BACKEND WEB DEVELOPMENT

DJANGO – A PYTHON FRAMEWORK

SOURABH PAL

LIST OF CLASS WORKS (till 26th September 2023)

- Display on client side (HttpResponse)
- Display a html page from templates
- Admin panel (adding members)
- Pull data from database (admin panel added members information display)
- Creating a form (Get and post methods) – applying CSS

DOWNLOAD VISUAL STUDIO CODE AND PYTHON

DOWNLOAD LINKS:-

- https://code.visualstudio.com/download
- https://www.python.org/downloads/

1.

Creating first Django project

DISPLAY CONTENT ON THE CLIENT SIDE (BROWSER)

Creating project (use vs code terminal OR cmd)

EXECUTE THE FOLLOWING CODES SEQUENTIALLY

- mkdir <FolderName>
- cd <FolderName>
- python –m venv env
- cd env
- Scripts\activate.bat
- Python –m pip install Django
- Django-admin startproject <ProjectName>
- Cd <ProjectName>
- Python manage.py runserver
- Crtl + C
- Code .

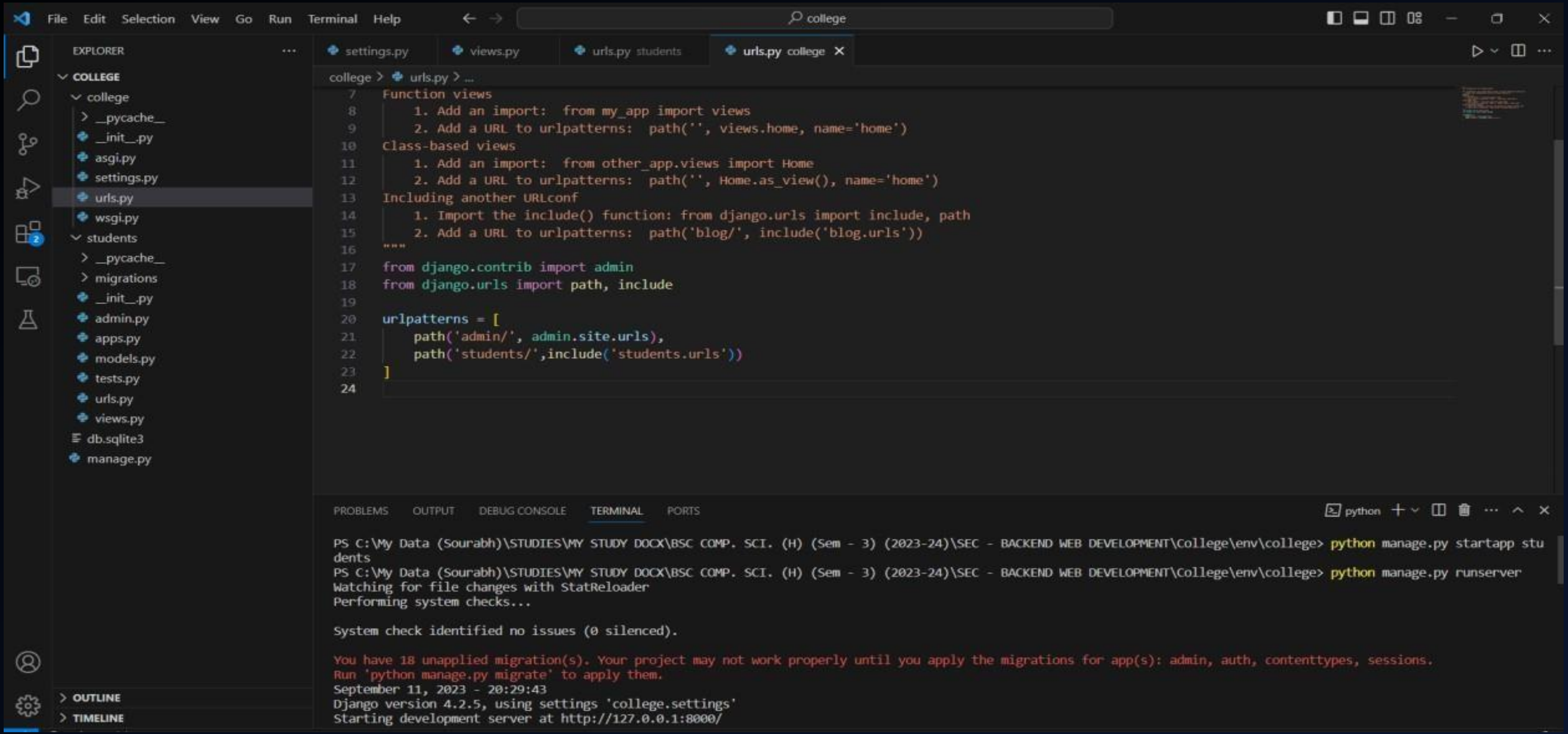
NOTE THAT

- Runserver command will generate a url which shows if the project creation is successful or not.
- To break the connection from server, press ctrl + C.
