Getting Started with Web Development with Django

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IrPycon

Feb 2018 - Tehran - IUST

Who am I ?

- Reza ShalbafZadeh
- Software Developer and DevOps Engineer
- Working in Miare

Some Stats About Miare

- About 15000 commits
- More than 1300 tests on Django
- More than 2M Request Per Day
- Join US! sazary@miare.ir

ميارة
miaré

D is silent!

/dʒæŋʊ/

What we gonna Learn?

- How not get scared in current state of Web
- Basic Web Development Concepts
- What is Django and how to learn it

Software World

- Mostly Web Applications and Applications this days

Internet ,Web and ...

But first let be clear

- It ’s HARD

VERY HARD

BUT

POSSIBLE!

LEARN TO LEARN:

- Yak Shaving
- Bike Sheding

STAR
WORLD

Necessary Skill Set

Ruby on Rails Competencies

- Ruby language
  - Object oriented programming
    - Classes & modules
    - Methods & methods
    - Inheritance & mixins
  - Core libraries
    - Enum
    - Time & Date
  - Concurrency
    - Threads
    - Fibers & Enumerators
  - Metaprogramming
  - Unit testing & debugging
  - Idiomatic Ruby
- Rubygems
  - RVM & Gemsets
  - Gems
    - File structure
    - Dependency declaration
  - Bundler & dependency management
- Rails framework
  - MVC
    - Request routing & dispatching
    - URL helpers
    - Templates
      - Layouts & partials
      - Forms & validations
      - Template helpers
  - ORM
    - Migrations
    - Relational schemas
      - Migrations
      - Associations
      - Foreign keys
      - Indexes
    - Transactions
    - Associations
      - Eager loading
      - Polymorphic associations
    - Validations & callbacks
  - View management
    - Internationalization
    - Partial templates
    - Multi-format
  - Controllers & routing
    - RESTful conventions
    - Filters
    - Security & defaults
  - CLI
    - Rails commands
    - Rake tasks
    - Generators
  - Asset pipeline
- Git
  - Version control options
    - Basic use of VCS
    - Branch
    - Merge
    - Diff
  - GitHub
    - Fork
    - Pull requests
  - Config
    - Aliases
    - Default behaviors
- IDE/Text editor
  - Keyboard shortcuts
  - Syntax highlighting
  - Incremental search
  - Navigation
  - Customizability
  - Power editing
    - Multi-line edits
    - Permanent History
    - Rapid Fire multi-edits
- Software engineering
  - Agile software delivery
    - Modularization & SOA
    - Encapsulation of domain logic
  - Agile process
    - Project ownership & user stories
    - Iterative cycles
      - Testing & pairing
      - Code style review
      - Code refactoring
    - High-bandwidth communication
  - Project management
    - Planning & estimation
    - Tools & documentation
    - Learning
- Operating system
  - File management
  - Job & process control
  - Package management
  - Local web server
- Command line
  - Bash profile
  - Secure connection & keys
  - File system basics
- HTTP
  - Request
    - Methods
    - Params
    - Cookies
    - Query
    - Schema
  - Response
    - Status codes
    - Header types
- HTML
  - The DOM
  - Semantic markup
  - XHTML
  - HTML5 features & compatibility
- CSS
  - Box & Layout
  - CSS Frameworks
  - Browser quirks
  - Selectors & specificity
- JavaScript
  - Libraries
    - jQuery
    - Local data storage
  - Prototypal inheritance
  - Anonymous functions
  - AJAX
  - CoffeeScript
- Web
  - Types
    - Unit
    - Functional
    - Integration
    - Environment
    - Acceptance
    - Regression
  - Tools
    - Object Mother & fixtures
    - Factories & fixtures
    - Mocks & stubs
  - TDD/BDD
    - Red/Green/Refactor
    - Outside-in development
- Web in Depth/Hosting
  - Select
    - Group
    - Order
    - Limit
  - Insert & update
  - Transactions
  - Joins
  - Performance
    - Slow query logs
    - Query plans
    - Client-side caching
- Deployment
  - Automation
    - Continuous Deployment
    - Continuous Integration
    - Server provisioning & logging
  - Configuration management
    - Release management
    - Security & data integrity
  - Platform
    - Deployment
    - Virtualization
    - Multi-tenancy

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Job Market in Iran

Very High Demand with Very Low Supply

Job Market in The World

- Very Good
- Many Big names , Instagram , Disqus, Bitbucket,NASA

Ok back to track

What is a library

A software library is a suite of data and programming code that is used to develop software programs and applications. It is designed to assist both the programmer and the programming language compiler in building and executing software.

