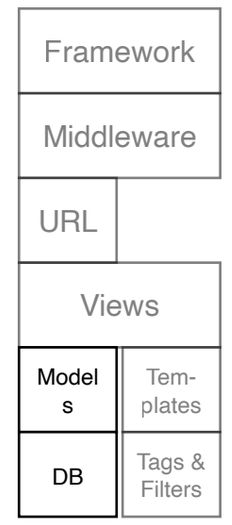
```
class Thingy(models.Model):
    ...

class Gadget(models.Model):
    ...
```

```
class Gizmo(models.Model):
    thingy = models.ForeignKey(Thingy)

    gadget = models.ForeignKey(Gadget,
            blank=True, null=True)
```



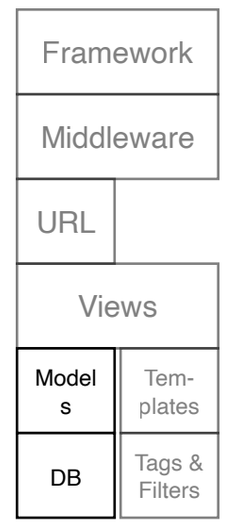
Many-to-Many Relations

```
class Thingy(models.Model):
    ...

class Gizmo(models.Model):
    thingies = models.ManyToManyField(Thingy)
```



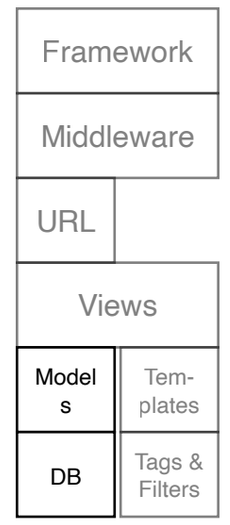
Saving a Model Object

```
thingy = Thingy()
thingy.size = 'big'
thingy.save()

gadget = Gadget(thingy=thingy)
gadget.save()

gizmo = Gizmo(thingies=[thingy])
gizmo.save()
```



Exercise 11

- Create new model classes for foreign keys:
  - Category
  - Talk Type
  - Audience Skill Level
  - Location
  - Time Slot
- All should have a name, up to 255 characters
- All should have a __str__; Time Slot's should use strftime (see strftime.net)
- Location and Time Slot should be optional
- Do a many-to-many on django.contrib.auth.models.User for talk speakers



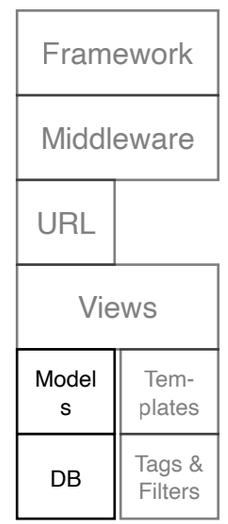
Let’s see the code!

git reset --hard ex11

Meanwhile, in the admin app...

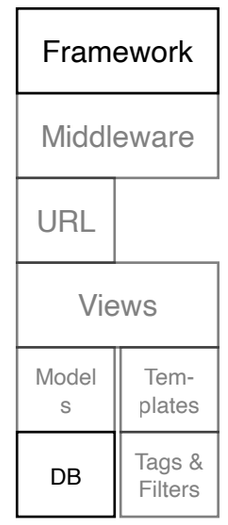
Changing Existing Models

- Adding/removing/changing fields in a model requires a schema migration
- Django doesn't support it out of the box
- Pro mode: use South



Cheesy Precompiler Way

```
$ ./manage.py dbshell

> DROP TABLE talks;

$ ./manage.py syncdb
```