- Code . Command will open the present directories (project) in vs code (ide)

FOLLOW THESE STEPS

- Create app using the following command
- Python manage.py startapp <appName>
- Create urls.py in app directory
- Add the appName in quotes in the installed apps section of settings.py of the project
- Then make the following changes in views.py, urls.py (project and app).
- In the given example
- Directory name = College
- Project name = college
- App name = students

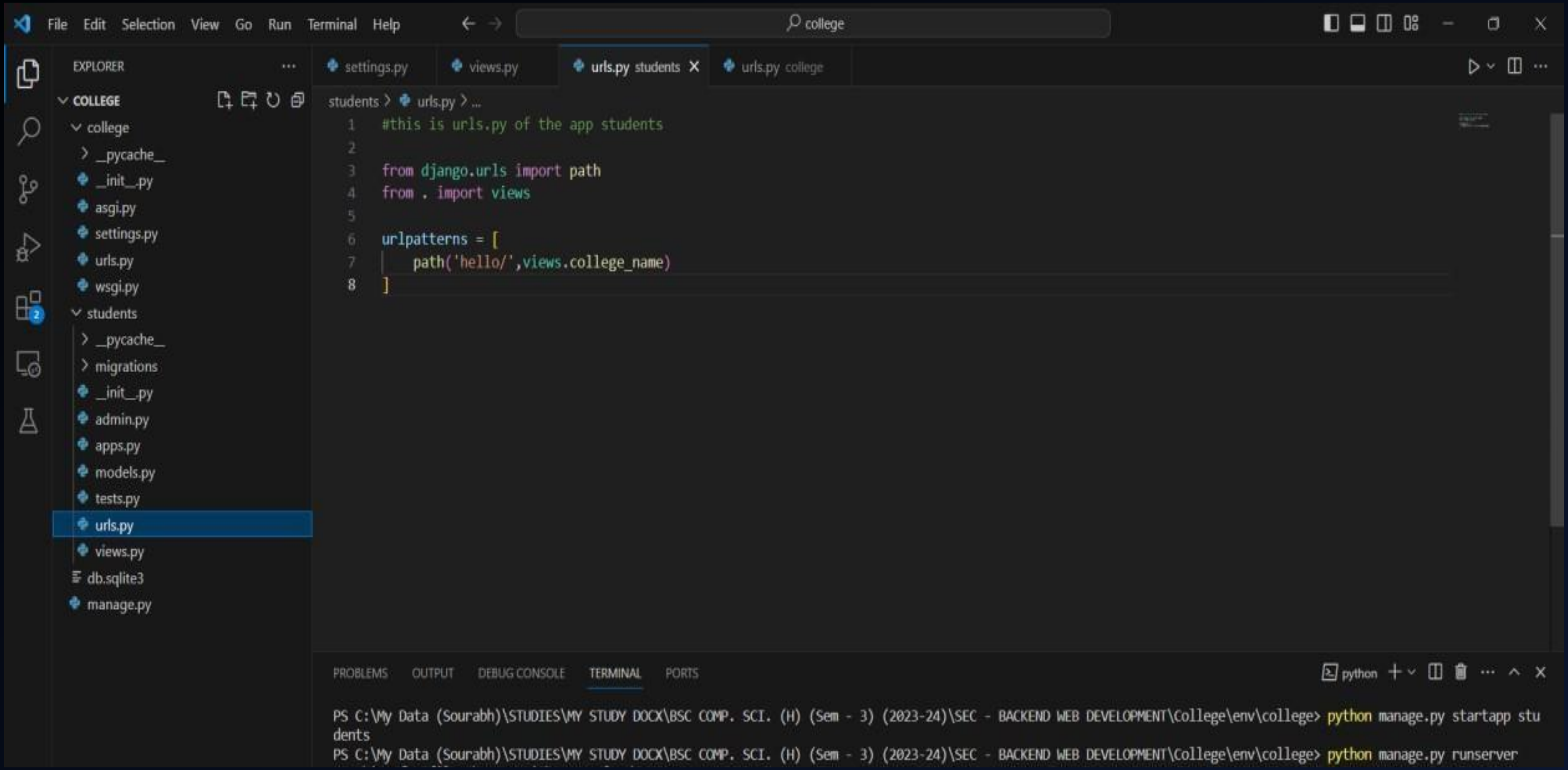
PROJECT – URLS.PY



```python
Function views
    1. Add an import:  from my_app import views
    2. Add a URL to urlpatterns:  path('', views.home, name='home')
Class-based views
    1. Add an import:  from other_app.views import Home
    2. Add a URL to urlpatterns:  path('', Home.as_view(), name='home')
Including another URLconf
    1. Import the include() function: from django.urls import include, path
    2. Add a URL to urlpatterns:  path('blog/', include('blog.urls'))
"""
from django.contrib import admin
from django.urls import path, include

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

