MIT
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Indonesia Summer 2013
Meetup 10 – Models, Views, Templates

MISTI

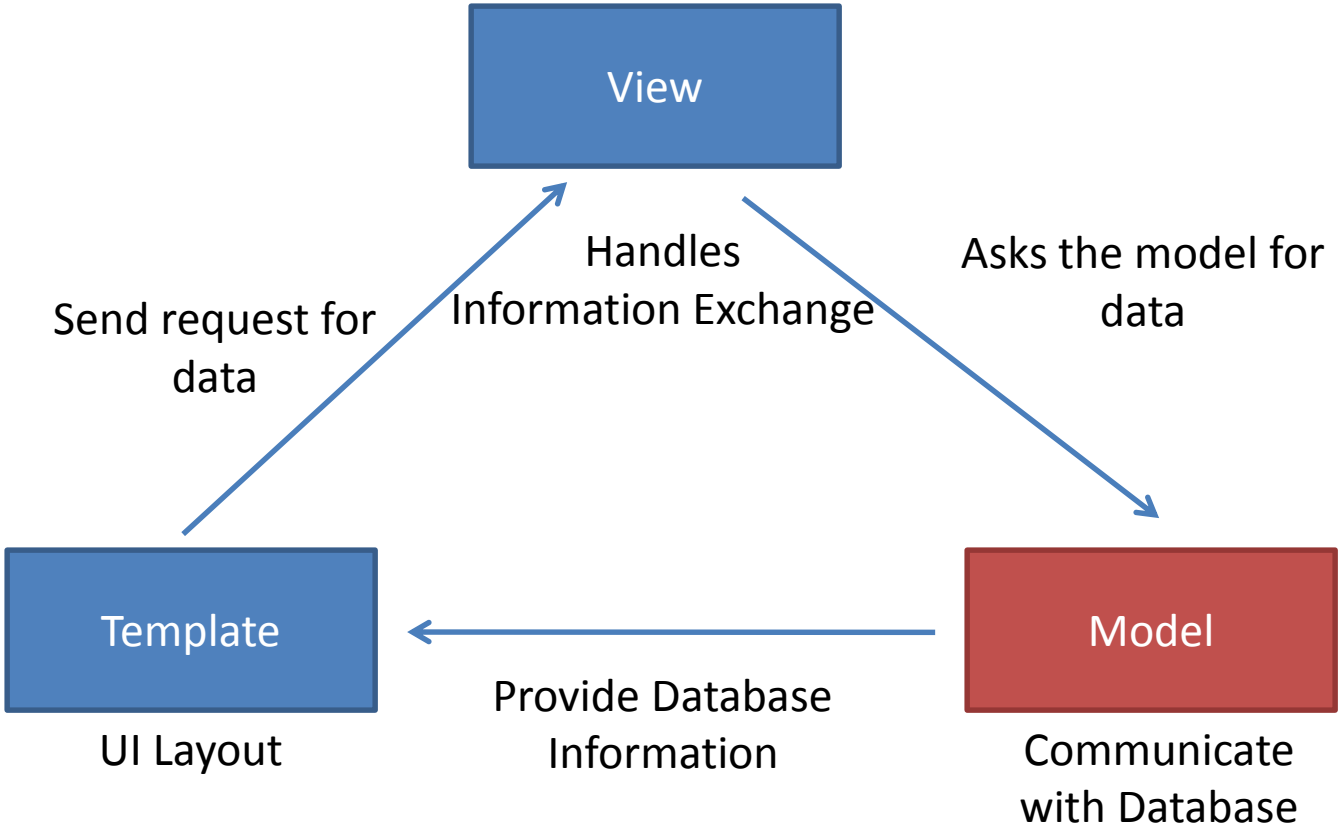
Google

Today‘s Meetup

- Models
- Templates
- Views
- Today‘s Assignment

Models

Models


View
Handles
Information Exchange
Send request for
data
Asks the model for
data
Template
UI Layout
Provide Database
Information
Model
Communicate
with Database

