Views In Django | Python

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Django Views are one of the vital participants of the MVT Structure of Django. As per Django Documentation, A view function is a Python function that takes a Web request and returns a Web response. This **response** can be the HTML contents of a Web page, a redirect, a 404 error, an XML document, an image, or anything that a web browser can display.

Django Views

Django views are part of the user interface — they usually render the HTML/CSS/Javascript in your Template files into what you see in your browser when you render a web page. (Note that if you've used other frameworks based on the MVC (Model-View-Controller), do not get confused between Django views and views in the MVC paradigm. Django views roughly correspond to controllers in MVC, and Django templates to views in MVC.)

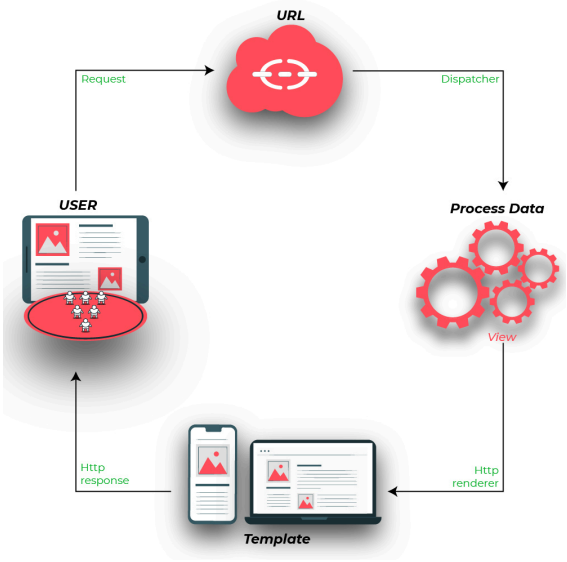


Illustration of **How to create and use a Django view** using an Example. Consider a project named geeksforgeeks having an app named geeks.

Refer to the following articles to check how to create a project and an app in Django.

- *How to Create a Basic Project using MVT in Django?*
- *How to Create an App in Django ?*

After you have a project ready, we can create a view in geeks/views.py,

Python3

```
# import Http Response from django
from django.http import HttpResponse
# get datetime
import datetime

# create a function
def geeks_view(request):
    # fetch date and time
    now = datetime.datetime.now()
    # convert to string
    html = "Time is {}".format(now)
    # return response
    return HttpResponse(html)
```

Let's step through this code one line at a time:

- First, we import the class **HttpResponse** from the django.http module, along with Python's datetime library.
- Next, we define a function called geeks_view. This is the view function. Each view function takes an HttpRequest object as its first parameter, which is typically named request.
- The view returns an HttpResponse object that contains the generated response. Each view function is responsible for returning an **HttpResponse** object.

For more info on HttpRequest and HttpResponse visit – Django Request and Response cycle – HttpRequest and HttpResponse Objects

Let's get this view to working, in geeks/urls.py,

Python3

```python
from django.urls import path

# importing views from views..py
from .views import geeks_view

urlpatterns = [
    path('', geeks_view),
]
```

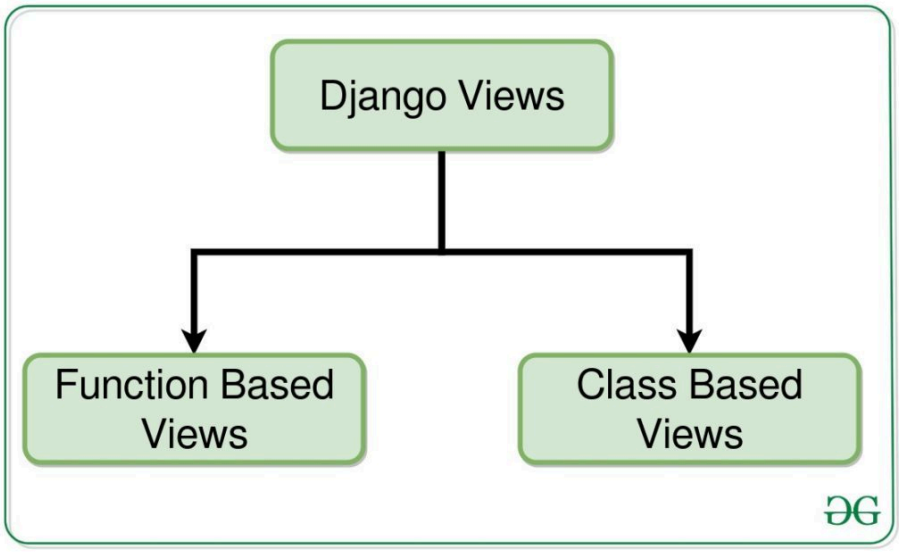
Now, visit http://127.0.0.1:8000/.

