Accelerating Information Technology Innovation

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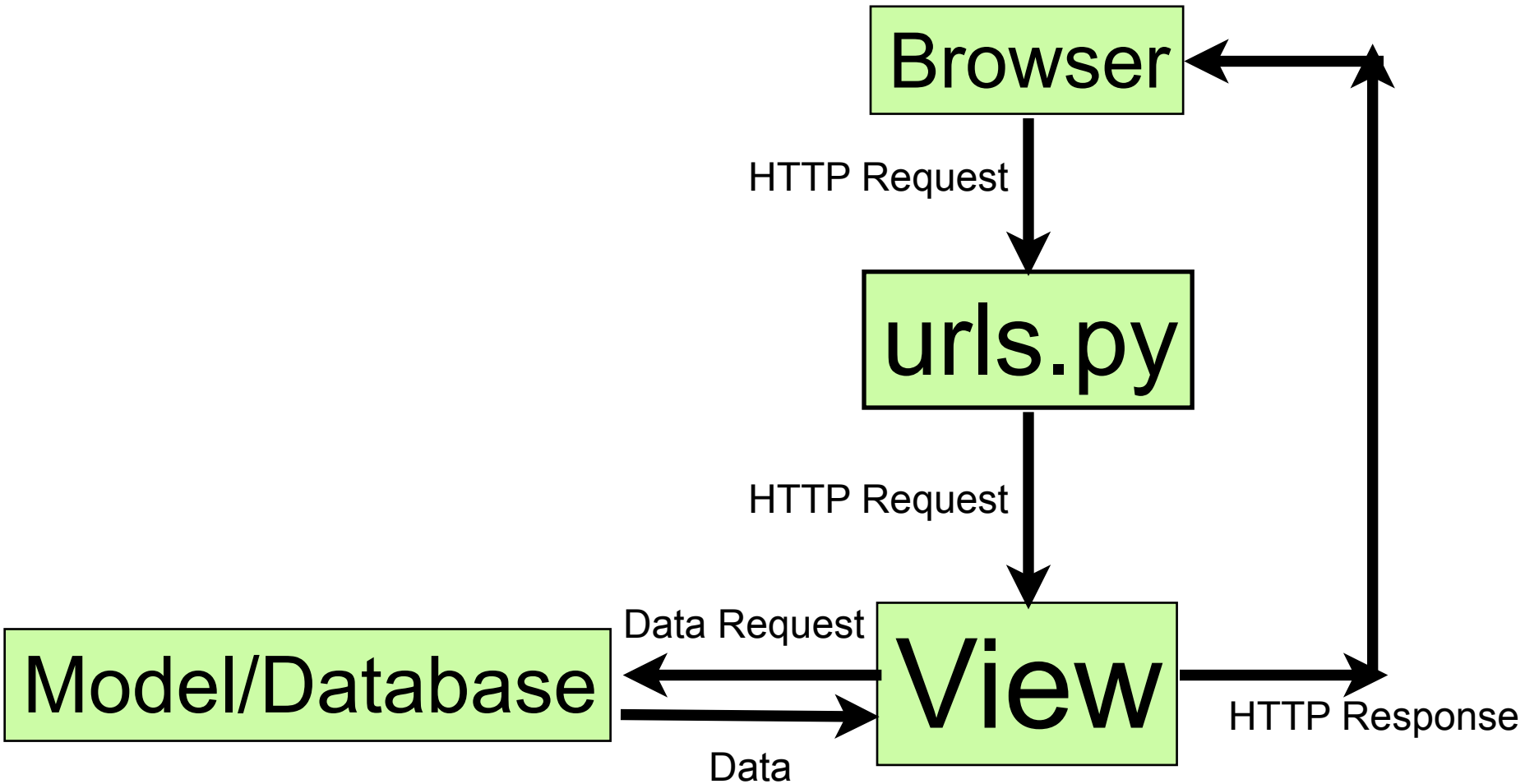
Ghana Summer 2012
Lecture DJ04 – Django Views

