

Voting System Project Using Django Framework

Introduction:

We will create a pollster (voting system) web application using Django. This application will conduct a series of questions along with many choices. A user will be allowed to give voting for that question by selecting a choice. Based on the answer the total votes will be calculated and it will be displayed to the user. Users can also check the result of the total votes for specific questions on the website directly. We will also build the admin part of this project. Admin user will be allowed to add questions and manage questions in the application.

Poll Questions

What is your favourite JS framework

[Vote Now](#)

[Results](#)

What is your favorite Python Framework?

[Vote Now](#)

[Results](#)

Pre-requisite:

Knowledge of Python and basics of Django Framework. Python should be installed in the system. Visual studio code or any code editor to work on the application.

Implementation of the Project:

Creating Project:

Step-1: Create an empty folder pollster_project in your directory.

Step-2: Now switch to your folder and create a virtual environment in this folder using the following command.

pip install pipenv

pipenv shell

Step-3: A Pipfile will be created in your folder from the above step. Now install Django in your folder using the following command.

pipenv install django

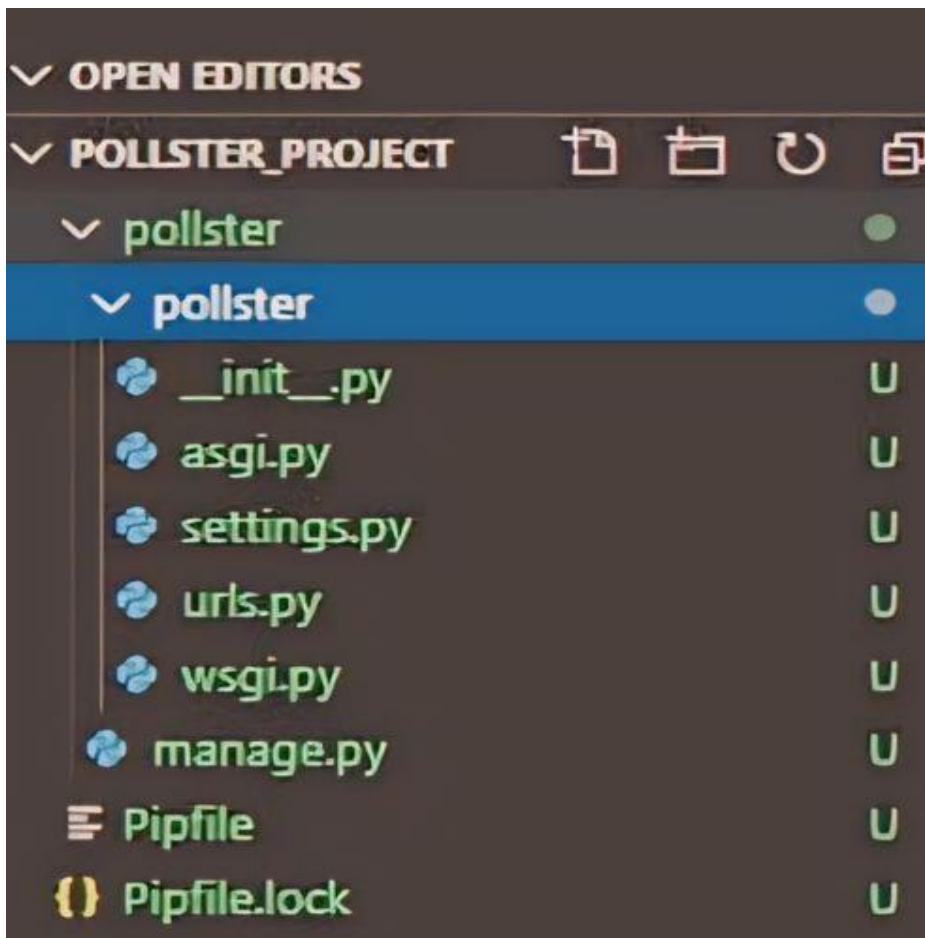
Step-4: Now we need to establish the Django project. Run the following command in your folder and initiate a Django project.

django-admin startproject pollster

A New Folder with name pollster will be created. Switch to the pollster folder using the following command.

cd pollster

The folder structure will look something like this.



Here you can start the server using the following command and check if the application running or not using your `http://127.0.0.1:8000/` in your browser.

`python manage.py runserver`

Step-5: Create an app 'polls' using the following command

`python manage.py startapp polls`

Below is the folder structure after creating "polls" app in the project.

Create Models:

Step-1: In your `models.py` file write the code given below to create two tables in your database. One is 'Question' and the other one is 'Choice'. 'Question' will have two fields of 'question_text' and a 'pub_date'. Choice has three fields: 'question', 'choice_text', and 'votes'. Each Choice is associated with a Question.

Python3

```
from django.db import models

# Create your models here.

class Question(models.Model):

    question_text = models.CharField(max_length = 200)

    pub_date = models.DateTimeField('date published')

    def __str__(self):

        return self.question_text

class Choice(models.Model):

    question = models.ForeignKey(Question, on_delete =

models.CASCADE)

    choice_text = models.CharField(max_length = 200)

    votes = models.IntegerField(default = 0)

    def __str__(self):

        return self.choice_text
```

Step-2: Go to the **settings.py** file and in the list, **INSTALLED_APPS** write down the code below to include the app in our project. This will refer to the **polls -> apps.py -> PollsConfig class**. Go to the settings.py file and in the list, **INSTALLED_APPS** write down the code below to include the app in our project. This will refer to the **polls -> apps.py -> PollsConfig class**.