```
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py startapp stu
dents
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).

You have 18 unapplied migration(s). Your project may not work properly until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.
September 11, 2023 - 20:29:43
Django version 4.2.5, using settings 'college.settings'
Starting development server at http://127.0.0.1:8000/
```

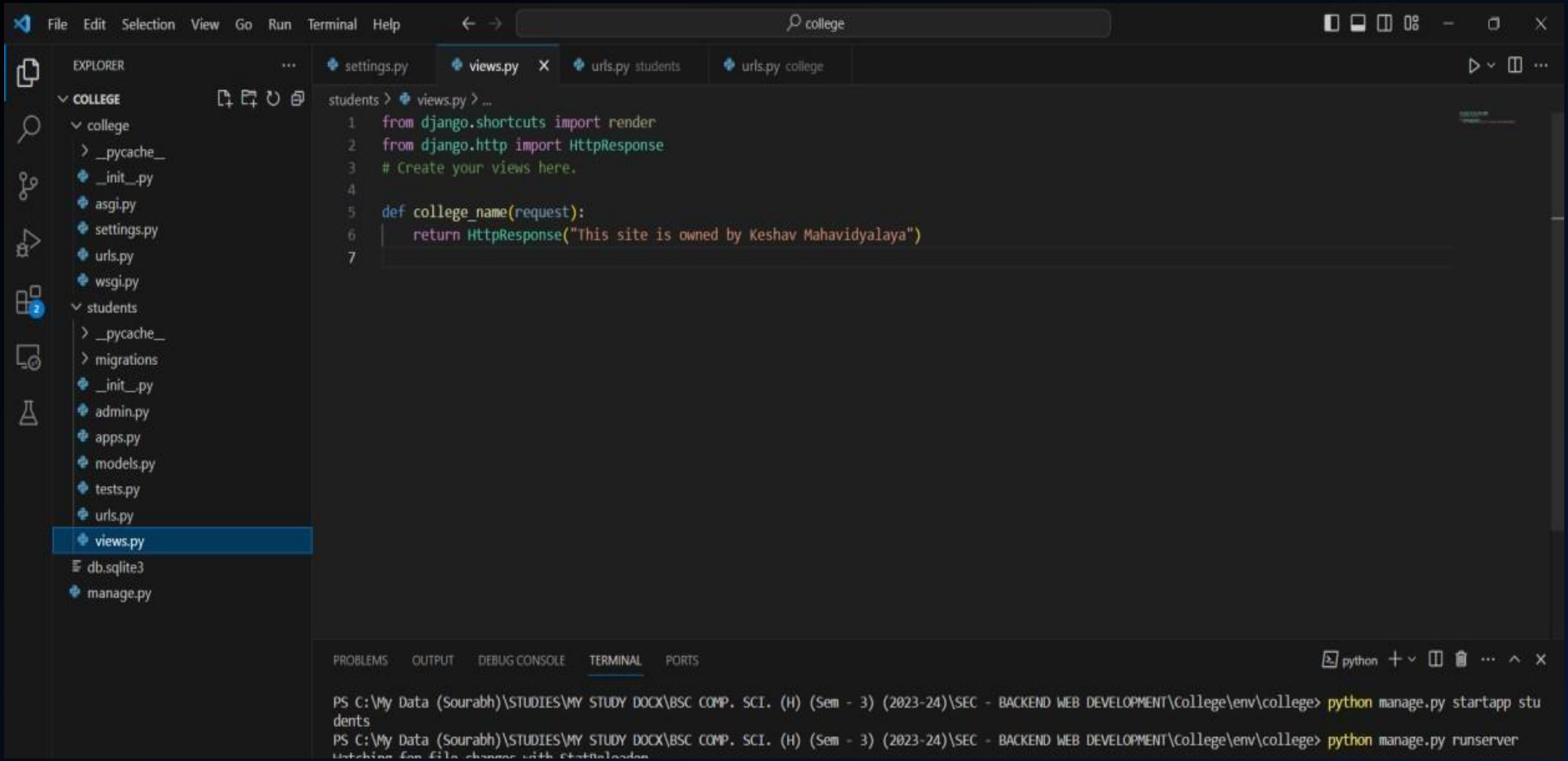
APP – URLS.PY