MISTI

Simple Diagram



Web Browsing

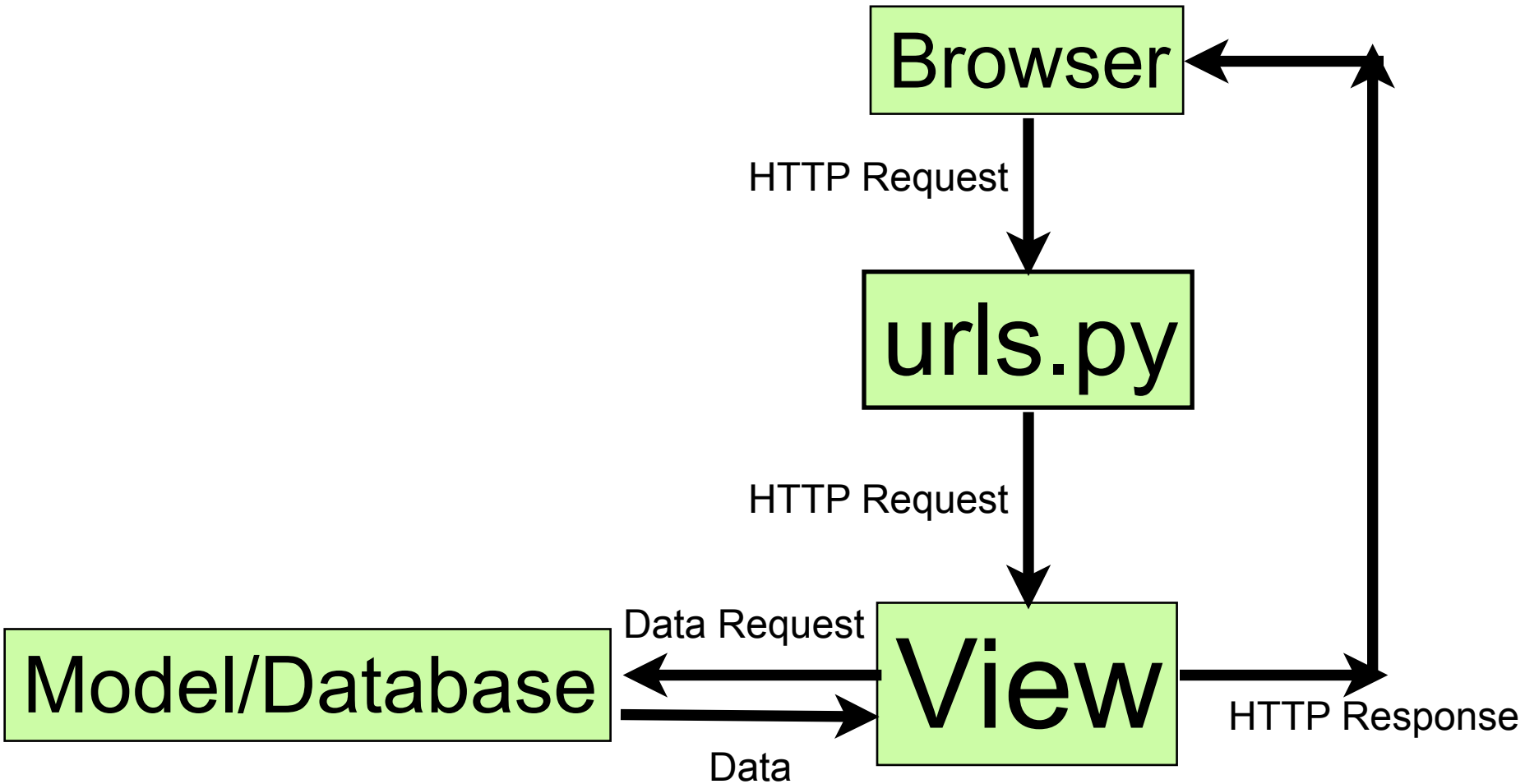
Users submit requests to websites through:

- Desktop web browsers and applications
- Smartphone web browsers and applications

- Django calls a view function associated with the URL

- User defines a map between the URL and the view function

Simple Diagram



Hello World! Django

Sample URLConf and view function below

hello_world/urls.py

```
from django.conf.urls.defaults import
patterns, include, url
urlpatterns = patterns('',
   url(r'^$', 'views.hello_world')
```