Python3

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

Step-3: We have made changes in our database and created some tables but in order to reflect these changes we need to create migration here and then Django application will stores changes to our models. Run the following command given below to create migrations.

```
python manage.py makemigrations polls
```

Inside polls->migrations a file 0001_initial.py will be created where you can find the database tables which we have created in our models.py file. Now to insert all the tables in our database run the command given below...

```
python manage.py migrate
```

Create an Admin User:

Step-1: Run the command given below to create a user who can login to the admin site

```
python manage.py createsuperuser
```

It will prompt username which we need to enter.

Username: **geeks123**

Now it will prompt an email address which again we need to enter here.

Email address: xyz@example.com

The final step is to enter the password. We need to enter the password twice, the second time as a confirmation of the first.

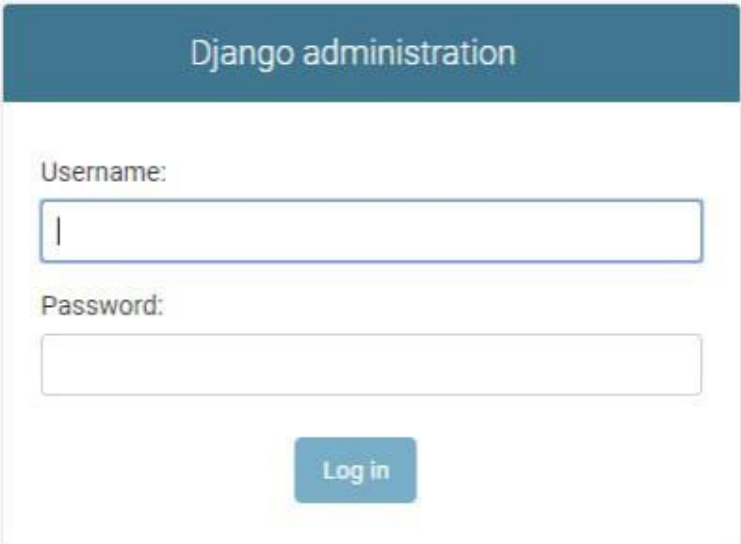
Password: *****

Password (again): *****

Superuser created successfully.

Now we can run the server using the same command `python manage.py runserver` and we can check our admin panel browsing the URL

`http://127.0.0.1:8000/admin`



The image shows a screenshot of the Django administration login interface. At the top, there is a dark blue header bar with the text "Django administration" in white. Below this, the page has a white background. There are two input fields: the first is labeled "Username:" and contains a single character "l"; the second is labeled "Password:" and is empty. Below the password field is a blue button with the text "Log in" in white.

Step-2: In the admin.py file we will write the code given below to map each question with choices to select. Also, we will write the code to change the site header, site title, and index_title. Once this is done we can add questions and choices for the question from the admin panel.

Python3

```
from django.contrib import admin

# Register your models here.

from .models import Question, Choice

# admin.site.register(Question)

# admin.site.register(Choice)

admin.site.site_header = "Pollster Admin"

admin.site.site_title = "Pollster Admin Area"

admin.site.index_title = "Welcome to the Pollster Admin
Area"
```

```

class ChoiceInLine(admin.TabularInline):

    model = Choice

    extra = 3

class QuestionAdmin(admin.ModelAdmin):

    fieldsets = [(None, {'fields': ['question_text']}), ('Date
Information', {'fields': ['pub_date'], 'classes':
['collapse']}), ]

    inlines = [ChoiceInLine]

admin.site.register(Question, Ques

```

Pollster Admin WELCOME, GEEKS123 VIEW SITE / CHANGE PASSWORD / LOG OUT

Home · Polls · Questions · Add question

Add question

Question text:

Date Information (Show)

CHOICES		
CHOICE TEXT	VOTES	DELETE?
<input type="text"/>	<input type="text" value="0"/>	
<input type="text"/>	<input type="text" value="0"/>	
<input type="text"/>	<input type="text" value="0"/>	

[+ Add another Choice](#)

[Save and add another](#)
[Save and continue editing](#)
[SAVE](#)

Create Views:

Now we will create the view of our application that will fetch the data from our database and will render the data in the 'template' (we will create 'template' folder and the files inside this folder in the next section) of our application to display it to the user.

Step-1 Open views.py file and write down the code given below.

Python3

```
From django.template import loader
```

```
From django.http import HttpResponseRedirect,  
HttpResponseRedirec
```

```
From django.shortcuts import get_object_or_404, render
```

```
From django.urls import reverse
```

```
From .models import Question, Choice
```

```
# Get questions and display them
```

Def index(request):

Latest_question_list = Question.objects.order_by('-pub_date')[:5]

Context = {'latest_question_list': latest_question_list}

Return render(request, 'polls / index.html', context)

Show specific question and choices

Def detail(request, question_id):

Try:

Question = Question.objects.get(pk = question_id)

Except Question.DoesNotExist:

Raise Http404("Question does not exist")

Return render(request, 'polls / detail.html', {'question': question})

Get question and display results

Def results(request, question_id):

Question = get_object_or_404(Question, pk = question_id)

Return render(request, 'polls / results.html', {'question': question})

```

# Vote for a question choice

Def vote(request, question_id):

    # print(request.POST['choice'])

    Question = get_object_or_404(Question, pk =
question_id)

    Try:

        Selected_choice = question.choice_set.get(pk =
request.POST['choice'])

        Except (KeyError, Choice.DoesNotExist):

            # Redisplay the question voting form.

            Return render(request, 'polls / detail.html',
{'question': question, 'error_message': "You didn't select a
choice.",})

    Else:

        Selected_choice.votes += 1

        Selected_choice.save()

        # Always return an HttpResponseRedirect after
successfully dealing

```

with POST data. This prevents data from being posted twice if a

user hits the Back button.