```python
#this is urls.py of the app students

from django.urls import path
from . import views

urlpatterns = [
    path('hello/',views.college_name)
]
```

```
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py startapp stu
dents
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py runserver
```

VIEWS.PY



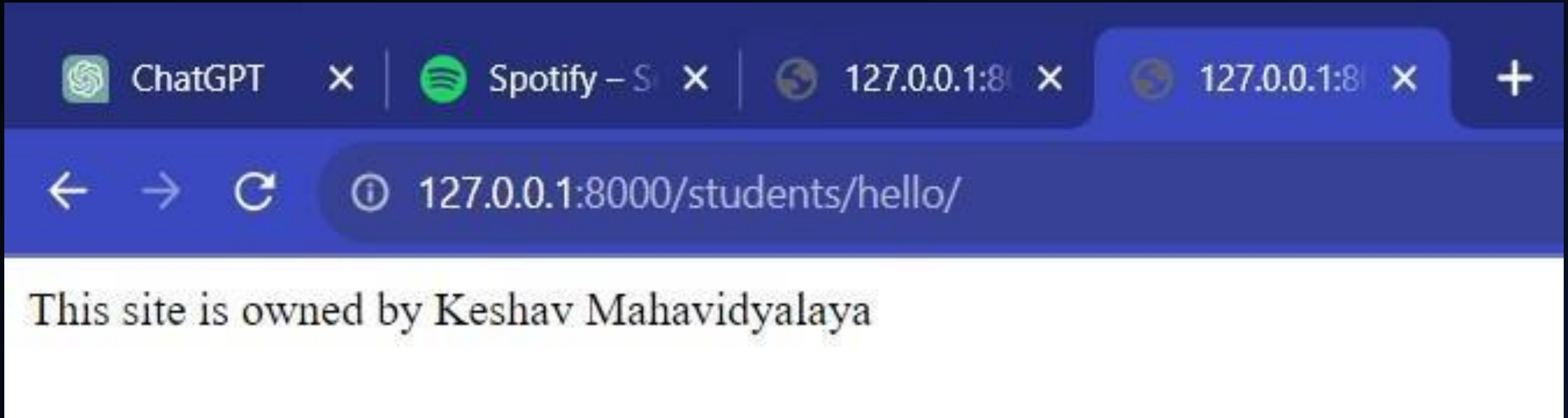
```python
from django.shortcuts import render
from django.http import HttpResponse
# Create your views here.

def college_name(request):
    return HttpResponse("This site is owned by Keshav Mahavidyalaya")
```

