Accelerating Information Technology Innovation

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Sri Lanka Summer 2012
Lecture DJ02 – Django Models

What is a model?

- A class describing data in your application
- Basically, a class with attributes for each data field that you care about
- The schema for your data

Django models

- Avoid direct work with the database
- No need to handle database connections, timeouts, etc. Let Django do it for you.
- Class that extends models.Model

Django fields

- All you do is define a field type
  - Ex: active = models.BooleanField()
- Django handles the rest:
  - Bit value in sql database
  - Represented as a checkbox on a webpage
  - Validation of values

Django Model Syntax

```python
class Musician(models.Model):
    first_name = models.CharField(max_length=50)
    last_name = models.CharField(max_length=50)
    instrument = models.CharField(max_length=100)
    def __unicode__():
        return last_name+", "+first_name


class Album(models.Model):
    artist = models.ForeignKey(Musician)
    name = models.CharField(max_length=100)
    release_date = models.DateField()
    num_stars = models.IntegerField()
    def __unicode__():
        return name
```

Django Model Syntax

- ```python
  class Album(models.Model):
  artist = models.ForeignKey
  (Musician) name =
  models.CharField
  (max_length=100) release_date =
  models.DateField() num_stars =
  models.IntegerField()
  ```

Important Django field types

- BooleanField
  - Checkbox

- CharField(max_length)
  - Single-line textbox

- DateField
  - Javascript calendar

- DateTimeField
  - Javascript calendar, time picker

Important Django field types

- DecimalField(max_digits, decimal_places)
  - Decimal numbers
- EmailField
  - Charfield that validates email address
- FileField
  - File upload, stores path in database
- FloatField
  - Floating point numbers

Important Django field types

- IntegerField
  - Integer textbox

- PositiveIntegerField
  - Integer textbos for positive integers

- TextField
  - Multi-line textbox

Important Django Field types

- TimeField
  - Time picker
- URLField
  - Textbox for URLs
- Anything you create

Field options

- Null
- Blank
- Choices:
  - List or tuple of 2-tuples to use as field choices
  - Django will represent it with a drop-down instead of a textbox
- Default
- Help text

More field options

- Primary key

- unique

- Verbose field name

DateField and DateTimeField options

- Auto_now
  - Any time the object is saved, the field will be updated with the current time.

- Auto_now_add
  - The time will always be equal to the creation date of the object.

Model Methods

- __unicode__():
  - Equivilant of toString – used for auto-generated admin pages

- Get_absolute_url()
  - Used for deciding URLs that reference a specific object

Django Relationship Fields

- ForeignKey(foreign class)
  - Many-to-one
- ManyToManyField(foreign class)
  - Uses a temporary table to join tables together
- OneToOneField(foreign class)
  - Enforces uniqueness

Rules of Django Models

1. When you update a model, ALWAYS RUN

`python manage.py syncdb`

2. Keep code clean

3. Always create a __unicode__() method

4. Name your variables well

5. Don't think too much about the database