Return HttpResponseRedirect

Step-2: Create a file urls.py inside the pollster->polls folder to define the routing for all the methods we have implemented in views.py file (don't get confused with the file inside the pollster->pollster->urls.py file). Below is the code of urls.py file...

Python3

```
from django.urls import path
```

```
from . import views
```

```
app_name = 'polls'
```

```
urlpatterns = [path("", views.index, name = 'index'),
```

```
path('<int:question_id>/', views.detail, name = 'detail'),
```

```
path('<int:question_id>/results/', views.results, name  
= 'results'), path('<int:question_id>/vote/', views.vote,  
name = 'vote'),]
```

Create Templates:

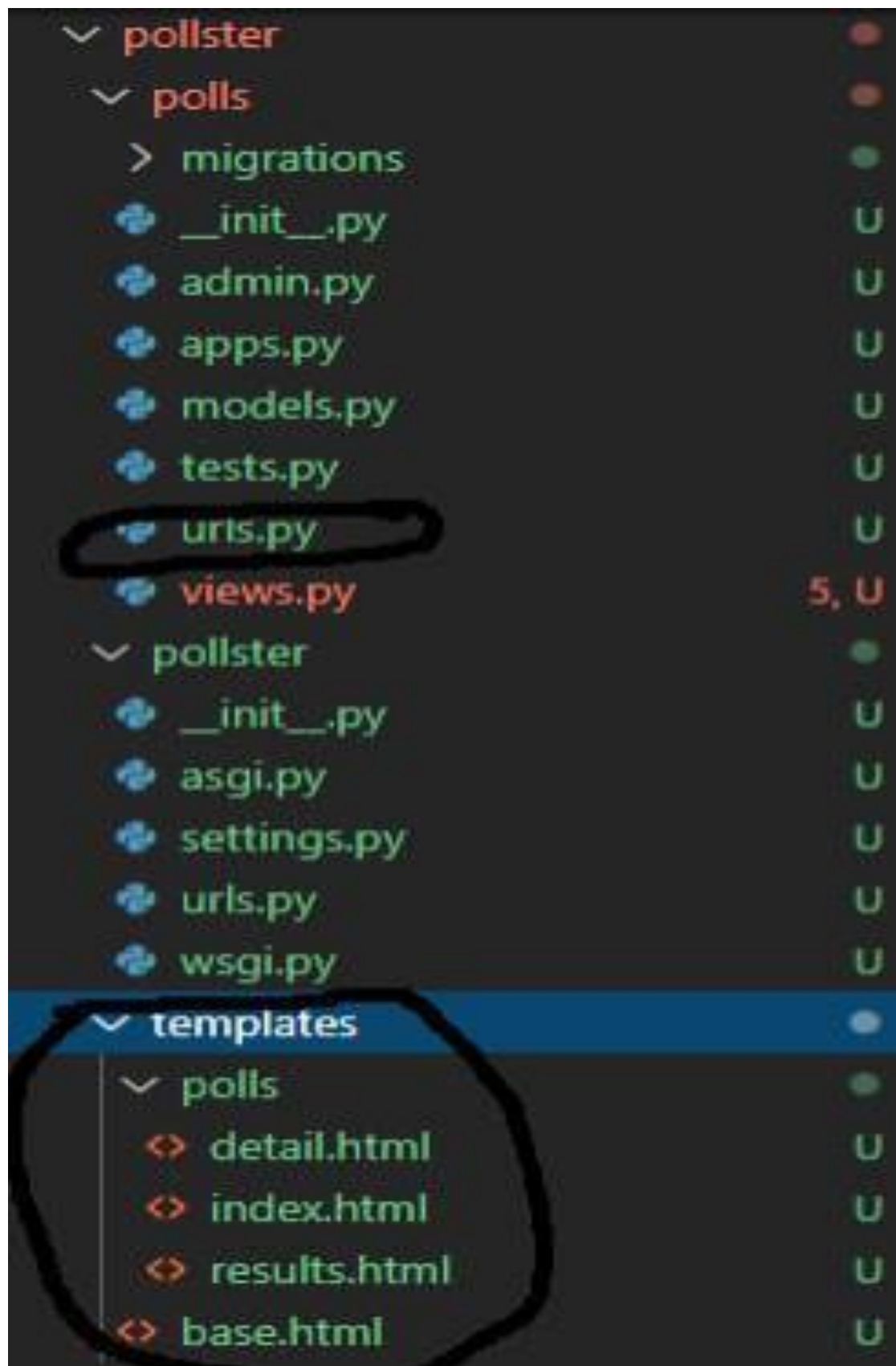
Step-1: Follow the steps given below to create the front layout of the page.

Create a folder 'templates' in top-level pollster folder (alongside of polls and pollster) i.e. pollster-> templates.

Create 'base.html' file inside the template folder. We will define the head, body and navigation bar of our application in this file.