To check how to make a basic project using MVT (Model, View, Template) structure of Django, visit Creating a Project Django.

Django Class Based Views vs Function Based Views

Django views are divided into two major categories:

- Function Based Django Views
- Class Based Django Views



Function Based Views in Django

Function based views are written using a function in python which receives as an argument HttpRequest object and returns an HttpResponse Object. Function based views are generally divided into 4 basic strategies, i.e., CRUD (Create, Retrieve, Update, Delete). CRUD is the base of any framework one is using for development.

How to use Function based view in Django?

Let's Create a function-based view list view to display instances of a model. Let's create a model of which we will be creating instances through our view. In geeks/models.py,

Python3

```
# import the standard Django Model
# from built-in library
from django.db import models

# declare a new model with a name "GeeksModel"
class GeeksModel(models.Model):

    # fields of the model
    title = models.CharField(max_length = 200)
```

```
    description = models.TextField()

    # renames the instances of the model
    # with their title name
    def __str__(self):
        return self.title
```

After creating this model, we need to run two commands in order to create Database for the same.

```
Python manage.py makemigrations
Python manage.py migrate
```

Now let's create some instances of this model using shell, run form bash,

```
Python manage.py shell
```

Enter following commands

```
>>> from geeks.models import GeeksModel
>>> GeeksModel.objects.create(
                      title="title1",
                      description="description1").save()
>>> GeeksModel.objects.create(
                      title="title2",
                      description="description2").save()
>>> GeeksModel.objects.create(
                      title="title2",
                      description="description2").save()
```

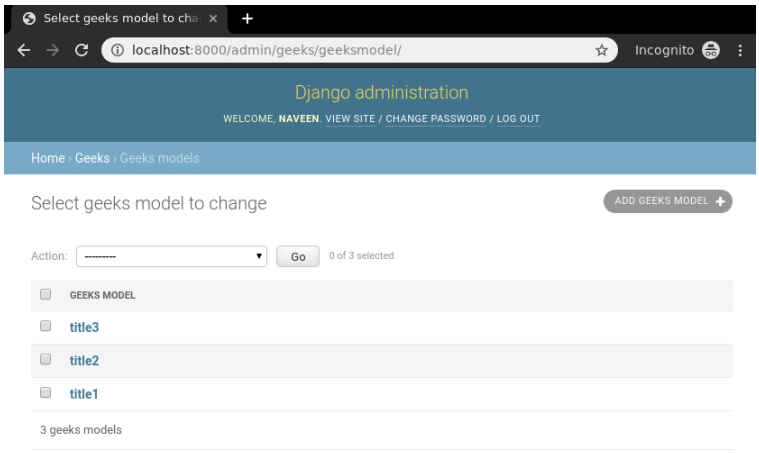
Now if you want to see your model and its data in the admin panel, then you need to register your model.
Let's register this model. In geeks/admin.py,

Python3

```
from django.contrib import admin
from .models import GeeksModel
# Register your models here.
```

```
4  admin.site.register(GeeksModel)
```

Now we have everything ready for the back end. Verify that instances have been created from http://localhost:8000/admin/geeks/geeksmodel/



