INSTITUTE OF TECHNOLOGY,

NIRMA UNIVERSITY

2CSDE86 Application Development Framework

PRACTICAL 1

Name : Jaimik S. Chauhan

Roll No. : 20BCE503

Semester : 7th

Teacher's Signature :

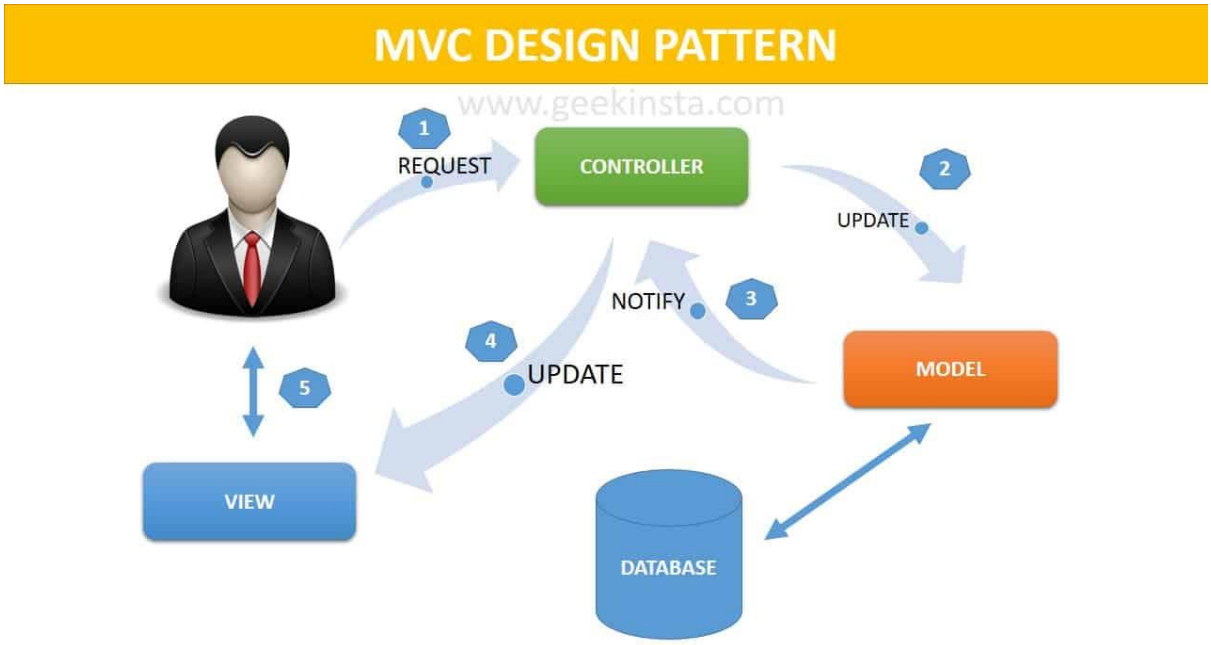
Aim : Introduction to MVC and MVT architecture. Comparative Study on MVC and MVT.

MVC (Model View Controller)

- It's software design pattern that is used to implement user interfaces and gives emphasis on separating data representation from the components which interacts and process the data.

It has 3 components and each has specific approach :

- Model is the central component of this architecture and manages the data, logic as well as other constraints of the application.
- View deals with how the data will be displayed to the user and provides various data representation components.
- Controller manipulates the Model and renders the view by acting as a bridge between both of them.



Advantages:

- Makes it easy to develop large applications
- Easy for multiple developers to collaborate and work together.