In the 'templates' folder create another folder 'polls'. In 'polls' folder create three files 'index.html', 'results.html' and 'detail.html'.

The folder structure will look like the image given below (we have highlighted the files which we have created in 'create views i.e urls.py' and 'create template' section)...



Step-2: By default Django will search the 'template' inside the 'polls' app but we have created a global 'template' folder which is outside the polls app. So in order to make it work, we need to define the 'template' folder path inside the settings.py file. Open settings.py file and add the code given below in the list 'TEMPLATES'. In order to make the given code work add "import os" in settings.py.

Python3

```
TEMPLATES = [  
  
    {  
  
        # make changes in DIRS[].  
  
        'BACKEND':  
        'django.template.backends.django.DjangoTemplates',  
  
        'DIRS': [os.path.join(BASE_DIR, 'templates')],  
  
        'APP_DIRS': True,  
  
        'OPTIONS': {'context_processors': [  
  
            'django.template.context_processors.debug',  
  
            'django.template.context_processors.request',
```

```
'django.contrib.auth.context_processors.auth',  
'django.contrib.messages.context_processors.messages'}  
],},}
```

Step-3: Open index.html file and write the code given below. This file will display the list of questions which are stored in our database. Also, two buttons will be displayed to the user. One for the voting (we will create a detail.html file for voting) and the other one is to check the results (we will create results.html file for results).

Python3

```
{% extends 'base.html' %}
```

```
{% block content %}
```

```
<h1 class="text-center mb-3">Poll Questions</h1>
```

```
{% if latest_question_list %}

{% for question in latest_question_list %}

<div class="card-mb-3">

<div class="card-body">

<p class="lead">{{ question.question_text }}</p>

<a href="{% url 'polls:detail' question.id %}" class="btn
btn-primary btn-sm">Vote Now</a>

<a href="{% url 'polls:results' question.id %}"
class="btn btn-secondary btn-sm">Results</a>

</div>

</div>

{% endfor %}

{% else %}

<p>No polls available</p>

{% endif %}

{% endblock %}
```

Step-4: Open detail.html file and write the code given below. This file will be responsible for voting on specific questions. Whatever question a user will select for voting from the list of the question (index.html file), that specific question and the choices for the question will be displayed on this page. A user will be allowed to select one choice and give voting by clicking on the vote button.

Python3

```
{% extends 'base.html' %}

{% block content %}

<a class="btn btn-secondary btn-sm mb-3" href="{% url
'polls:index' %}">Back To Polls</a>

<h1 class="text-center mb-
3">{{ question.question_text }}</h1>

{% if error_message %}

<p class="alert alert-danger">

<strong>{{ error_message }}</strong>

</p>
```

```

{% endif %}

<form action="{% url 'polls:vote' question.id %}"
method="post">

{% csrf_token %}

{% for choice in question.choice_set.all %}

<div class="form-check">

<input type="radio" name="choice" class="form-check-
input" id="choice{{ forloop.counter }}"

    Value="{{ choice.id }}" />

    <label
for="choice{{ forloop.counter }}">{{ choice.choice_text
}}</label>

    </div>

{% endfor %}

<input type="submit" value="Vote" class="btn btn-
success btn-lg btn-block mt-4" />

</form>

{% endblock %}

```

Step-5: Open results.html file and write the code given below. This file will display the result of total votes on a specific question whatever question the user will select (from the index.html file) to check the result.

Python3

```
{% extends 'base.html' %}

{% block content %}

<h1 class="mb-5 text-center">{{ question.question_text }}</h1>

<ul class="list-group mb-5">

{% for choice in question.choice_set.all %}

<li class="list-group-item">

{{ choice.choice_text }} <span class="badge badge-success float-right">{{ choice.votes }}

    Vote{{ choice.votes | pluralize }}</span>

</li>

{% endfor %}
```


<a class="btn btn-secondary" href="{% url
'polls:index' %}">Back To Polls

<a class="btn btn-dark" href="{% url 'polls:detail'
question.id %}">Vote again?

{% endblock %}

Step-6: Let's create the navigation bar for our application. Create a folder 'partials' inside the folder 'templates' and then create a file '_navbar.html' inside the 'partial' folder. File structure will be templates->partials->_navbar.html. Write the code given below in this file.

Python3

<nav class="navbar navbar-dark bg-primary mb-4">

<div class="container">

Pollster

```
</div>
```

```
</nav>
```

Step-7: We haven't included the head and body tag in every single HTML file we have created till now. We can write these codes in just one single file base.html and we can give the layout to our page. We will also bring our navigation bar(_navbar.html file) on this page. So open base.html file inside the 'template' folder and write down the code given below.

Python3

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
<link rel="stylesheet"
```

```
href=https://stackpath.bootstrapcdn.com/bootstrap/4.4.1  
/css/bootstrap.min.css
```



```
Integrity="sha384-  
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeW  
PGFN9MuhOf23Q9Ifjh" crossorigin="anonymous">
```