Let's create a view and template for the same. In geeks/views.py,

Python3

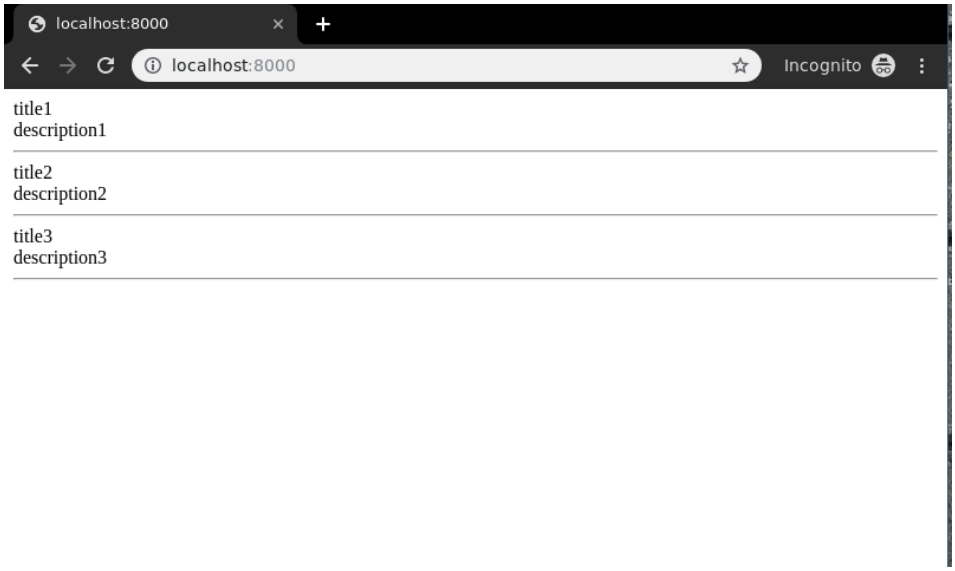
```
1  from django.shortcuts import render
2
3  # relative import of forms
4  from .models import GeeksModel
5
6
7  def list_view(request):
8      # dictionary for initial data with
9      # field names as keys
10     context ={}
11
12     # add the dictionary during initialization
13     context["dataset"] = GeeksModel.objects.all()
14
15     return render(request, "list_view.html", context)
```

Create a template in templates/list_view.html,

html

```
<div class="main">

    {% for data in dataset %}.

    {{ data.title }}<br/>
    {{ data.description }}<br/>
    <hr/>

    {% endfor %}

</div>
```

Let's check what is there on http://localhost:8000/



Similarly, function based views can be implemented with logics for create, update, retrieve and delete views.

Django CRUD (Create, Retrieve, Update, Delete) Function Based Views :-

- Detail View – Function based Views Django
- Create View – Function based Views Django
- Update View – Function based Views Django
- Delete View – Function based Views Django
- List View – Function based Views Django

Class Based Views in Django

Class-based views provide an alternative way to implement views as Python objects instead of functions. They do not replace function-based views, but have certain differences and advantages when compared to function-based views:

- Organization of code related to specific HTTP methods (GET, POST, etc.) can be addressed by separate methods instead of conditional branching.
- Object oriented techniques such as mixins (multiple inheritance) can be used to factor code into reusable components.

Class-based views are simpler and efficient to manage than function-based views. A function-based view with tons of lines of code can be converted into class-based views with few lines only. This is where Object-Oriented Programming comes into impact.

How to use Class based view in Django?

In geeks/views.py,

Python3

```
from django.views.generic.list import ListView
from .models import GeeksModel

class GeeksList(ListView):

    # specify the model for list view
    model = GeeksModel
```

Now create a URL path to map the view. In geeks/urls.py,

Python3

```
from django.urls import path

```

```
# importing views from views..py
from .views import GeeksList
urlpatterns = [
    path('', GeeksList.as_view()),
]
```

Create a template in templates/geeks/geeksmodel_list.html,

html

```
<ul>
    <!-- Iterate over object_list -->
    {% for object in object_list %}
    <!-- Display Objects -->
    <li>{{ object.title }}</li>
    <li>{{ object.description }}</li>

    <hr/>
    <!-- If objet_list is empty  -->
    {% empty %}
    <li>No objects yet.</li>
    {% endfor %}
</ul>
```

Let's check what is there on http://localhost:8000/

Django CRUD (Create, Retrieve, Update, Delete) Class Based Generic Views :-

- CreateView – Class based Views Django
- DetailView – Class based Views Django
- UpdateView – Class based Views Django
- DeleteView – Class based Views Django
- FormView – Class Based Views Django

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