Disadvantages:

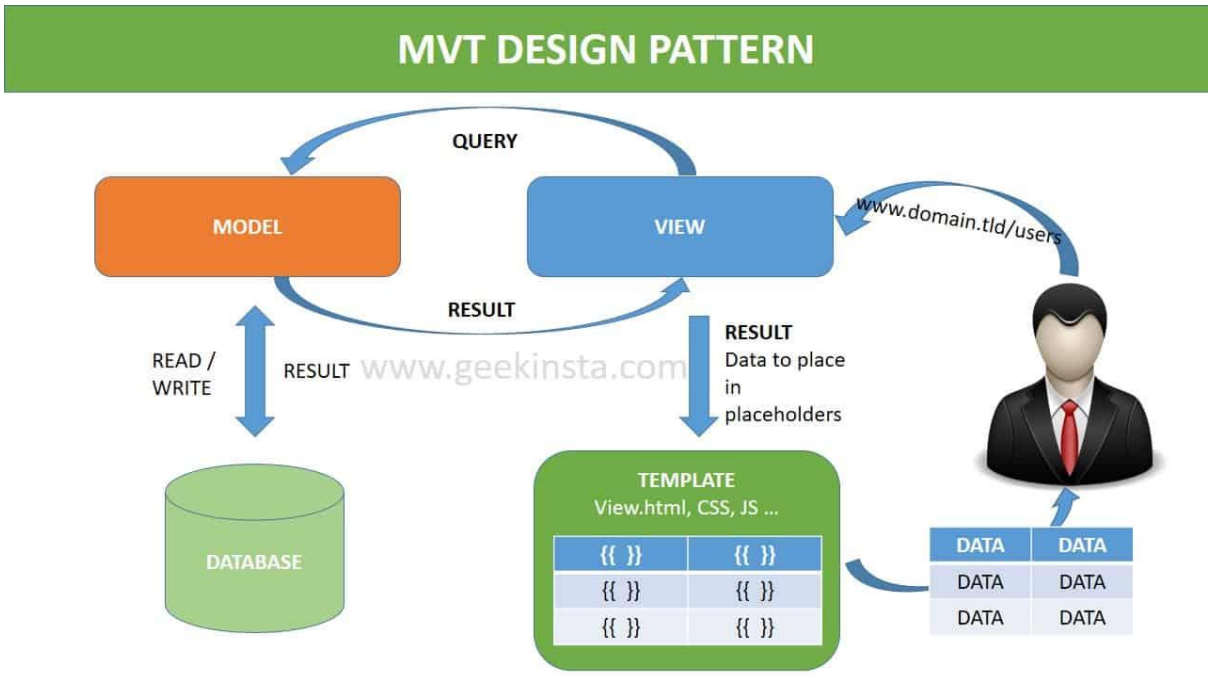
- View is controlled by Model and Controller
- Not suitable for small applications

MVT (Model View Template)

- Similar to MVC, but in contrast to MVC the controller part is taken care for us by the framework itself.

It has 3 components :

- Model similar to MVC acts as an interface for your data and is basically the logical structure behind the entire web application which is represented by a database such as MySql, PostgreSQL.
- View Executes the business logic and interacts with the model and renders the template. It accepts HTTP request and then return HTTP responses.
- Templates is the component which makes MVT different from MVC. Templates acts as the presentation layer and are basically HTML code that renders the data. Content in these files can be either static on dynamic.



Advantages:

- Less coupled.
- Suitable for small to large-scale applications.
- Easy to Modify.

Disadvantages:

- Sometimes, understanding the flow can be confusing
- Modification of models/views should be done carefully without affecting templates.

MVC V/S MVT

Model View Controller (MVC)	Model View Template (MVT)
MVC has controller that drives both model and view	MVT has views for receiving HTTP request and returning HTTP response
View tells how the user data will be presented	Templates are used in MVT for that purpose
Highly coupled	Loosely coupled
Modifications are difficult	Modifications are easy
Suitable for development of large applications but not for small applications	Suitable for both small and large applications
Flow is clearly defined thus easy to understand	Flow is sometimes harder to understand as compared to MVC
It doesn't involve mapping of URLs	URL pattern mapping takes place
Ex: Spring MVC	Ex: Django