```
<title>Pollster {% block title %}{%  
endblock %}</title>
```

```
</head>
```

```
<body>
```

```
<!--NavBar-->
```

```
{% include 'partials/_navbar.html'%}
```

```
<div class="container">
```

```
<div class="row">
```

```
<div class=".col-md-6 m-auto">
```

```
{% block content %}{% endblock%
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</body>
```

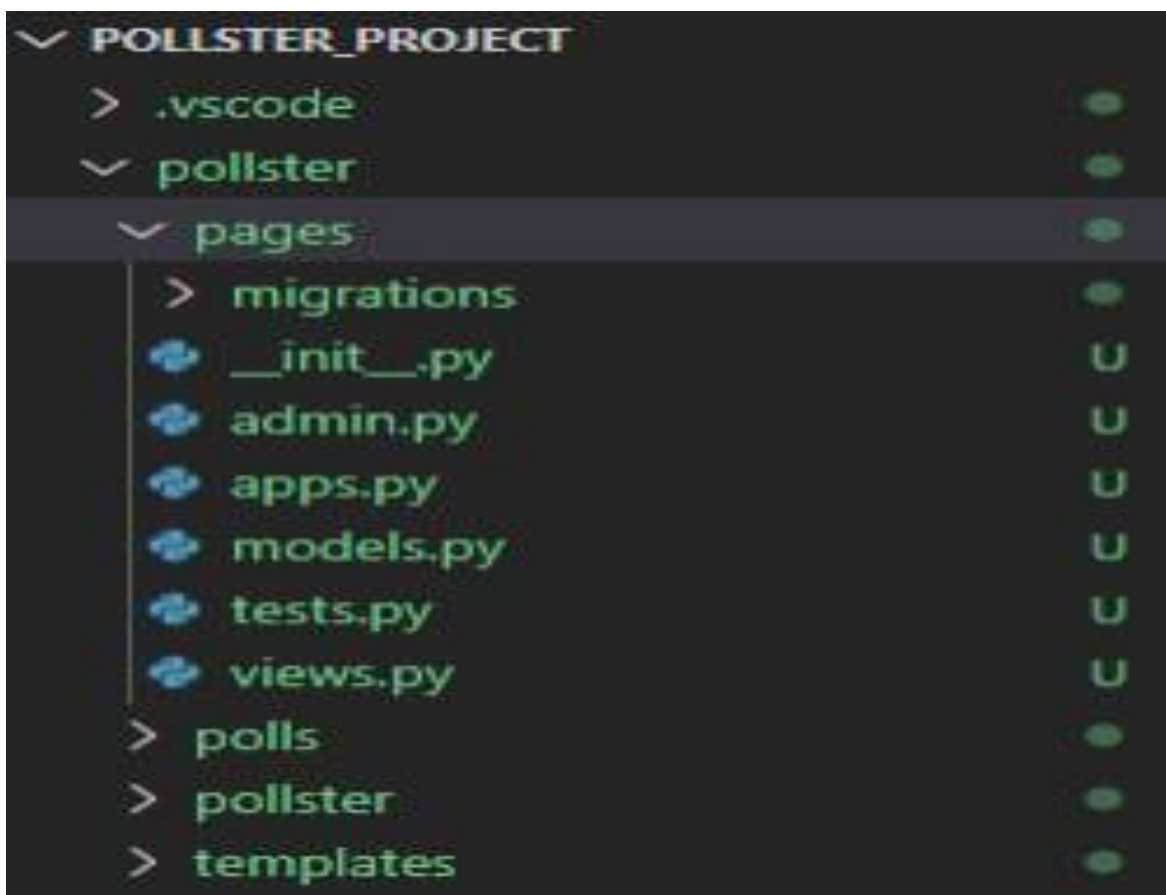
```
</html>
```

Create Landing Page:

The URL <http://127.0.0.1:8000/> should display a landing page for our web application. So to create a landing page we will follow the step given below.

Step-1 Switch to the top-level pollster folder and run the command given below to create an app 'pages'.

Python **manage.py** startapp page



Above in this folder structure once the 'pages' app will be created.

Step-2 Open 'views.py' inside 'pages' folder i.e. pages->views.py. Write down the code given below to visit on landing page.

Python3

```
From django.shortcuts import render
```

```
# Create your views here.
```

```
Def index(request):
```

```
Return render(request, 'pages')
```

Step-3 Create urls.py file inside the 'pages' folder i.e. pages->urls.py. Write the code given below to define the routing of pages->index.html file (check step-1).

Python3

```
From django.urls import path
```

```
From . import views
```

```
Urlpatterns = [Path('', views.index, name = 'index'),]
```

Step-4 Create a folder 'pages' inside 'template' folder. Now inside 'pages' folder create a file index.html. Write down the code given below to display the landing page to the users.

Python3

```
{% extends 'base.html' %}
```

```
{% block content %}
```

```
<div class="card text-center">
```

```
<div class="card-body">
```

```
<h1>Welcome To Pollster!</h1>
```

```
<p>This is an Polling Web Application built with  
Django</p>
```

```
<a class="btn btn-dark" href="{% url 'polls:index' %}">
```

```
View Available Polls</a>
```

```
</div>
```

```
</div>
```

```
{% endblock %}
```

Create routing inside the main **urls.py** file of the application

We have created two apps in our application 'polls' and 'pages'. We need to define the routing of these two apps inside the main **urls.py** file which is pollster->pollster->urls.py file. So open the main **urls.py** file inside the pollster folder and write down the code given below to define the routing of these two apps('polls' and 'pages').

Python3

