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1 – Setup Python Development Environment :













There are three ways to setup Python. Using Anaconda is the easiest way to get started according to MSDN. The first thing we have to do is install the Python tools for visual studio which can be done from inside of visual studio or you can go directly to one of the websites below to install python :

1. www.python.org/downloads – The main python library location.
2. www.continuum.io – Anaconda from Continuum Analytics.
3. www.enthought.com – Use Canopy python bundle.

Note : There are many different versions of Python like 2.7, 3.3 and 3.4. In this guide, we are using Python Version 3.5 64 Bit.

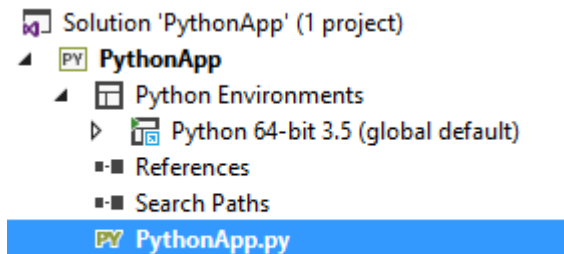
2 – Python Templates for Visual Studio :

You can create various project types using the Python Templates shown below :

-  From Existing Python code
-  Python Application
-  Azure Cloud Service
-  Web Project
-  Bottle Web Project
-  Django Web Project
-  Flask Web Project
-  Flask/Jade Web Project
-  IronPython Application
-  IronPython WPF Application
-  IronPython Silverlight Web Page
-  IronPython Windows Forms Application

3 – Create a simple Hello World Application :

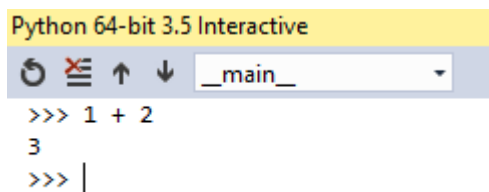
Use the Python Application Template to create a hello world application



A Virtual Environment is a mechanism to keep the dependencies required by different projects in separate locations. It solves the “Project X depends on version 1.x but, Project Y needs 4.x” dilemma, and keeps your global site-packages directory clean and manageable. It is basically a folder as shown in the above snapshot.

4 – Python Interactive Window and other Features built into Visual Studio 2015 :

Python has an interactive window and command line built into visual studio so you can copy and paste your code in there and run it. The interactive window can be launched from the Other Windows menu option in Visual Studio.



Type Help() to get interactive python help prompt. Also there is a code snippet option to insert commonly used python code. Also you can step through and debug python variables.

Python is installed at c:\Python34\python.exe and it can be launched from command line. Add the locations below to windows PATH environment variable if it is missing.

```
C:\Python34\;C:\Python34\Scripts;
```

To install django please run pip as shown below:

```
C:\main>pip install django
Collecting django
  Downloading Django-1.9.5-py2.py3-none-any.whl (6.6MB)
    100% |#####| 6.6MB 95kB/s
Installing collected packages: django
Successfully installed django-1.9.5
```

5 – Django setup :

To setup Rest framework with Django you can use

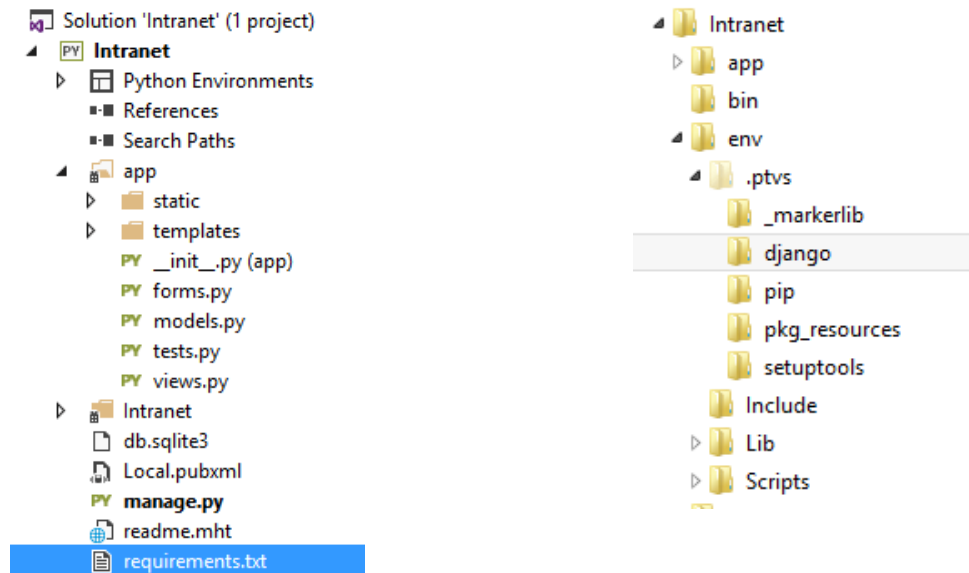
1. Tasty Pie - <https://django-tastypie.readthedocs.org/en/latest/>
2. Rest Framework - <http://www.django-rest-framework.org/>