What is a Model

- A Python class describing data in your application
  - Subclass of models.Model
- Defined in **`models.py`** inside the *appFolder*
- Assigns attributes to each data field that is implemented
- Avoid direct work with the database
  - No need to handle database connections, timeouts, etc. Let Django do it for you.
  - Provides Schema for Database

Django Model Syntax

Import statements

SubClass of models.Model Class

Define fields

__unicode__ corresponds to python __str__

Can define more functions

```
from django.db import models
import datetime
from django.utils import timezone

# Create your models here.

class Poll(models.Model):
    question = models.CharField(max_length=200)
    pub_date = models.DateTimeField('date published')

    def __unicode__(self):
        return self.question

    def was_published_recently(self):
        return self.pub_date >= timezone.now() - datetime.timedelta(days=1)
```

Django Fields

We can define fields directly in our model class

– No need to define manually in database

Example: create two fields in our Poll class

```
class Poll(models.Model):
    question = models.CharField(max_length=200)
    pub_date = models.DateTimeField('date published')
```

Define Type of Field

- E.g. models.CharField

Define arguments of field

- E.g. max_length=200

Django will automatically create fields in database

Important Django Field Types

- BooleanField
  - Checkbox
- CharField(max_length)
  - Single-line textbox
- DateField
  - Javascript calendar
- DateTimeField
  - Javascript calendar, time picker
- DecimalField(max_digits, decimal_places)
  - Decimal numbers
- EmailField
  - Charfield that validates email address
- FileField
  - File upload, stores path in database
- FloatField
  - Floating point numbers
- IntegerField
  Integer textbox
- PositiveIntegerField
  - Integer textbos for positive integers
- TextField
  - Multi-line textbox