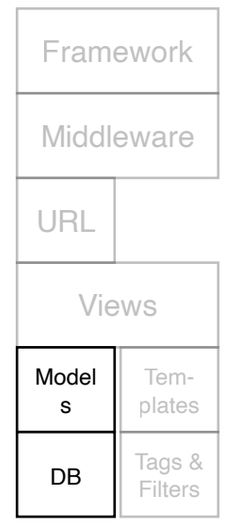
Querying the Model

all_thingies = Thingy.**objects.all()**

single_thingy = Thingy.**objects.get(id=1)**

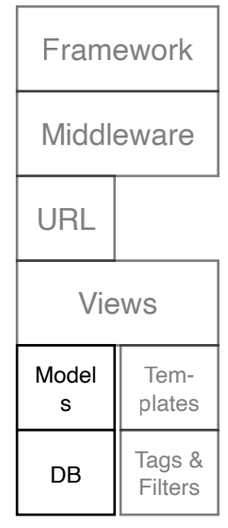
big_thingies = Thingy.**objects.filter(size='big')**

ordered_thingies = Thingy.objects.all().**order_by('size')**



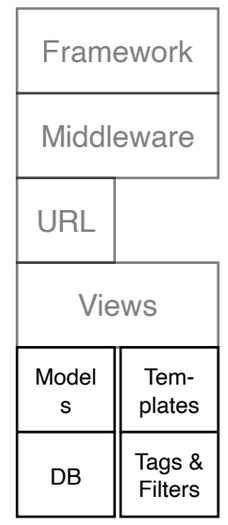
Relations in Templates

- When a model object retrieved from the ORM has relations, you get a relation manager and not an actual iterable collection
- Need to call .all() (or get or filter) on it before you get back the related model objects



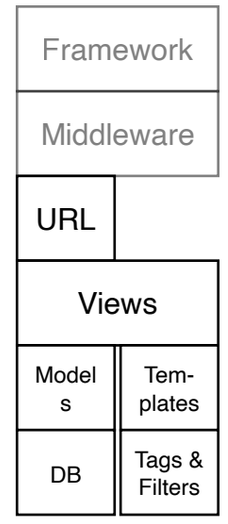
Relations in Templates

```
{% for gizmo in gizmos %}
    {% for thingy in gizmo.thingies.all %}
        ...
    {% endfor %}
{% endfor %}
```



Exercise 12

- Create a view and template to display a list of all talks, ordered by title
- Be sure to display all of the talk speakers



Let’s see the code!

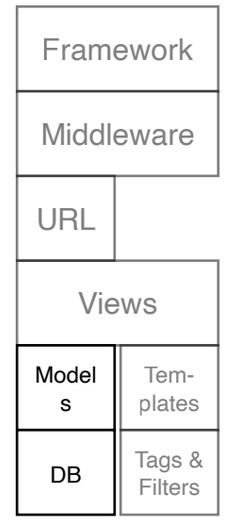
git reset --hard ex12

Optimizing Queries

- What we just did will make lots of extra database queries (because of the loops)
- Go read up on:
  - select_related: does a join in SQL
  - prefetch_related: queries in advance, caches results, allows “join” in Python

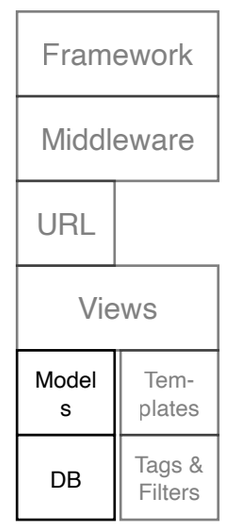
Model Managers

- A place to encapsulate data queries
- Extend to provide extra queries with developer-friendly interfaces



Model Managers

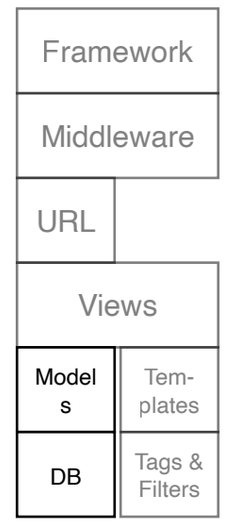
```
class ThingyManager(models.Manager):

    def big_ones(self):
        return self.get_query_set().filter(size='big')

    def of_color(self, color):
        return self.get_query_set().filter(color=color)


class Thingy(models.Model):

    objects = ThingyManager()
```