The visual studio 2015 syncdb commad does not work. Change Directory to the app and run this command instead.

```
python manage.py makemigrations
```

7 – Django Project Structure :

Visual Studio Project and Folder Structure.



8 – Django Templates :

Django comes with a Template engine for embedding python with HTML.

Templates

A template is simply a text file. It can generate any text-based format (HTML, XML, CSV, etc.).

A template contains **variables**, which get replaced with values when the template is evaluated, and **tags**, which control the logic of the template.

Below is a minimal template that illustrates a few basics. Each element will be explained later in this document.

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

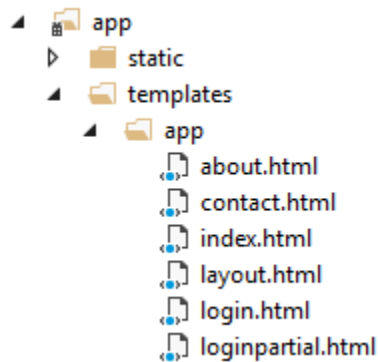
{% block title %}{{ section.title }}{% endblock %}

{% block content %}
<h1>{{ section.title }}</h1>

{% for story in story_list %}
<h2>
  <a href="{{ story.get_absolute_url }}">
    {{ story.headline|upper }}
  </a>
</h2>
<p>{{ story.tease|truncatewords:"100" }}</p>
{% endfor %}
{% endblock %}
```

9 – Django Layout Master :

Django templates support visual inheritance and we can build master pages like layout.html



10 – Django Modules :

There are 126 modules. Here is a list of the high level namespaces.

Django Modules					
django.apps	django.conf	django.contrib	django.core	django.db	django.forms
django.http	django.middleware	django.template	django.test	django.utils	django.views

Commonly used modules. Here is a list of the high level namespaces.

1. views.py
 - `from django.shortcuts import render`
 - `from django.http import HttpRequest`
 - `from django.template import RequestContext`
 - `from datetime import datetime`
2. tests.py
 - `import django`
 - `from django.test import TestCase`
3. models.py
 - `from django.db import models`
4. forms.py
 - `from django import forms`
 - `from django.contrib.auth.forms import AuthenticationForm`
 - `from django.utils.translation import ugettext_lazy as _`

Use the import command to include the following libraries.

Libraries			
sys (System)	re (Regular Expressions)	csv	

11 – sqlite3 database :

Python comes with a filesystem based database called sqlite3 which is part of the Python Standard Library. There are no server processes involved, no configurations required, and no other obstacles we have to worry about.

In general, the only thing that needs to be done before we can perform any operation on a SQLite database via Python's sqlite3 module, is to open a connection to an SQLite database file.

Creating a new SQLite database

Let us have a look at some example code to create a new SQLite database file with two tables: One with and one without a PRIMARY KEY column (don't worry, there is more information about PRIMARY KEYS further down in this section).

```
import sqlite3

sqlite_file = 'my_first_db.sqlite' # name of the sqlite database file
table_name1 = 'my_table_1' # name of the table to be created
table_name2 = 'my_table_2' # name of the table to be created
new_field = 'my_1st_column' # name of the column
field_type = 'INTEGER' # column data type

# Connecting to the database file
conn = sqlite3.connect(sqlite_file)
c = conn.cursor()

# Creating a new SQLite table with 1 column
c.execute('CREATE TABLE {tn} ({nf} {ft})'\
        .format(tn=table_name1, nf=new_field, ft=field_type))

# Creating a second table with 1 column and set it as PRIMARY KEY
# note that PRIMARY KEY column must consist of unique values!
c.execute('CREATE TABLE {tn} ({nf} {ft} PRIMARY KEY)'\
        .format(tn=table_name2, nf=new_field, ft=field_type))