```
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py startapp stu
dents
PS C:\My Data (Sourabh)\STUDIES\MY STUDY DOCX\BSC COMP. SCI. (H) (Sem - 3) (2023-24)\SEC - BACKEND WEB DEVELOPMENT\College\env\college> python manage.py runserver
Watching for file changes with StatReloader
```

BROWSER

- Run the following command
- Python manage.py runserver
- Then go to the url generated
- Then append the url with /students/hello

RESULT



127.0.0.1:8000/students/hello/

This site is owned by Keshav Mahavidyalaya

2.

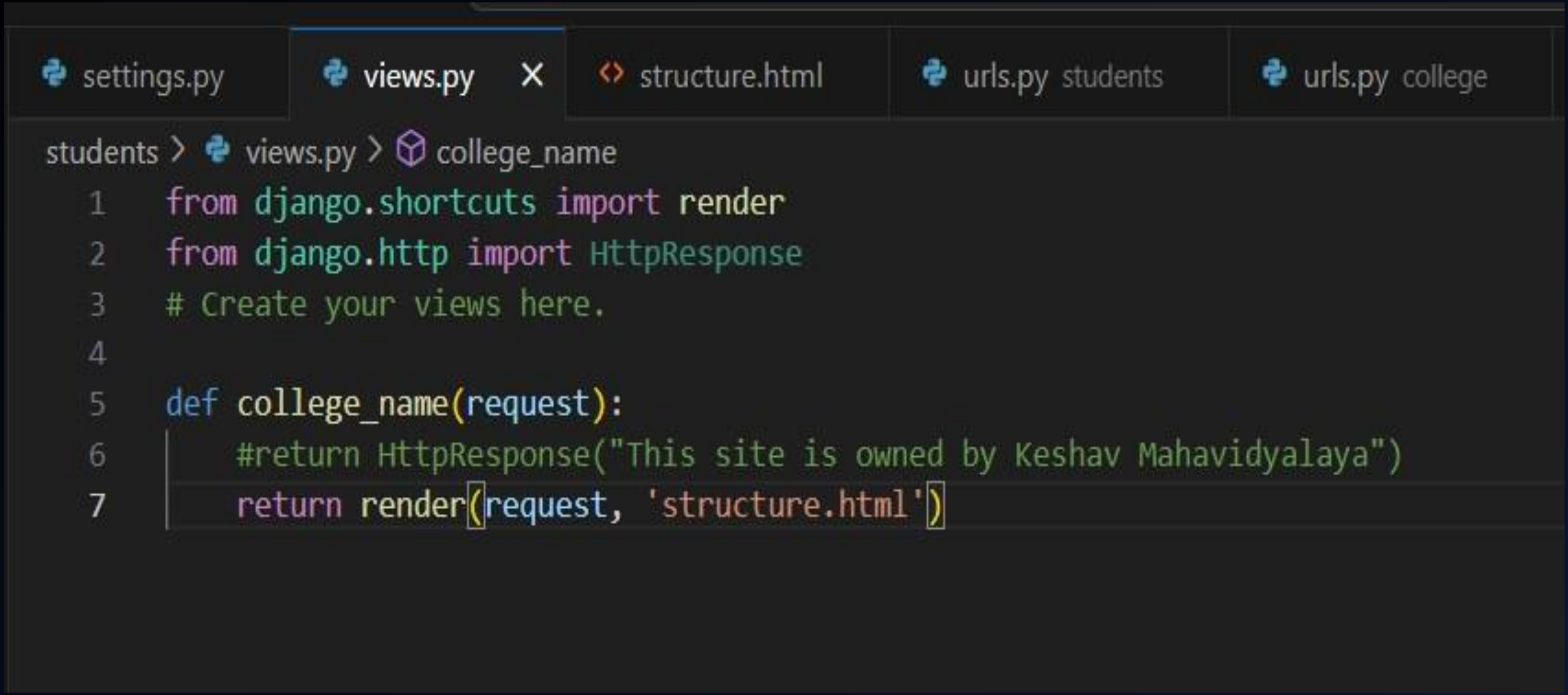
Creating templates

DISPLAY HTML PAGES ON THE CLIENT SIDE (BROWSER)

TEMPLATE – HTML PAGE

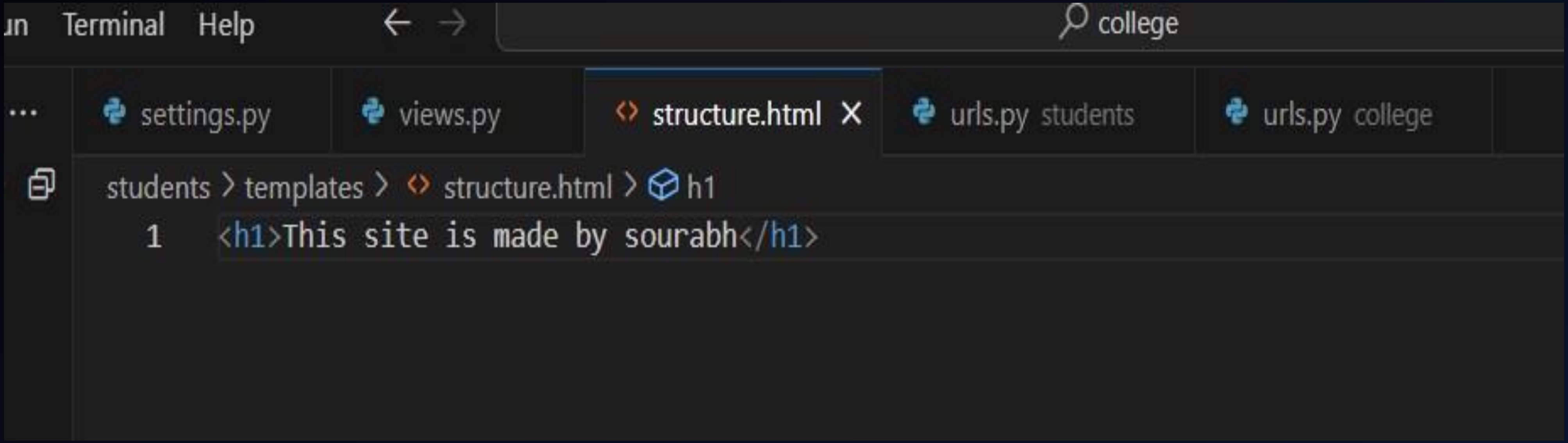
- To the same project, make the following changes
- Create templates folder inside the app directory and create html page inside it.
- Then Change views.py

VIEWS.PY



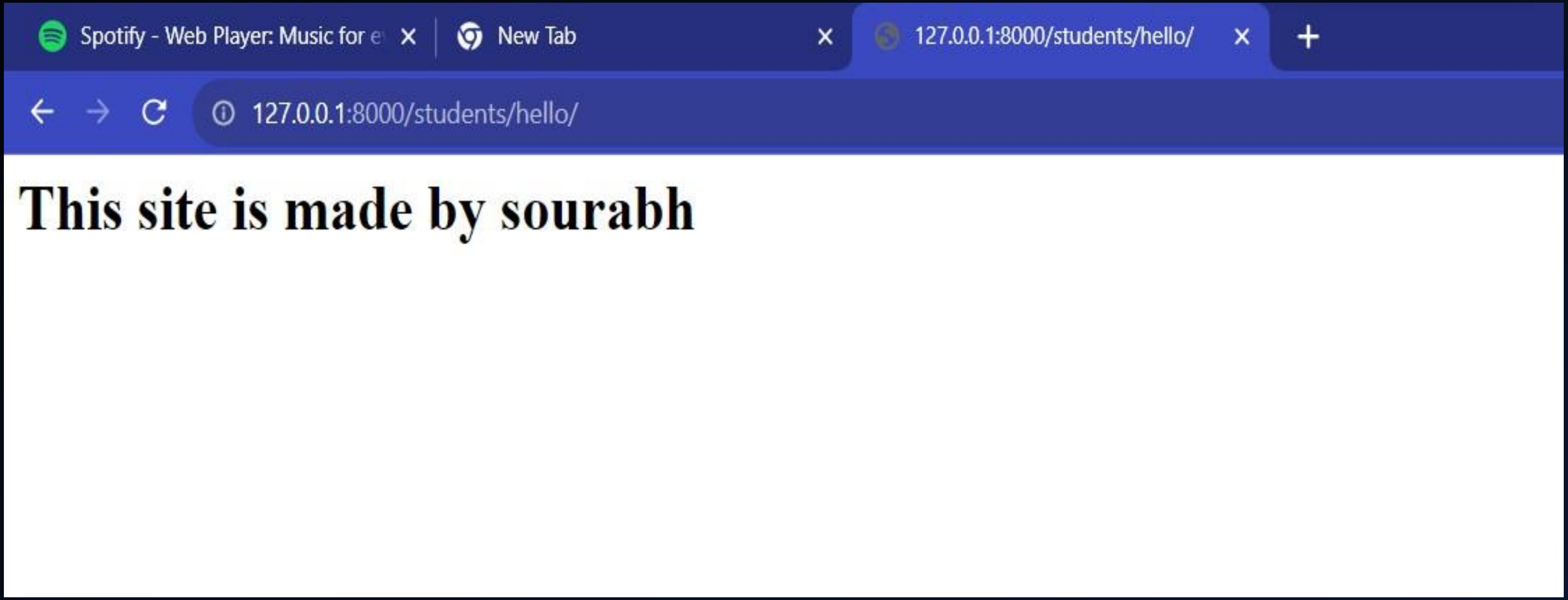
```python
from django.shortcuts import render
from django.http import HttpResponse
# Create your views here.