What is a framework

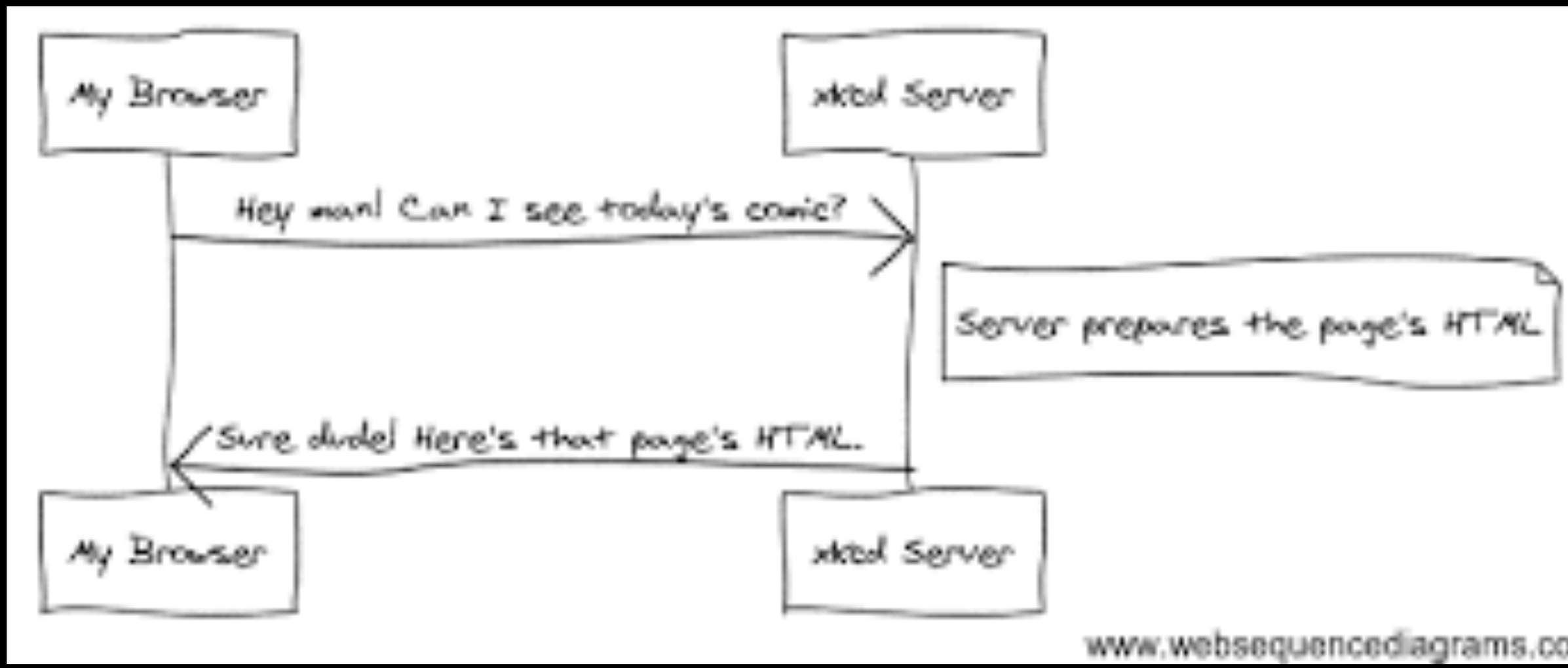
In computer science, a software framework is an abstraction in which software providing generic functionality can be selectively changed by additional user-written code, thus providing application-specific software. A software framework provides a standard way to build and deploy applications.

Our Toolset

- Pip
- Virtualenv
- Git

World Wild Web

HTTP


My Browser
xkcd Server
Hey man! Can I see today's comic?
Server prepares the page's HTML
Sure dude! Here's that page's HTML.
My Browser
xkcd Server
www.websequencediagrams.com

How it Works

Web Browser
(HTTP Client)
Web Server
(HTTP Server)
Time
Request
GET /index.html HTTP/1.1
Host: www.example.org
Response
HTTP/1.0 200 OK
Content-type: text/html
Set-Cookie: name=value
Set-Cookie: name2=value2;
Expires=Wed, 09 Jun 2021 10:18:14 GMT

Request - Response

Backend - Frontend

Lets dive in backend

Why Python

- It’s easy
- A lot of libraries for almost anything
- Strong Community
- Close to human language

Django

Who uses Django?