# Committing changes and closing the connection to the database file
conn.commit()
conn.close()
```

Use Firefox SQL Manager Plug in to manage the database via a GUI.

<https://addons.mozilla.org/en-US/firefox/addon/sqlite-manager/?src>

Note: If you prefer to use Oracle instead then open up settings.py which is a normal python module with module-level variables. Change the connection strings and switch to the engine called django.db.backends.oracle to connect to an oracle database.

12 – Configurations :

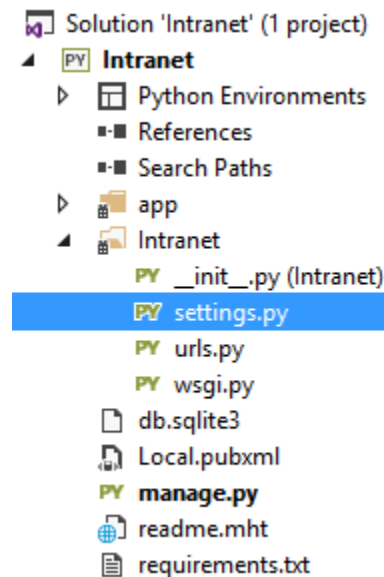
We can build an Intranet portal with Python using Visual Studio 2015.

init.py – The initialization python script for the project

settings.py – Similar to web.config. Contains key/value pairs.

urls.py – Define the routing for the application.

wsgi.py – **Web Server Gateway Interface (WSGI)** interface for building web applications or frameworks



13 – Deployment :

Setup python to run on IIS

<https://support.microsoft.com/en-us/kb/276494>

```
$ python manage.py runserver
```

You'll see the following output on the command line:

```
Performing system checks...
```

```
System check identified no issues (0 silenced).
```

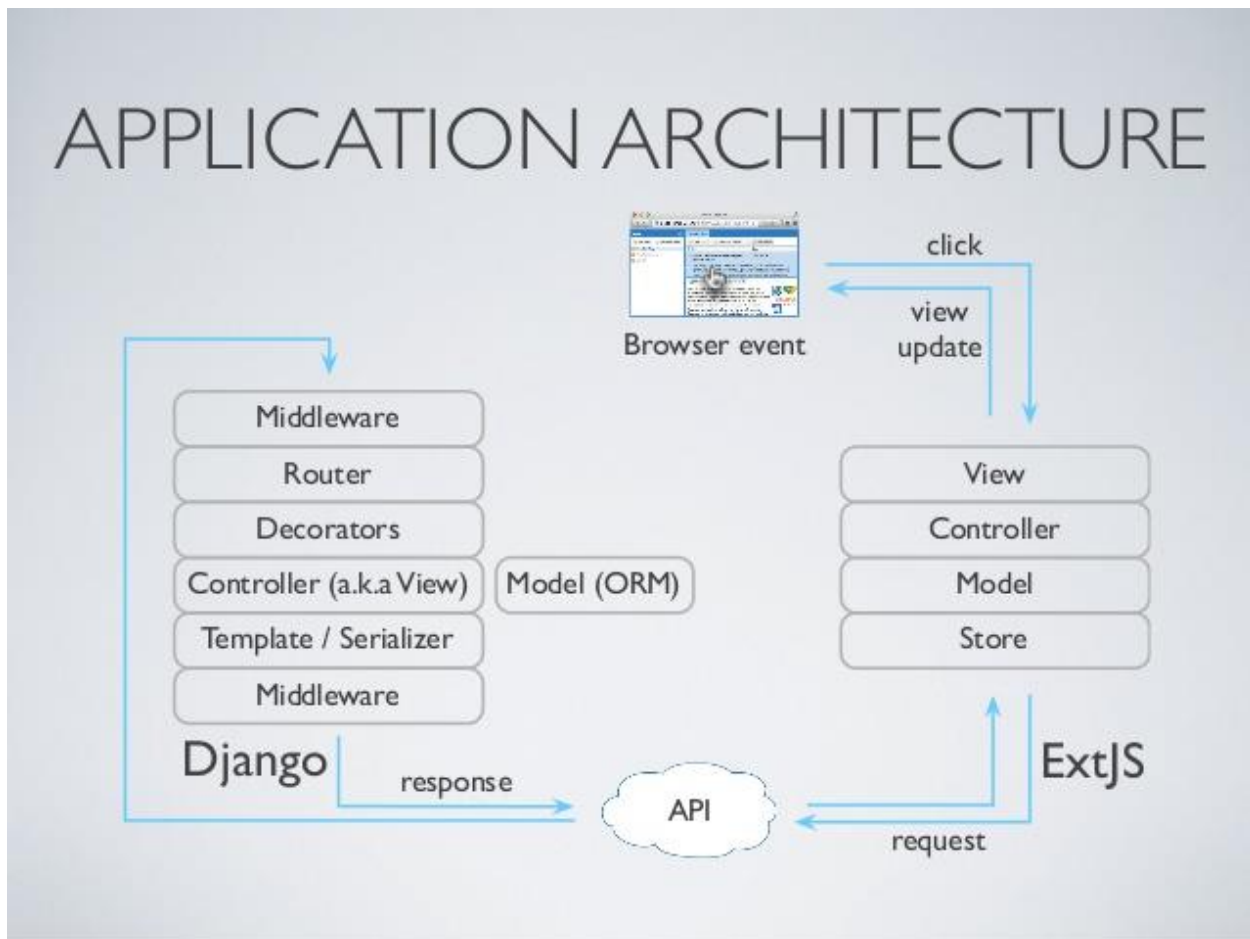
```
You have unapplied migrations; your app may not work properly until they are applied.  
Run 'python manage.py migrate' to apply them.
```