```
From django.contrib import admin
```

```
From django.urls import include, path
```

```
Urlpatterns = [
```

```
Path('', include('pages.urls')),
```

```
Path('polls/', include('polls.urls')),
```

```
Path('admin/', admin.site.urls),]
```

Testing of the Application:

Admin Frontend:

Step-1 Run the server using the command `python manage.py runserver` and browse the URL

<http://127.0.0.1:8000/admin/>. Now enter the username and password to login into the system.

Pollster Admin

Username:

geeks123

Password:

.....

Log in

Step-2 Click on 'add' button next to the 'Questions'.

Pollster Admin

Welcome to the Pollster Admin Area

AUTHENTICATION AND AUTHORIZATION

Groups

+ Add

✎ Change

Users

+ Add

✎ Change

POLLS

Questions

+ Add

✎ Change

Step-2 Now add question and choices for those questions. Also, mention the date and time and then click on the 'save' button. You can add as many questions as you want. You will see a list of questions added in the database.

Home · Polls · Questions · Add question

Add question

Question text:

Date information (Show)

CHOICES			
CHOICE TEXT	VOTES	DELETE?	
<input type="text" value="React"/>	<input type="text" value="0"/>		
<input type="text" value="Angular"/>	<input type="text" value="0"/>		
<input type="text" value="Vue"/>	<input type="text" value="0"/>		
<input type="text" value="Meteor"/>	<input type="text" value="0"/>		

[+ Add another Choice](#)

[Save and add another](#) [Save and continue editing](#) [SAVE](#)

User Frontend:

Step-1: Browse the URL <http://127.0.0.1:8000/> and you will see the landing page of the application. Click on the "View Available Polls"

Welcome To Pollster

This is an example Django polling app

[View Available Polls](#)

Step-2: You will see list of questions with two options 'Vote Now' and 'Results'. From here you need to select one question and click on the 'Vote Now' button.

poll-questions

Poll Questions

What is Your Favourite Python Framework?

[Vote Now](#) [Results](#)

What is Your Favourite JavaScript Framework or Library?

[Vote Now](#) [Results](#)

Step-3: Once this is done select any one choice and click on 'Vote' button. You can also go to the previous menu using the 'Back to Polls' button on the top.

Pollster

Back To Polls

What is Your Favourite JavaScript Framework or Library?

☐ React

☒ Angular

☐ Vue

☐ Meteor

Vote

You will see the total voting result for the question you have selected.

Pollster

What is Your Favourite JavaScript Framework or Library?

React	0 votes
Angular	1 vote
Vue	0 votes
Meteor	0 votes

Back To Polls

Vote again?

You can also check the total votes for any question using the option 'Results' from the 'Poll Questions' page.

Python 3

```
# models.py

from django.db import models

class Question(models.Model):

    question_text = models.CharField(max_length=200)

    pub_date = models.DateTimeField('date published')

class Choice(models.Model):

    question = models.ForeignKey(Question,
on_delete=models.CASCADE)

    choice_text = models.CharField(max_length=200)

    votes = models.IntegerField(default=0)


# admin.py

from django.contrib import admin

from .models import Question, Choice

admin.site.register(Question)

admin.site.register(Choice)
```

```
# urls.py

from django.urls import path

from . import views

urlpatterns = [

    path("", views.index, name='index'),

    path('<int:question_id>/', views.detail, name='detail'),

    path('<int:question_id>/vote/', views.vote,
name='vote'),

]
```

```
# views.py

from django.shortcuts import render, get_object_or_404
from django.http import HttpResponseRedirect
from django.urls import reverse
from .models import Question, Choice

def index(request):

    latest_question_list = Question.objects.order_by('-
pub_date')[:5]
```

```

    context = {'latest_question_list': latest_question_list}

    return render(request, 'polls/index.html', context)

def detail(request, question_id):

    question = get_object_or_404(Question,
pk=question_id)

    return render(request, 'polls/detail.html', {'question':
question})

def vote(request, question_id):

    question = get_object_or_404(Question,
pk=question_id)

    try:

        selected_choice =
question.choice_set.get(pk=request.POST['choice'])

    except (KeyError, Choice.DoesNotExist):

        return render(request, 'polls/detail.html', {

            'question': question,

            'error_message': "You didn't select a choice.",

        })

    else:

```

```
        selected_choice.votes += 1

        selected_choice.save()

    return HttpResponseRedirect(reverse('polls:results',
args=(question.id,)))
```

```
<!-- index.html -->
```

```
{% if latest_question_list %}
```

```
    <ul>
```

```
        {% for question in latest_question_list %}
```

```
            <li><a href="{% url 'polls:detail'
question.id %}">{{ question.question_text }}</a></li>
```

```
        {% endfor %}
```

```
    </ul>
```

```
{% else %}
```

```
    <p>No polls are available.</p>
```

```
{% endif %}
```

```

<!-- detail.html -->

<h1>{{ question.question_text }}</h1>

{% if
error_message %}<p><strong>{{ error_message }}</st
rong></p>{% endif %}

<form action="{% url 'polls:vote' question.id %}"
method="post">

    {% csrf_token %}

    {% for choice in question.choice_set.all %}

        <input type="radio" name="choice"
id="choice{{ forloop.counter }}"
value="{{ choice.id }}">