Using a Model Manager

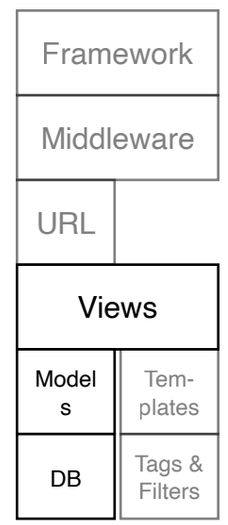
big_thingies = Thingy.**objects.big_ones()**

green_thingies = Thingy.**objects.of_color('green')**



Exercise 13

- Move the queries from the previous exercise into a TalkManager
- Change the queries to only get talks that have been approved

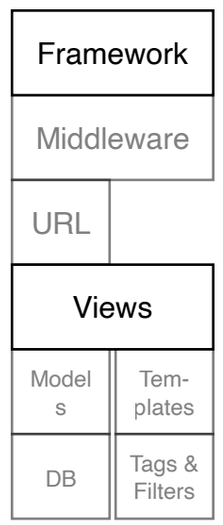


Let’s see the code!

git reset --hard ex13

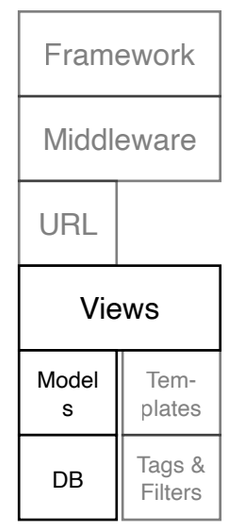
Generic Views

- Many views fall into the same patterns
- Django provides generic view classes for things like showing a list of objects, creating an object, updating an object, deleting, etc.
- Subclass and set properties or override certain methods to customize



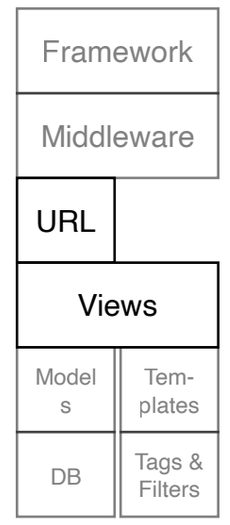
Generic List Views

```
from django.views.generic import ListView

class ThingyListView(ListView):
    queryset = Thingy.objects.all()
```



Generic List View URLs

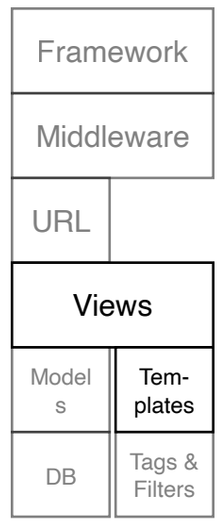
```
from django.conf.urls import patterns, include, url
from myapp.views import ThingyListView


urlpatterns = patterns('myapp.views',
...
url(r'^$', ThingyListView.as_view(), name='things')
```



Generic List View Templates

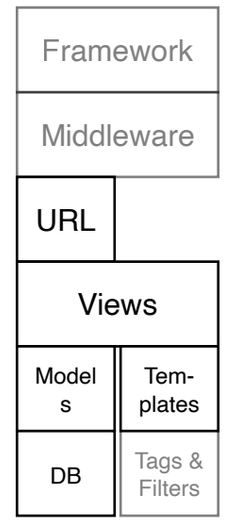
- Generic List Views are automatically wired to templates
- Naming convention: lowercase model name + “_list.html”, eg:

templates/myapp/thingy_list.html



Exercise 14

- Replace the view that lists talks with a generic list view
- Redo the URL mapping to use your new generic list view subclass

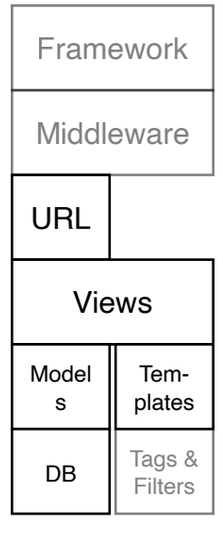


Let’s see the code!