- Instagram
- Disqus
- Bitbucket
- Nasa
- Eventbrite

A bit of history

- Goes back to 2005
- Evolved Since

Django Principles

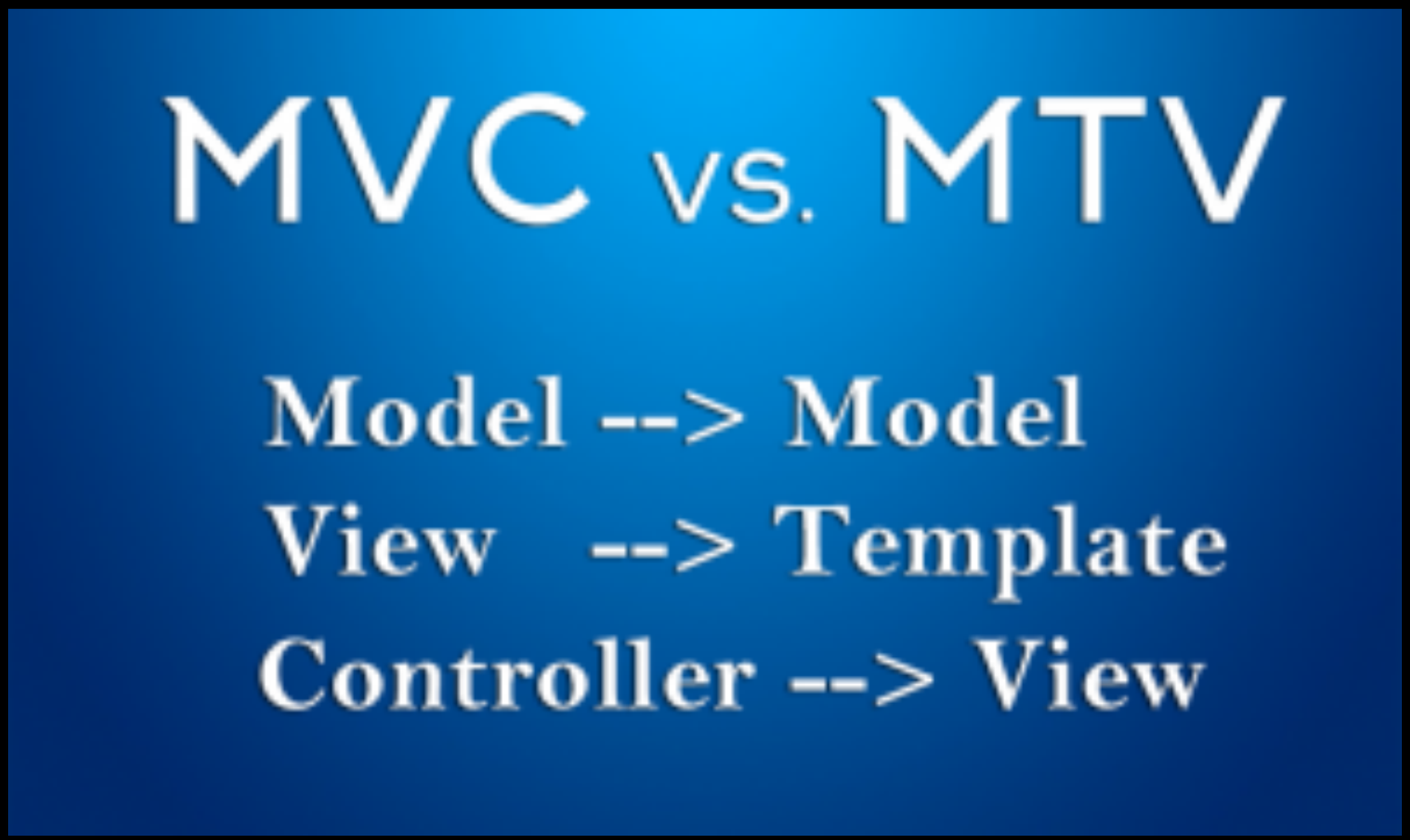
- **Less code**
- **DRY**
- **Quick development**