Explore Django Application Structure

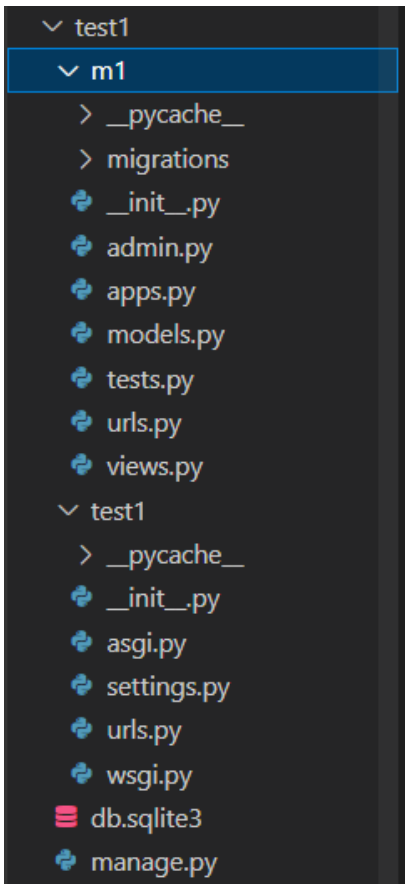
1. Create Django Project Using Following Command

```
Django-admin startproject [projectName]
```

2. Create App/Module Using Following Command

```
Python manage.py startapp [app/module Name]
```

3. Project Structure



4. Register an app with Installed_APPS.py file

```
INSTALLED_APPS = [
    'django.contrib.admin',
    'django.contrib.auth',
    'django.contrib.contenttypes',
    'django.contrib.sessions',
    'django.contrib.messages',
    'django.contrib.staticfiles',
    'm1'
]
```

5. Register module/app urls to project Url file

```
from django.contrib import admin
from django.urls import path, include

urlpatterns = [
    path('admin/', admin.site.urls),
    path('',include('m1.urls'))
]
```

6. Inside App/module edit views.py file

test1 > m1 > views.py > ...

```
1   # import datetime
2   from datetime import datetime
3   from django.shortcuts import render
4   from django.http import HttpResponse
5
6   # Create your views here.
7
8   def index(request):
9       t = datetime.now()
10      return HttpResponse(t)
```

7. Import views inside urls.py file

```
test1 > m1 > urls.py > ...
1  from importlib.resources import path
2  from . import views
3  from django.urls import path
4
5  urlpatterns = [
6      path('m1',views.index)
7  ]
8
```

8. Start the server using following command

```
Python manage.py runserver
```

2022-10-04 14:47:37.806855

Manage.py :

The `manage.py` file provides a command-line utility for a Django project. You will use this command-line utility to perform various operations related to debugging, running, and deploying a Django web application.

The Files are present in project :

__init__.py

It is an empty Python file. The `__init__.py` file tells the Python interpreter that the directory `project` is a Python package.

Asgi.py & wsgi.py

`asgi` stands for **Asynchronous Server Gateway Interface** and `wsgi` stands for **Web Server Gateway Interface.**
After your development process is completed, you will move to production and hosting. For hosting you will use `asgi` or `wsgi` compatible servers. According to the type of server you use, you have to import middleware accordingly.
asgi.py enables ASGI compatible servers and wsgi.py enables WSGI compatible servers to serve your Django web app.

Settings.py

This is the main configuration file for a Django project. This is the main settings file and here you will configure all the apps and middleware for your project.
This file also handles the database settings. By default Django uses sqlite3. But if you use a different database, which you will most probably do, you will configure it in `settings.py`.
`settings.py` also handles templates, static files, and media files related settings.

Urls.py

URLs are different endpoints of your website. `urls.py` contains the URL configurations for your website. By default, `urls.py` comes with the URL pattern for the admin panel. You will create other endpoints for your web app in this file.

App Structure :

__init__.py

The `__init__.py` file in an app is no different than the `__init__.py` file in a project. This empty Python file is telling the interpreter that `app` is a Python package.

admin.py

This file is used to register the models in your app in the Django administration. You will use this file to display the models of your app in the admin panel.

apps.py

It is a common configuration file for all Django apps. You can configure the attributes for your app using this file. However, the default configuration is sufficient for most cases. So, adding app configuration is a rare case.

views.py

In this file, you write the business logic for your app. A view can be either function-based or class-based. You decide if you want to write your views using functions or classes.