git reset --hard ex14

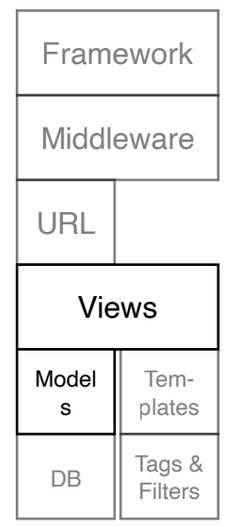
Can You Guess What's Next?

- Need to create new talks
- We could do it the hard way...
  - Make a Form
  - Make a View
  - Read validated data, put it into a model object
  - Save the model, redirect...



Model Forms

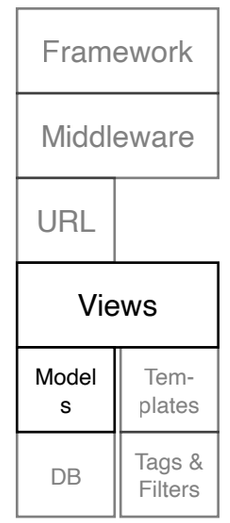
```
from django import forms
from myapp.models import Thingy


class ThingyForm(forms.ModelForm):
    class Meta:
        model = Thingy
        exclude = ('flavor', 'user')
```



Generic Create Views

```
from django.views.generic.edit import CreateView
from myapp.forms import ThingyForm


class ThingyCreationView(CreateView):
```

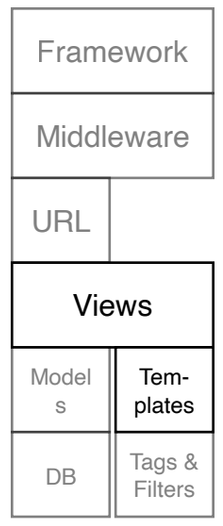
model = Thingy
form_class = ThingyForm
success_url = "/accounts/profile"



Generic Create View Templates

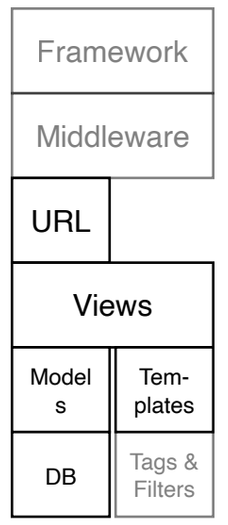
- Generic Create Views are automatically wired to templates
- Naming convention: lowercase model name + “_form.html”; eg:

templates/myapp/thingy_form.html



Exercise 15

- Make a Generic Create View and Model Form to submit new talk proposals
- Exclude approval status, location, and time slot (since the speaker doesn't control them)
- Be sure to connect a "create" URL to the new Generic Create View
- Don't forget a template!
- Link to the create form from user profile
- List user's submitted

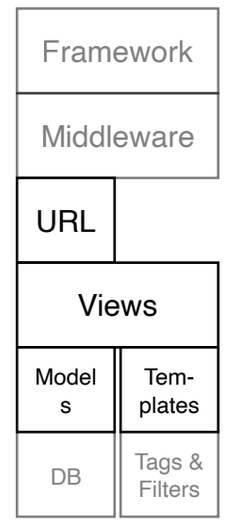


Let’s see the code!

git reset --hard ex15

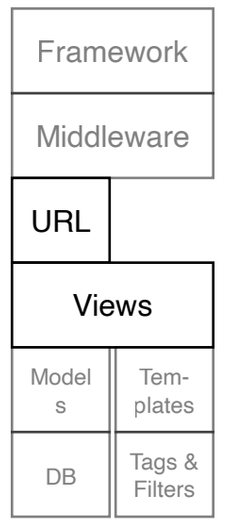
Generic Edit Views

```
from django.shortcuts import resolve_url
from django.view.generic.edit import UpdateView

from myapp.forms import ThingyForm


class ThingyUpdateView(UpdateView):
    form_class = ThingyForm
    queryset = Thingy.objects.all()

    def get_success_url(self):
        return resolve_url('myapp:thingy')

    def get_context_data(self, **kwargs):
        context = super(ThingyUpdateView, self).get_context_data(**kwargs)
        context['editing'] = True
        return context
```