Explicit is better than implicit

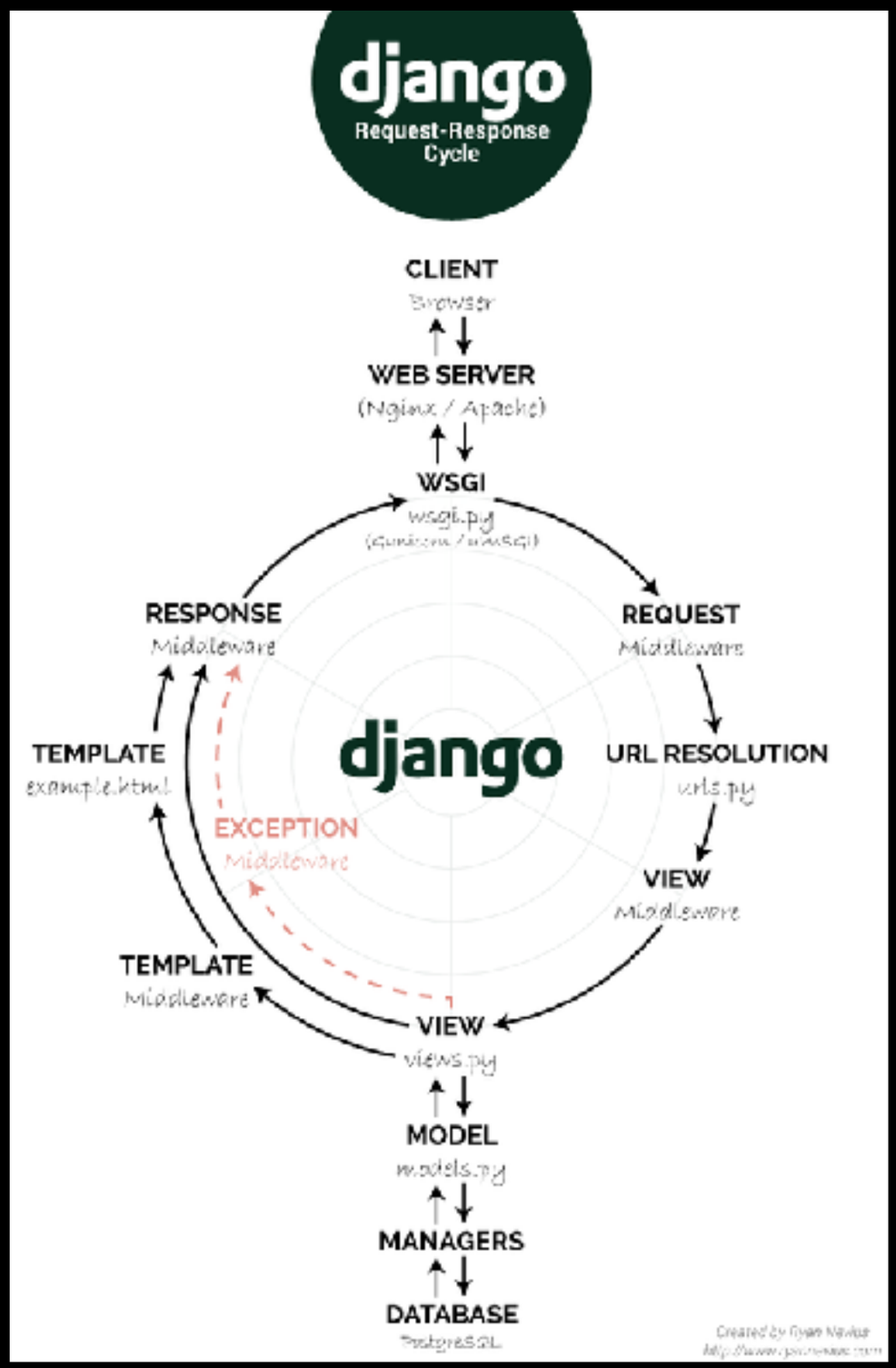
- **Convention over Configuration**

MVC Pattern

MTV vs MVC



Django Under the hood



Two Approaches:

- Django as a RESTful API
- Django as a full stack framework

A bit of SQL

```
CREATE TABLE STATION
(ID INTEGER PRIMARY KEY,
CITY CHAR(20),
STATE CHAR(2),
LAT_N REAL,
LONG_W REAL);
```

```
INSERT INTO STATION VALUES (13, 'Phoenix', 'AZ', 33, 112);
INSERT INTO STATION VALUES (44, 'Denver', 'CO', 40, 105);
INSERT INTO STATION VALUES (66, 'Caribou', 'ME', 47, 68);
```

SELECT * FROM STATION;

ID	CITY	STATE	LAT_N	LONG_W
13	Phoenix	AZ	33	112
44	Denver	CO	40	105
66	Caribou	ME	47	68