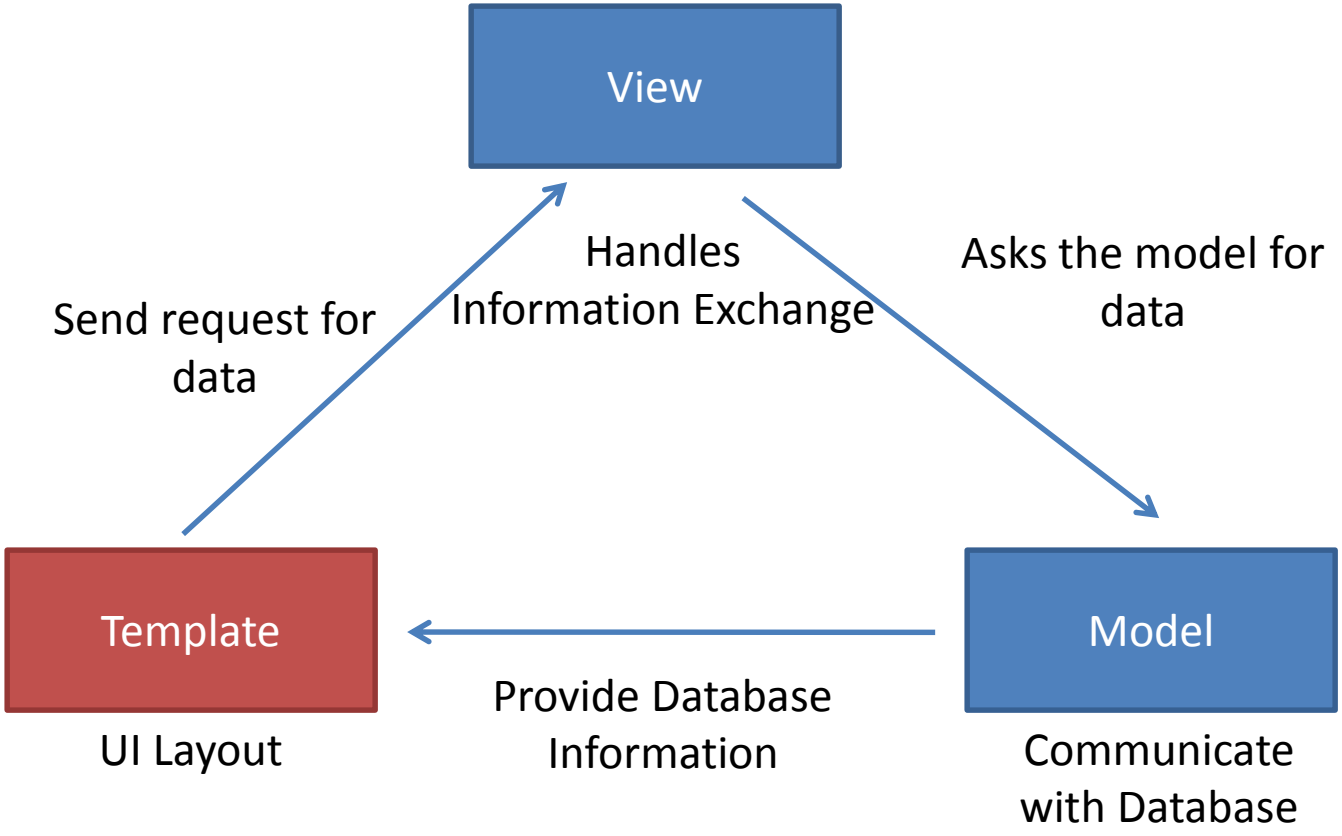
Rules of Django Models

- When you update a model, ALWAYS RUN
  python manage.py syncdb
- All classes extend **models.Model**
- Models only live in **Apps**
- Django doesn't save objects until you call **save()** method

```
>>>a1 = Album(...)
# a1 is not saved to the database yet!
>>>a1.save()
# Now it is.
```

Templates

Templates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What is a template?

- A text-based template for HTML, CSS, XML, JavaScript, etc.
- Defines the Layout of your Webpage in [name].html in your template directory
- Can contain
  - Hard coded text
  - Variables: {{ ... }}
  - Tags: {% ... %}

https://docs.djangoproject.com/en/1.5/topics/templates/

Django Template Syntax

```
<h2>The Latest 5 Polls</h2>

{% if latest_poll_list %}
    <ul>
    {% for poll in latest_poll_list %}
        <li><a href="/polls/{{ poll.id }}/">{{ poll.question }}</a></li>
    {% endfor %}
    </ul>
{% else %}
    <p>No polls are available.</p>
{% endif %}
```