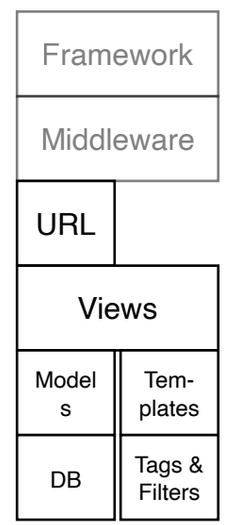
Generic Edit View URLs

```
from django.conf.urls import patterns, include, url
from myapp.views import ThingyUpdateView


urlpatterns = patterns('myapp.views',
    ...
    url(r'(?P<pk>[0-9]+)$', ThingyUpdateView.as_view(),
            name='update'),
)
```



Exercise 16

- Create a Generic Edit View for talks
- Use the Model Form from the previous exercise
- Be sure to wire it to a URL for editing
- Change the existing template to indicate whether we're editing or creating

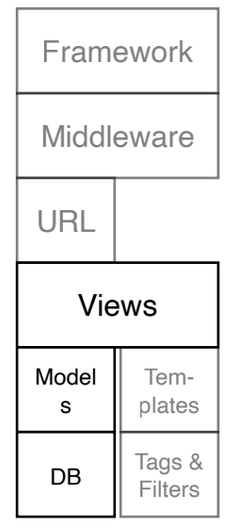


Let’s see the code!

git reset --hard ex16

Security in Views

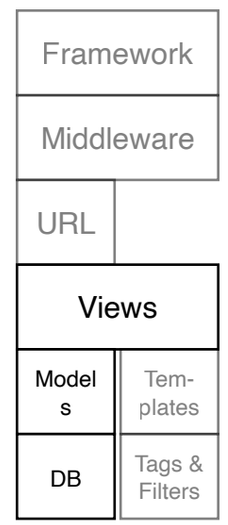
- Can you spot a security problem in the previous exercise?
- Anyone can edit any talk!
- Generic views can restrict access by limiting the queryset available in the view



Restricting Object Access

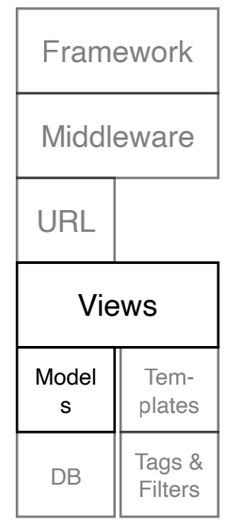
```
# In models.py...
class ThingyManager(models.Manager):

    def for_user(self, user):
        return self.get_query_set().filter(user=user)
```

```
# In views.py...
class ThingyUpdateView(UpdateView):

    def get_queryset(self):
        return Thingy.objects.for_user(
                self.request.user)
```



Exercise 17

- Lock down the update view from the previous exercise so that a talk may only be edited by its speakers

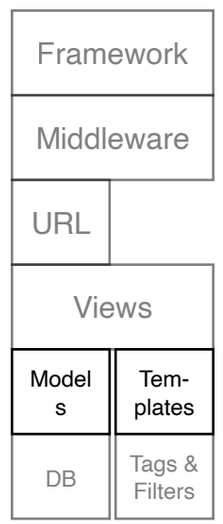


Let’s see the code!