SELECT * FROM STATION
WHERE LAT_N > 39.7;

ID	CITY	STATE	LAT_N	LONG_W
44	Denver	CO	40	105
66	Caribou	ME	47	68

A sip of SQL

```
CREATE TABLE "people_person" (
    "id" integer NOT NULL PRIMARY KEY,
    "first_name" varchar(300) NOT NULL,
    "last_name" varchar(300) NOT NULL,
    "bio" text NOT NULL,
);
```

Django ORM kicks in

```
from django.db import models

class Person(models.Model):
    first_name  = models.CharField(max_length=300)
    last_name   = models.CharField(max_length=300)
    bio         = models.TextField()

    def __unicode__(self):
        return (%s %s) % (self.first_name, self.last_name)

    class Meta:
        ordering = ["last_name"]
        verbose_name = "Person"
        verbose_name_plural = "People"
```

Django URLs

http://www.mysite.com/post/12345/

^post/(\d+)/$ >> 12345

See This!

- https://github.com/codingforentrepreneurs/Guides/blob/master/all/common_url_regex.md

New Style of Url Patterns

polls/urls.py

```python
from django.urls import path

from . import views

urlpatterns = [
    # ex: /polls/
    path('', views.index, name='index'),
    # ex: /polls/5/
    path('<int:question_id>/', views.detail, name='detail'),
    # ex: /polls/5/results/
    path('<int:question_id>/results/', views.results, name='results'),
    # ex: /polls/5/vote/
    path('<int:question_id>/vote/', views.vote, name='vote'),
]
```

Django Views

```python
from django.http import HttpResponse
import datetime

def current_datetime(request):
    now = datetime.datetime.now()
    html = "<html><body>It is now %s.</body></html>" % now
    return HttpResponse(html)
```

Settings

- DATABASE, TIMEZONE , I10n,i18n,

Django Admin

- You just need few lines of code!

What about Security?

Django Ecosystem

- Awesome Django
- Django Packages
- Etc etc etc

- https://gitlab.com/rosarior/awesome-django

Django Packages

Search | Go

Home | FAQ | Sign in with Github

ACTIVITIES	AUTHORIZATION	CHAT	DATA TOOLS	DOCUMENT MANAG...
ADMIN INTERFACE	AUTO-COMPLETE	CMS	DEPLOYMENT	E-COMMERCE
ANALYTICS	AWARDS AND BADGES	COMMENTING	DESIGN	EMAIL
ANTI-SPAM	BLOGS	CONFIGURATION	DEVELOPER TOOLS	ERROR HANDLING
API CREATION	CACHING	COOKIECUTTERS	DJANGO-CMS	FEED AGGREGATORS
ASSET MANAGERS	CALENDAR	COUNTRIES	DJANGO REST FR...	FEEDBACK
AUTHENTICATION	CAPTCHA	CUSTOM MODELS	DJANGO SHOP PL...	FIELDS

Hands On Time!

Where to go now?

- https://developer.mozilla.org/en-US/docs/Learn/Server-side/Django (a Great Tutorial from Mozilla
- https://jadi.net/tag/%D8%A8%D8%B3%D8%AA%D9%88%D9%86/ (Bestoon by jadi for getting started with django from scratch)

- https://djangobook.com/ (a good book for beginners)
- https://hackr.io/tutorials/learn-django (list of courses)
- Deploy Django to real world
- Learn Django REST Framework in persian(https://www.aparat.com/kasaie/%D8%B3%DB%8C%D8%AF%D9%85%D8%AD%D9%85%D8%AF%D8%B1%D8%B6%D8%A7_%DA%A9%D8%B3%D8%A7%D8%A6%DB%8C_%D8%B4%D8%B1%DB%8C%D9%81%DB%8C)

- https://www.digitalocean.com/community/tutorials/how-to-set-up-django-with-postgres-nginx-and-gunicorn-on-ubuntu-16-04 (Deploy Django in Real World on VPS)

- Learn Git (https://jadi.net/2017/10/git/)
- Learn MVC By Taha Kamkar(https://dutymess.github.io/laravel-0-to-60/chapter01/lesson01/mvc/)
- Think Python Persian (Great for beginners)
- https://behroozam.github.io/persianthinkpython/

Other Resources

- Two Scopes of Django (A Great book to learn almost every aspect of Django from begining , highly recommended)

- https://docs.djangoproject.com/en/2.0/ref/models/fields/ (Reference of Django Models)