Hard coded text

Tags: {% ... %} that control logic

Variables: {{ ... }} that get replaced

Setting Variables

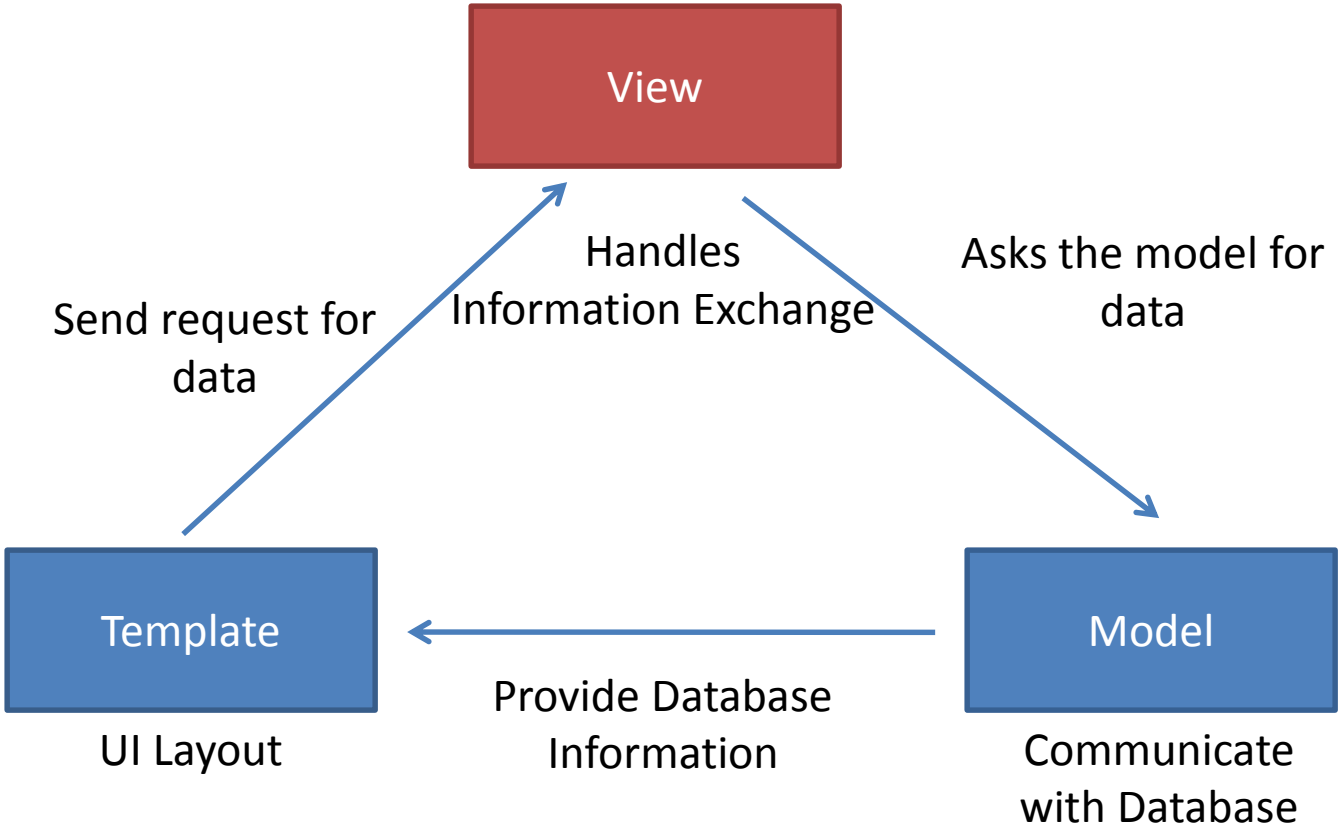
Templates by themselves are not very useful

How do we insert the content from our database into our UI?

Use **Views** to connect **Models** and **Templates**!