git reset --hard ex17

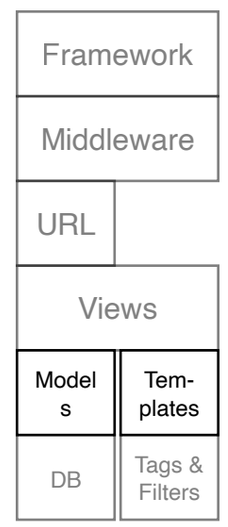
Read-Only Data in Generic Edit Views

- Model Form automatically builds form elements for everything in the model
- Model Form excludes anything that it was told to exclude
- Excluded fields are still available as attributes of a variable called “object” (the object being displayed/edited)



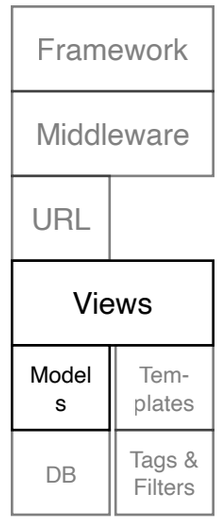
Read-Only Data in Generic Edit Views

```
<form ...>
    {% csrf_token %}

    {{ form.as_p }}

    <p><input type="text" id="flavor"
        value="{{ object.flavor }}" disabled ></p>

    <input type="submit" value="Save Changes">
</form>
```



Exercise 18

- Change the talk form from the previous exercises
- Show time slot, location, and approval status without allowing them to be modified

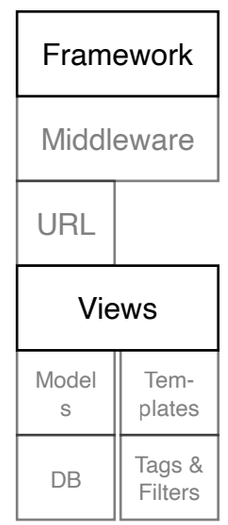


Let’s see the code!

git reset --hard ex18

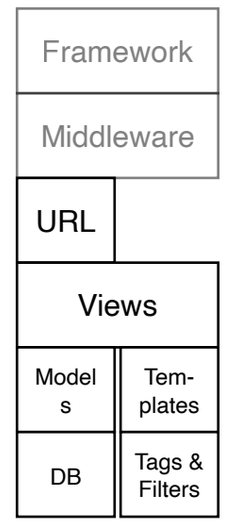
Requiring Login

```
from django.contrib.auth.decorators import \
        login_required


@login_required
def my_login_only_view(request):
    return render(request, "myapp/my_view.html")
```



Exercise 19

- Require login on the user profile page

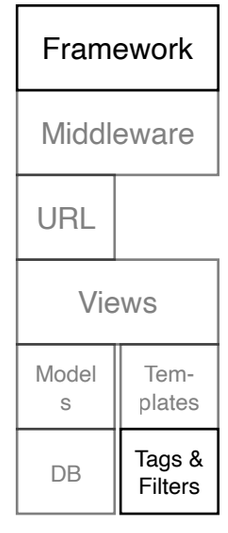


Let’s see the code!

git reset --hard ex19

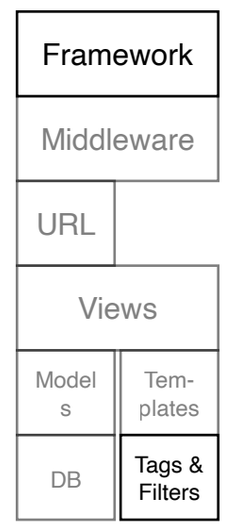
Custom Template Filters

- Django comes with many filters
- You can add your own
- Function that accepts a value and returns a string



Defining a Custom Filter

```
# In myapp/templatetags/myfilters.py...

from django import template
from django.utils.html import format_html

register = template.Library()


@register.filter
def my_filter(value):
    ...
    return format_html("...")
```