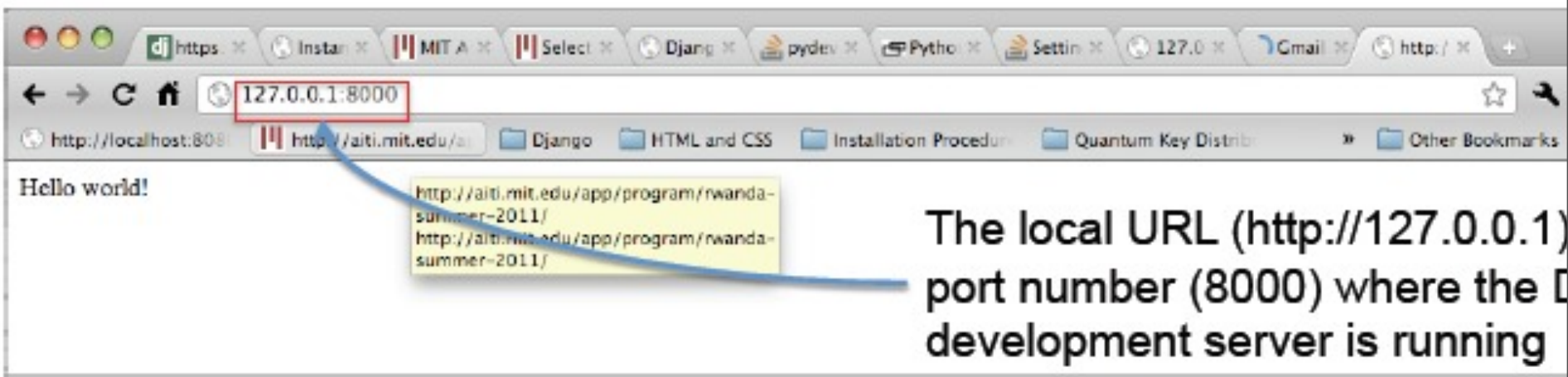
hello_world/views.py

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

Hello World! Django

Let's see the results!

– `python manage.py runserver`



- Cool! How do we make more exciting websites?
- Models- Store useful information
- Templates- Produce dynamic pages
- Views- We can do a lot more than "Hello world!"

Checkpoint

- Which file should we modify (and how) if we want to see “Hello World!” at the following URL?
  - http://127.0.0.1:8000/hello_world

- Which file(s) should we modify (and how) if we want to see “Hello Mars” at the following URL?
  - `http://127.0.0.1:8000/hello_mars`

Views

- How can we customize the view?
  - parameters from the URL (regexps)

Views

- Parameters in the URL
  - Regular Expressions specify the rules for URL's
    - Resources available online to learn more
- Consider a universal greeting:

```
urlpatterns = patterns('', url(r'^hello_(?
 P<planet>\w+)/$', 'views.hello_anyone'),
)
```

Views

- Universal greeting

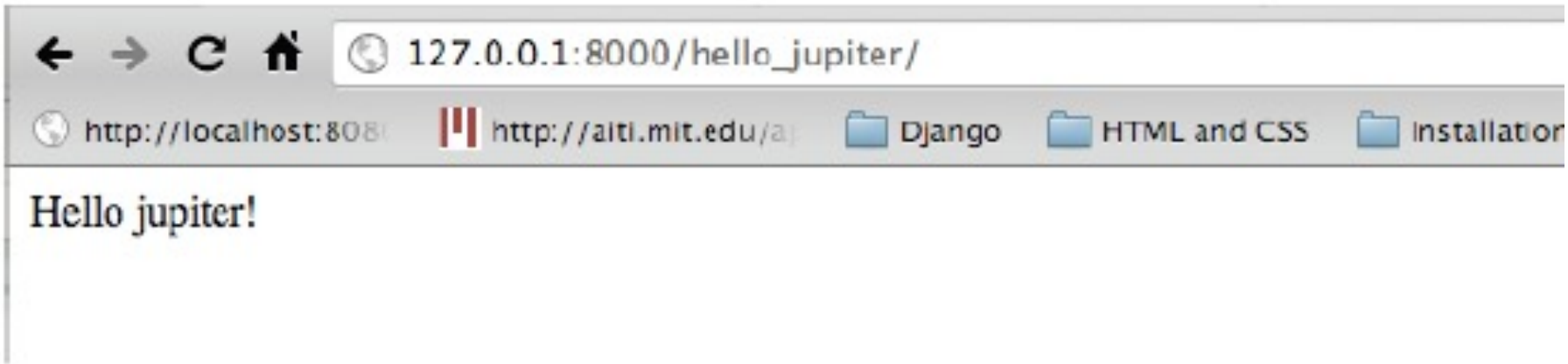
```
urlpatterns = patterns('',
url(r'^(hello)_w+/$', 'views.hello_anyone'),
)
```