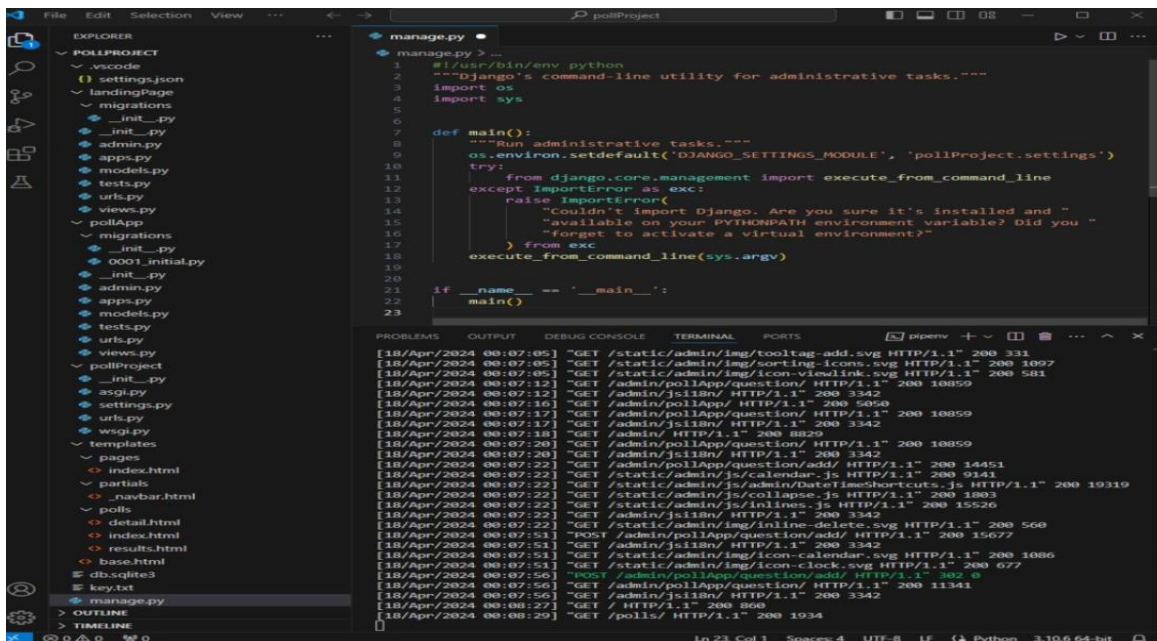
        <label
for="choice{{ forloop.counter }}">{{ choice.choice_text
}}</label><br>

    {% endfor %}

    <input type="submit" value="Vote">

</form>

```



Python 3

`#!/usr/bin/env python`

`"""Django's command-line utility for administrative tasks."""`

`Import os`

`Import sys`

`def main():`

`"""Run administrative tasks."""`

`os.environ.setdefault('DJANGO_SETTINGS_MODULE', 'pollProject.settings')`


```
try: from django.core.management import  
execute_from_command_line
```

```
except ImportError as exc:
```

```
raise ImportError(
```

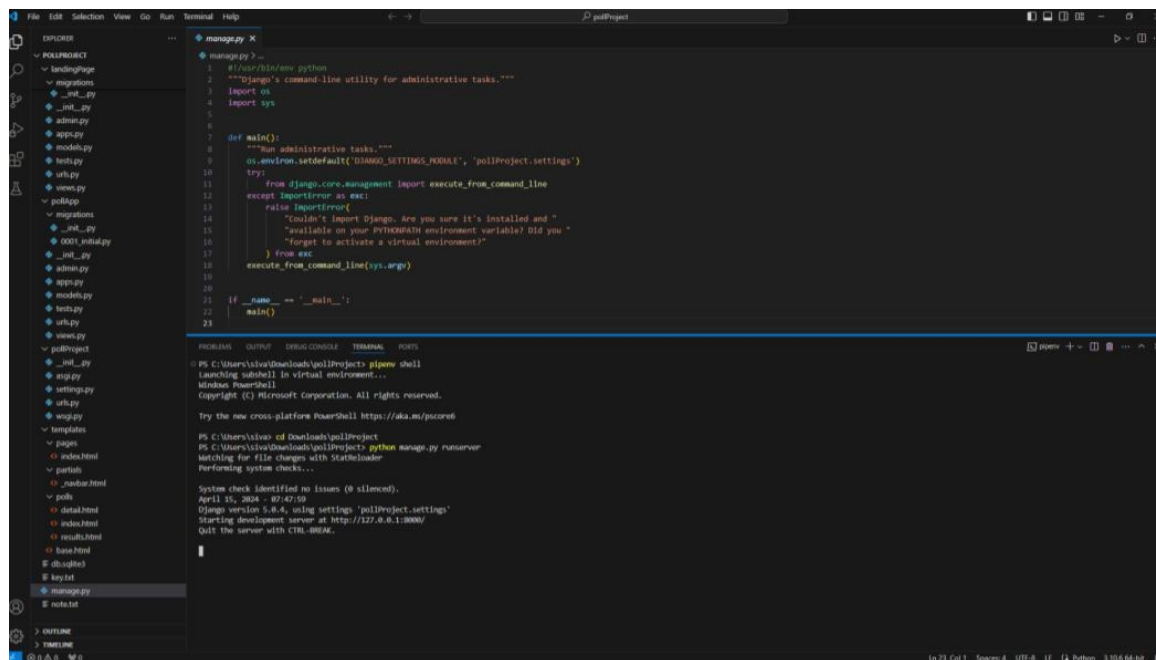
```
"Couldn't import Django. Are you sure it's Installed and "
```