Views

Views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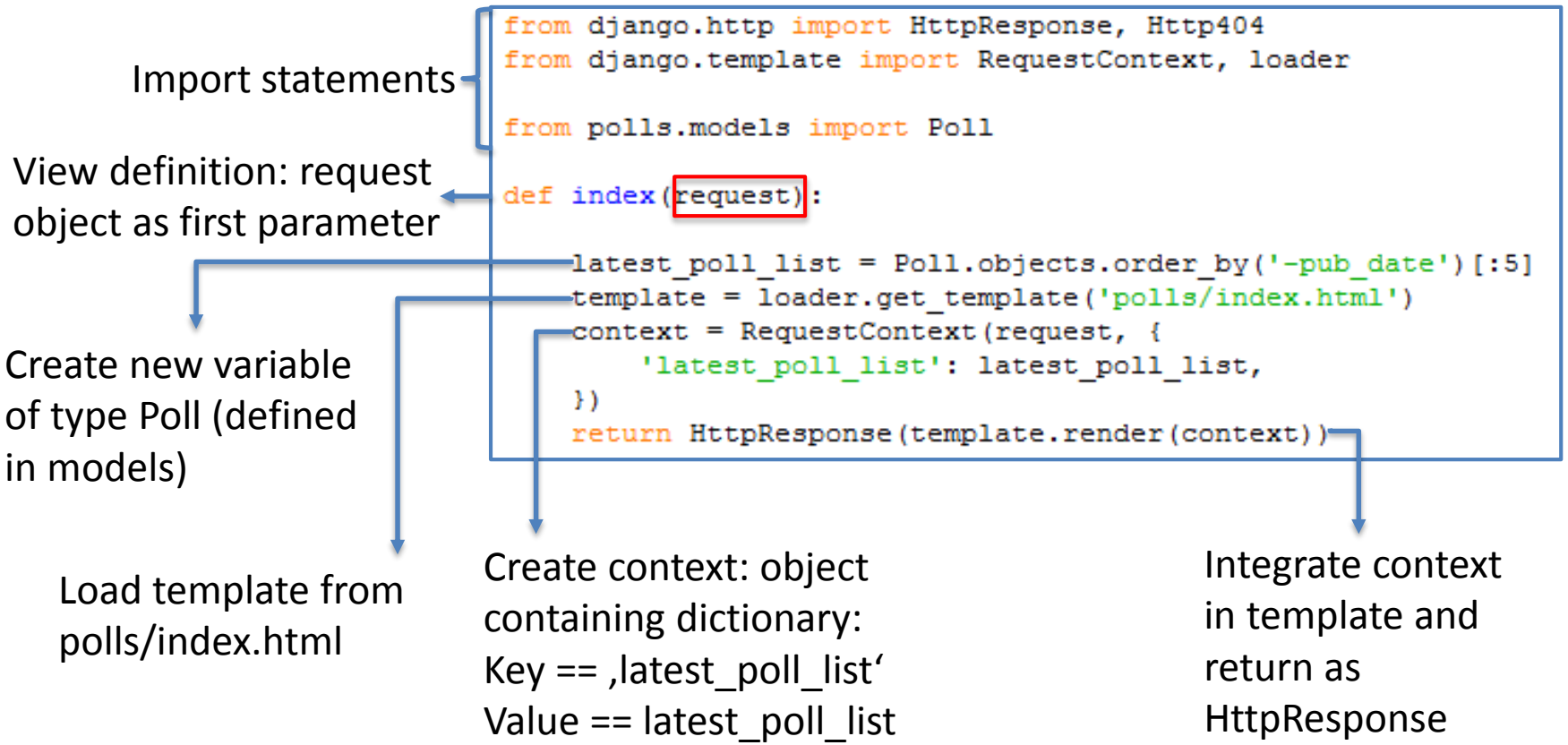
What is a view

- Views are the logical interface between data (Models) and presentation (Templates)
- Defined in **`views.py`** inside the *appFolder*
- EVERY view takes a request object as first parameter
- EVERY view returns an **`HttpResponse`** object

```
from django.http import HttpResponse
def hello(request):
   return HttpResponse("Hello world")
```

Django View Syntax



Directing http requests to views

e.g. user requests http://[host]/polls/12/results

1.: look in [project]/mysite/urls.py
(set in settings.py)

```
from django.conf.urls import patterns, include, url
from django.contrib import admin
admin.autodiscover()

urlpatterns = patterns('',
    url(r'^admin/', include(admin.site.urls)),
    url(r'^polls/', include('polls.urls')),
)
```

2.: Direct to
[project]/mysite/polls/urls.py

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

from polls import views

urlpatterns = patterns('',
    # ex: /polls/
    url(r'^$', views.index, name='index'),
    # ex: /polls/5/
    url(r'^(?P<poll_id>\d+)/$', views.detail, name='detail'),
    # ex: /polls/5/results/
    url(r'^(?P<poll_id>\d+)/results/$', views.results, name='results'),
    # ex: /polls/5/vote/
    url(r'^(?P<poll_id>\d+)/vote/$', views.vote, name='vote'),
)
```

3.: Find url and load
views.results

Request Life Cycle

1. User requests to view URL
2. Django determines the root URLconf by looking at the ROOT_URLCONF setting.
3. Django looks at all of the URLpatterns in the URLconf for the *first* one that matches the URL
4. If it finds a match, it calls the associated view function.
   - Repeats Steps 3-4 if redirected to another urls.py
5. The view function returns an HttpResponse.
6. Django converts the HttpResponse to the proper HTTP response, which results in a Web page.

Today‘s Assignment

Today‘s Assignment

Carry on with the Django Tutorial

- Create an Admin page for your Website

  Writing your first Django App – Part 2

- Learn how to configure Views and Templates

  Writing your first Django App – Part 3

Helpful Documentation:

- Chapters 3-6 of The Django Book