Using a Custom Filter

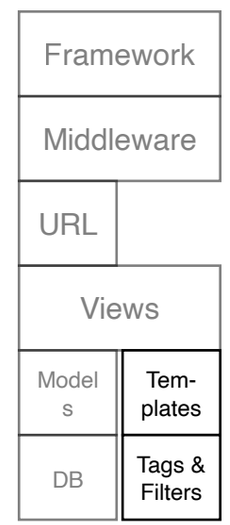
{% load myfilters %}

{% block content %}

{{ foolmy_filter }}

{{ bar }}

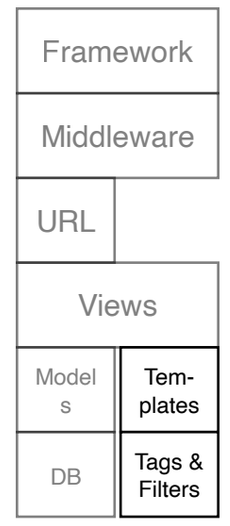
{% endblock %}



Exercise 20

- Create a custom filter function “boolean_icon” that will show one image if a value is True and another if it’s False
- Use the boolean_icon in the user’s profile to indicate whether a talk has been approved
- Use static icons from the admin site:

```
from django.contrib.admin.templatetags.admin_static import static

icon_url = static('admin/img/icon-{0}.gif'.format(
        {True: 'yes', False: 'no', None: 'unknown'}[value])
```

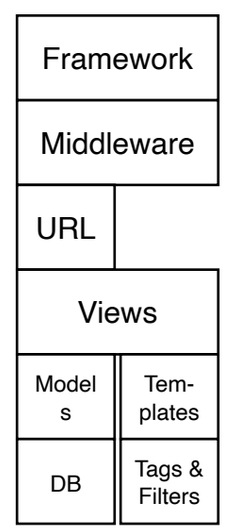


Let’s see the code!