```
"available on your PYTHONPATH environment variable?
```

```
Did you
```

```
"forget to activate a virtual environment?") from exc
```

```
execute_from_command_line(sys.argv)if __name__ == '__main__':
```



```
manage.py X  
1 #!/usr/bin/env python  
2 """Django's command-line utility for administrative tasks."""  
3 import os  
4 import sys  
5  
6  
7 def main():  
8     """Run administrative tasks."""  
9     os.environ.setdefault('DJANGO_SETTINGS_MODULE', 'pollProject.settings')  
10    try:  
11        from django.core.management import execute_from_command_line  
12    except ImportError as exc:  
13        raise ImportError(  
14            "Couldn't import Django. Are you sure it's installed and "  
15            "available on your PYTHONPATH environment variable? Did you "  
16            "forget to activate a virtual environment?"  
17        ) from exc  
18    execute_from_command_line(sys.argv)  
19  
20  
21 if __name__ == '__main__':  
22     main()  
23
```

```
PS C:\Users\sliva\Downloads\pollProject> pipenv shell  
Launching subshell in virtual environment...  
Microsoft PowerShell  
Copyright (c) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell https://aka.ms/powershell  
PS C:\Users\sliva\Downloads\pollProject> python manage.py runserver  
Watching for file changes with StatReloader  
Performing system checks...  
  
System check identified no issues (0 silenced).  
April 15, 2024 - 07:47:59  
Django version 5.0.8, using settings 'pollProject.settings'  
Starting development server at http://127.0.0.1:8000/  
Quit the server with Ctrl-C.  
  
^C
```

Python 3

```
#!/usr/bin/env python
```

```
"""Django's command-line utility for administrative tasks.
```

```
import os
```

```
import sys
```

```
def main():
```

```
    """Run administrative tasks."""
```

```
    os.environ.setdefault('DJANGO_SETTINGS_MODULE',  
        'pollProject.settings')
```

```
    try:
```

```
        from django.core.management import  
            execute_from_command_line
```

```
    except ImportError as exc:
```

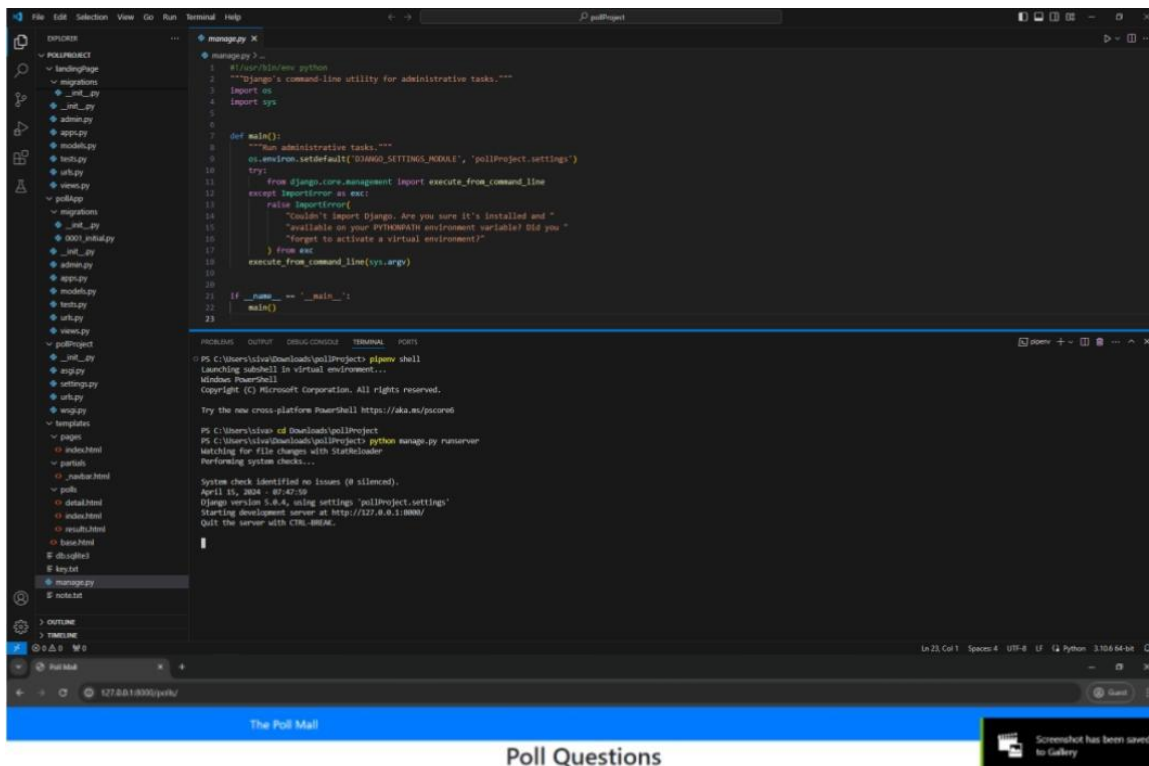
```
        raise ImportError(  
            "Couldn't import Django. Are you sure it's installed and  
            "available on your PYTHONPATH environment variable?  
            Did you forget to activate a virtual environment?"
```

```
        from exc
```

`execute_from_command_line(sys.argv)`

`if __name__ == '__main__':`

`main()`



Future Scope:

This project can be used to conduct the online voting system in any field or industry. The project can be expanded and several other features can also be included based on the requirement. People can share the opinion and they can also check the total voting given by many users.

Conclusion:

Concluding a voting application built using the Django framework involves summarizing its key features, highlighting its benefits, discussing any challenges faced during development, and outlining potential future improvements. Additionally, it's essential to reflect on how the application meets its objectives in facilitating fair and efficient voting processes.

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