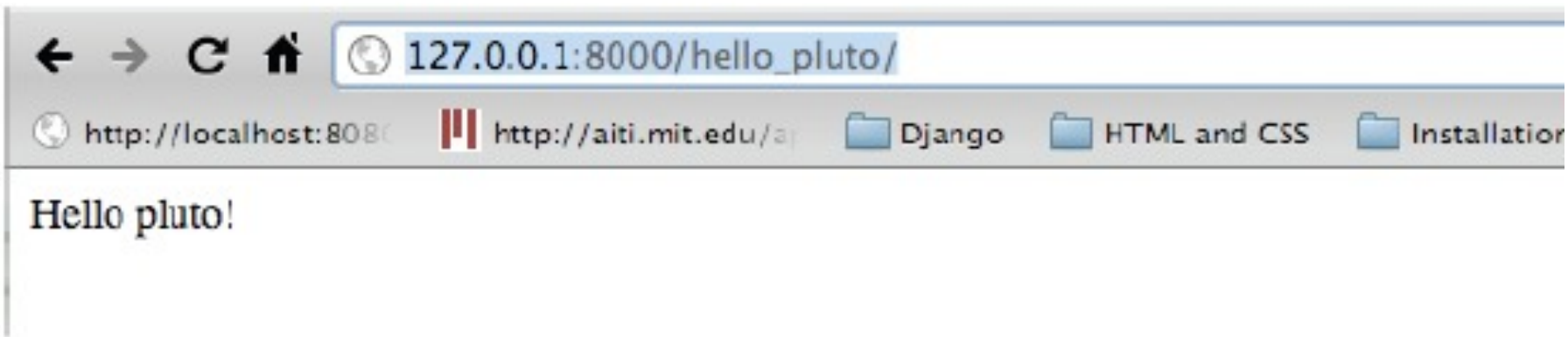
- Our view function has two parameters
  - request (`HttpRequest` object)
  - planet (string object)

```
from django.http import HttpResponse
def hello_anyone(request,planet):
      my_response = "Hello " + str(planet)
      return HttpResponse(my_response)
```

Views

- Testing it out…





Database Interaction

- We want to be able to display information from our database tables as well!

Getting all data

```
Blog.objects.all()
```

Gets all the data associated with the model but does NOT execute the query

It’s not a list, it’s an instance of QuerySet

Filtering Data

- `exact`: gets an exact match
  - `Blog.objects.filter(title__exact='cool')`
  - `Blog.objects.filter(title='cool')` #__exact is implied
- `contains`: find if a match is contained inside a field
  - `Blog.objects.filter (blog_text__contains='cool')`
- `icontains`: case insensitive contains
  - `Blog.objects.filter (author__icontains='smith')`
- More here: https://docs.djangoproject.com/en/1.3/ref/models/querysets/#field-lookups

Ordering

- `Blog.objects.order_by('-pub_date', 'title')`
  - First orders by `pub_date` in descending order (hence the negative sign). If there are `pub_dates` that are equivalent, then `title` is ordered in ascending order.

Values

- `Blog.objects.values()`
  - Returns a `ValueQuerySet`, which returns a list of dictionaries *when executed*
- `Blog.objects.values('title', 'body')`
  - Returns only the fields `title` and `body` in the dictionary

```
# This list contains a Blog object.
>>> Blog.objects.filter(name__startswith='Beatles')
[<Blog: Beatles Blog>]

# This list contains a dictionary.
>>> Blog.objects.filter
(name__startswith='Beatles').values()
[{'id': 1, 'name': 'Beatles Blog', 'tagline': 'All the
latest Beatles news.'}]
```

Distinct

- `Blog.objects.distinct()`
  - If there are any duplicate rows, only one is returned
  - This will rarely work like this, because you often will already have a distinct field, like an id

- `Blog.objects.distinct('title', 'body')`
  - This will get all unique `title-body` combinations

Slicing

- `Blog.objects.all()[:5]`
  - Gets the first 5 blog objects
  - The limit happens in the sql query
    - ex: SELECT * FROM users LIMIT 5

`Get`

- Gets a single row

- raises `MultipleObjectsReturned` if more than one object was found.

- raises a `DoesNotExist` exception if an object wasn't found for the given parameters.

`Get` continued

- `Blog.objects.get(id=5)`
  - Returns a single `QuerySet` if there is a row that exists, otherwise an error ensues

- `Blog.objects.filter(id=5)[0]`
  - Similar, except no exceptions are thrown

When are `QuerySets` Evaluated?

- Iteration

```
for e in Entry.objects.all():
    print e.headline
```

- Boolean

```
if Entry.objects.filter(headline="Test"):
   print "There is at least one Entry with
the headline Test"
```

Lookups that span relationships

- `Blog.objects.filter(comment__title__contains='Lennon')`
  - Retrieves all `Blog` objects with a comment whose `title` contains '`Lennon`'

Views Example

```
def get_titles(request, limit=100):
    book_list = Book.objects.all()[:limit]
    response = 'List of titles is:'
    for b in book_list:
      response+=str(b.title)
    return HttpResponse(response)
```