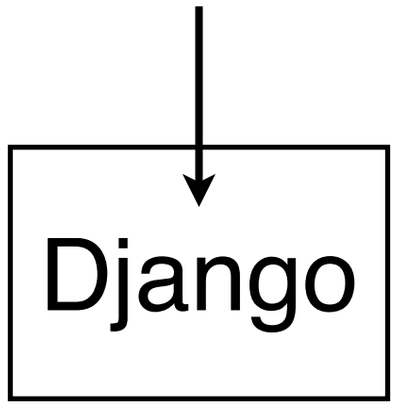
git reset --hard ex20

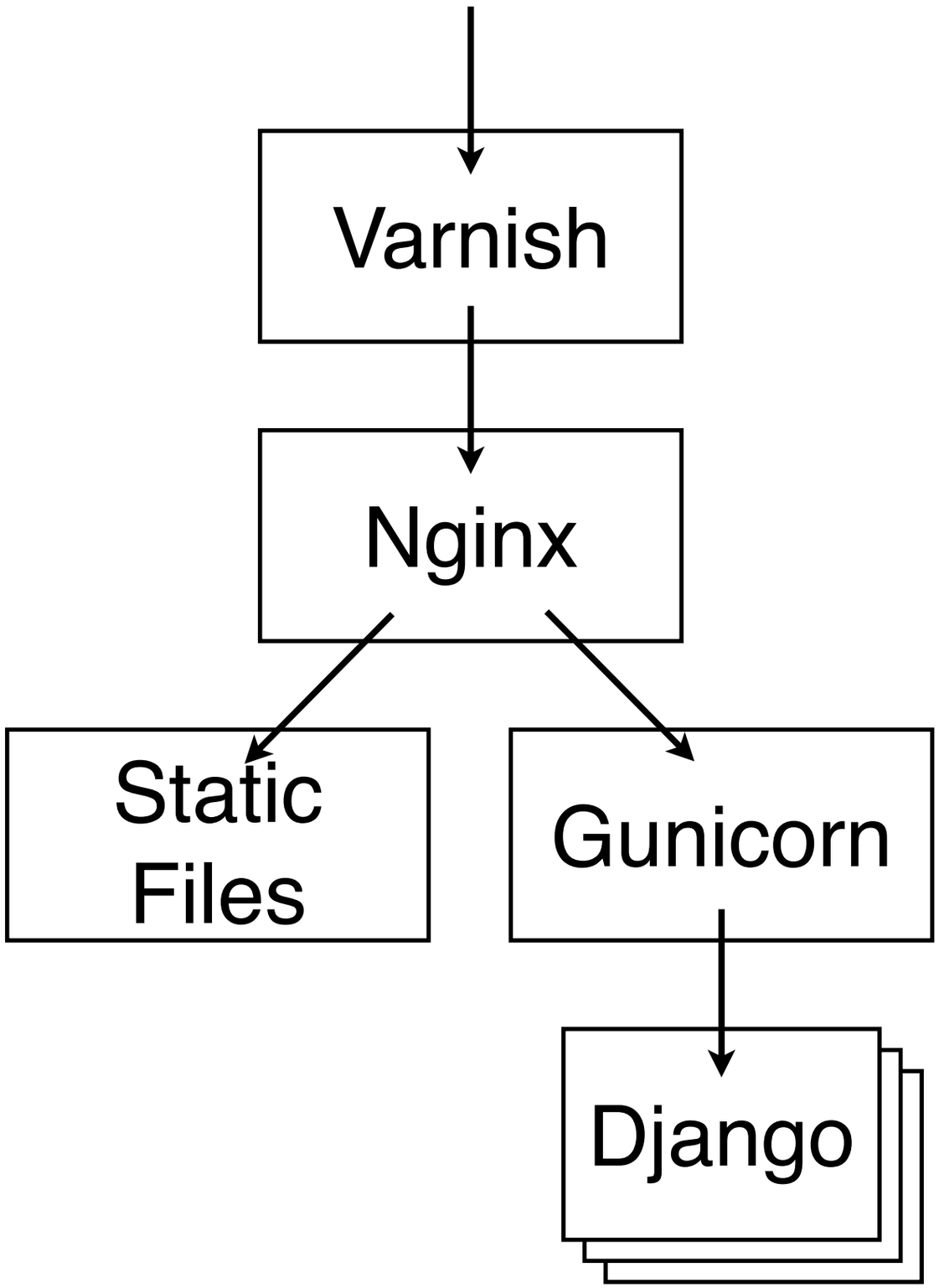
Bonus Exercises

- Show talks by time slot and/or location
- Blog; include RSS feed
- Sponsorship; include sponsor image upload and display
- Enhance user profiles; include image upload, default to Gravatar
- Room swap/ticket swap



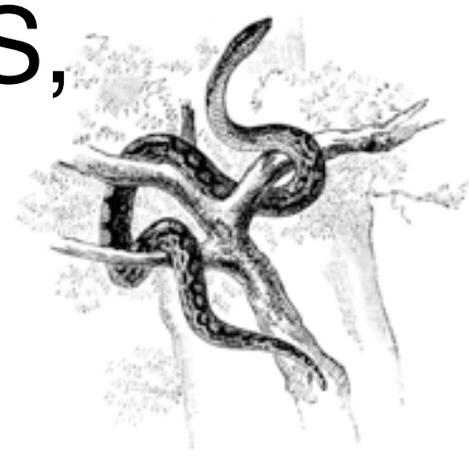
A Little Bit About Deployment


Django


Varnish
Nginx
Static
Files
Gunicorn
Django

Where to Deploy

- Gondor.io
- Heroku
- Webfaction
- Google App Engine
  (if that's what you're into)
- Your favorite VPS (Rackspace, AWS, etc.)



Questions?

Links

- http://python.org
- https://djangoproject.com
- https://github.com/finiteloopsoftware/django-precompiler

Credits

- Image from *Django Unchained* by Sony Pictures

http://www.nydailynews.com/entertainment/tv-movies/django-star-foxx-life-built-race-article-1.1220275

- Image of Django Reinhardt by ~Raimondsy

http://raimondsy.deviantart.com/art/Django-Reinhardt-3149

- Other images from ClipArt Etc.

http://etc.usf.edu/clipart/

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Thanks for coming & happy hacking!