```
December 05, 2017 - 15:50:53
```

```
Django version 2.0, using settings 'mysite.settings'  
Starting development server at http://127.0.0.1:8000/  
Quit the server with CONTROL-C.
```

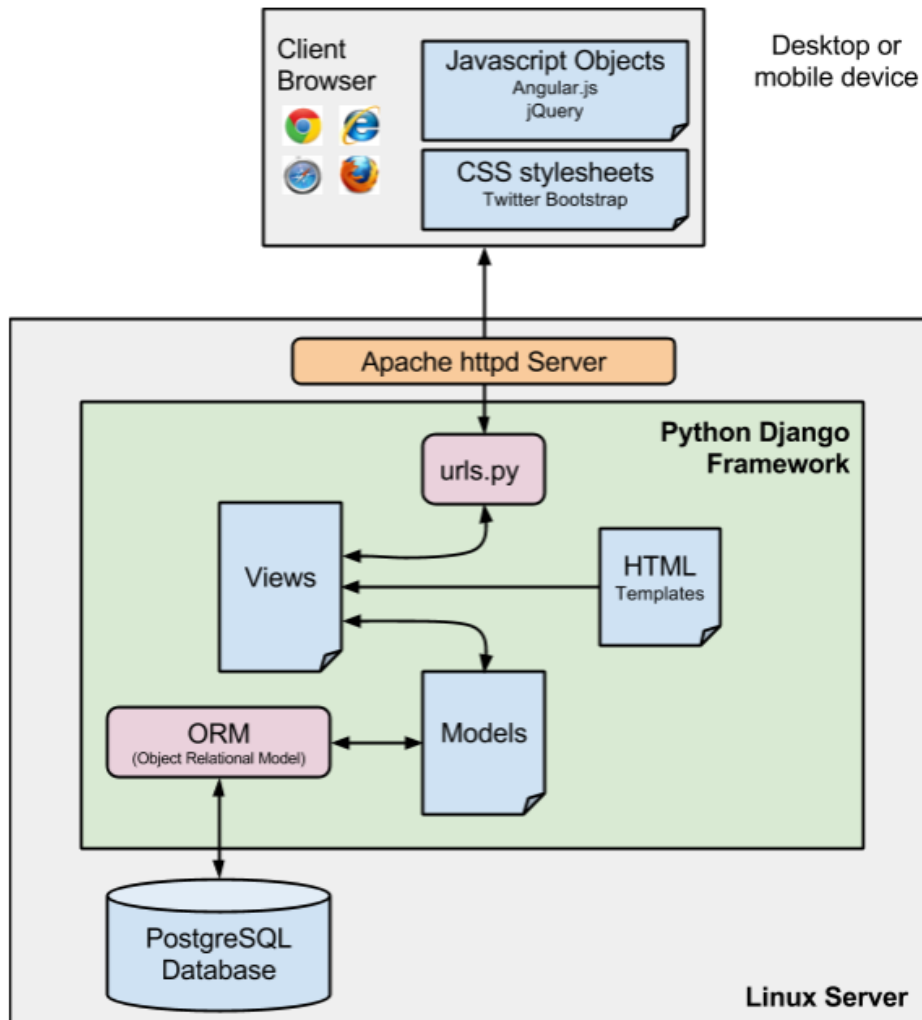
14 – Use with ExtJS :

Can be used with ExtJS like this shown below.



15 – Use with Angular or Jade (PUG) :

Python scripting can be used with Angular like this shown below.



16 – Caching :

Use REDIS or memcached or .NET System.Web.Http.Cache class.

17 – REST APIs :

Install using Pip:

```
pip install django-tastypie
```

<http://tastypieapi.org/>

Appendix :