def college_name(request):
    #return HttpResponse("This site is owned by Keshav Mahavidyalaya")
    return render(request, 'structure.html')
```

HTML PAGE INSIDE TEMPLATES



```html
<h1>This site is made by sourabh</h1>
```

BROWSER


Spotify - Web Player: Music for e
New Tab
127.0.0.1:8000/students/hello/
127.0.0.1:8000/students/hello/

This site is made by sourabh

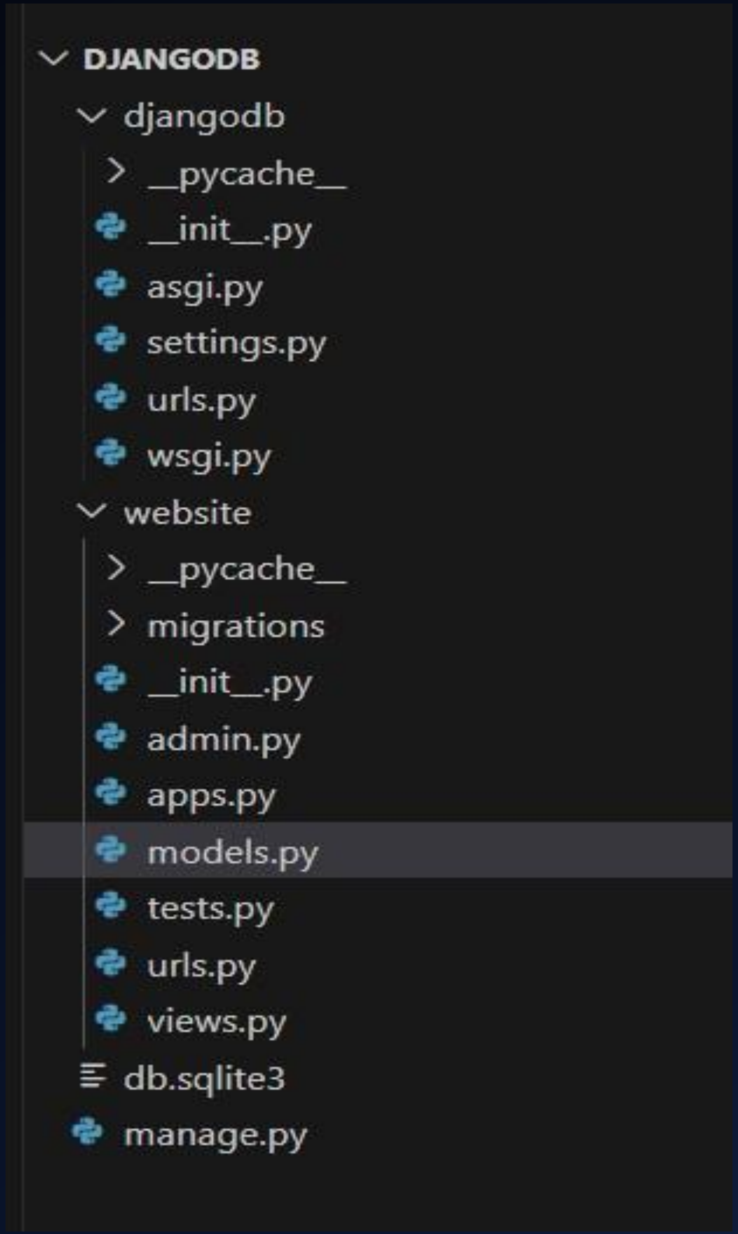
3.

The Admin panel

USER ADDING DATA TO THE DATABASE

INFORMATION

- Create another project
- Exampe given:
- Directory name = DjangoDb
- Project name = djangodb
- Appname = website



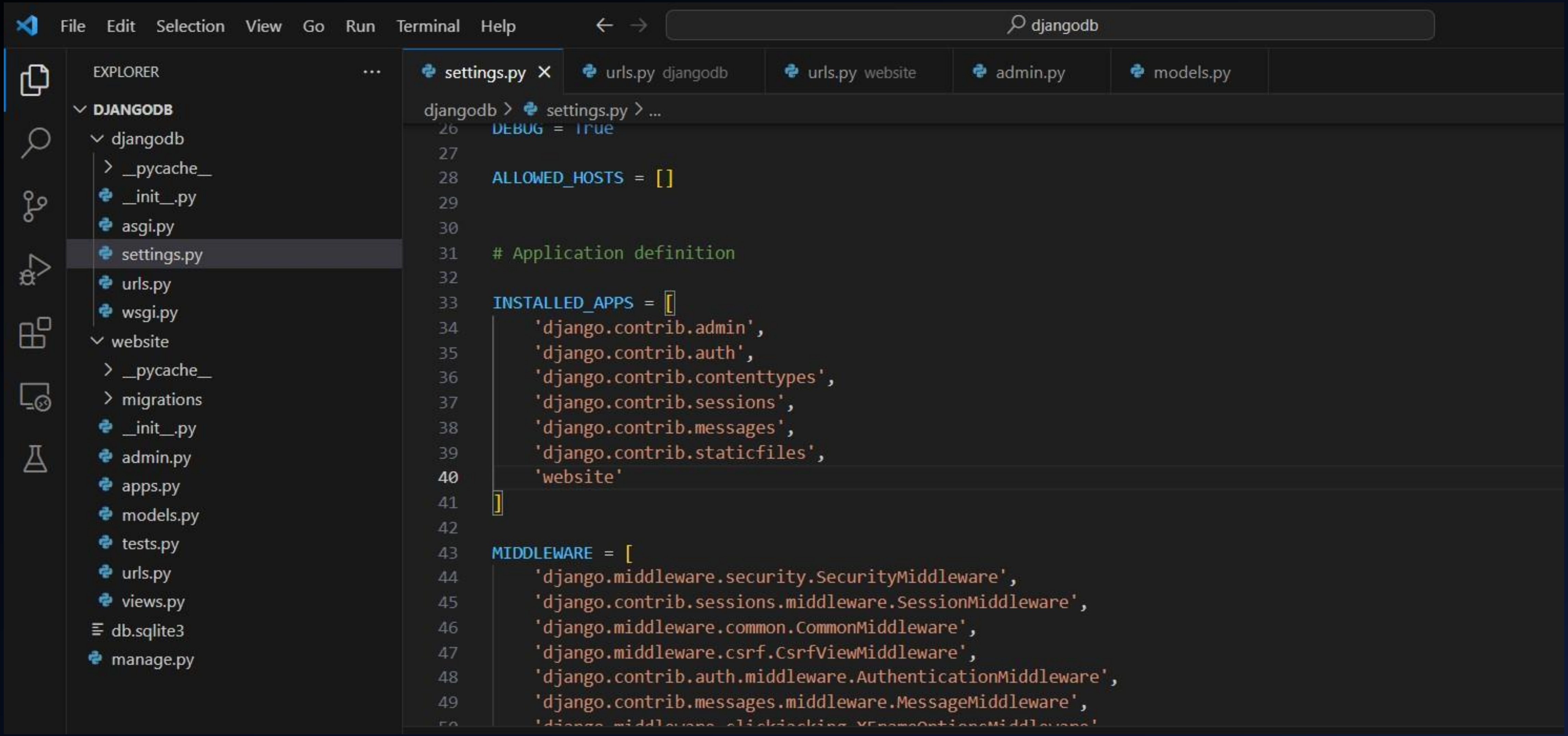
```
DJANGODB
  djangodb
    __pycache__
    __init__.py
    asgi.py
    settings.py
    urls.py
    wsgi.py
  website
    __pycache__
    migrations
    __init__.py
    admin.py
    apps.py
    models.py
    tests.py
    urls.py
    views.py
  db.sqlite3
  manage.py
```

INSTRUCTIONS

- Run -> python manage.py migrate
- Then make changes in the models.py and other files as shown in next slides
- Then create an admin user by running the command -> python manage.py createsuperuser
- Then create a user – remember the username and password
- Then run the command -> python manage.py makemigrations
- Then again -> python manage.py migrate
- Python manage.py runserver

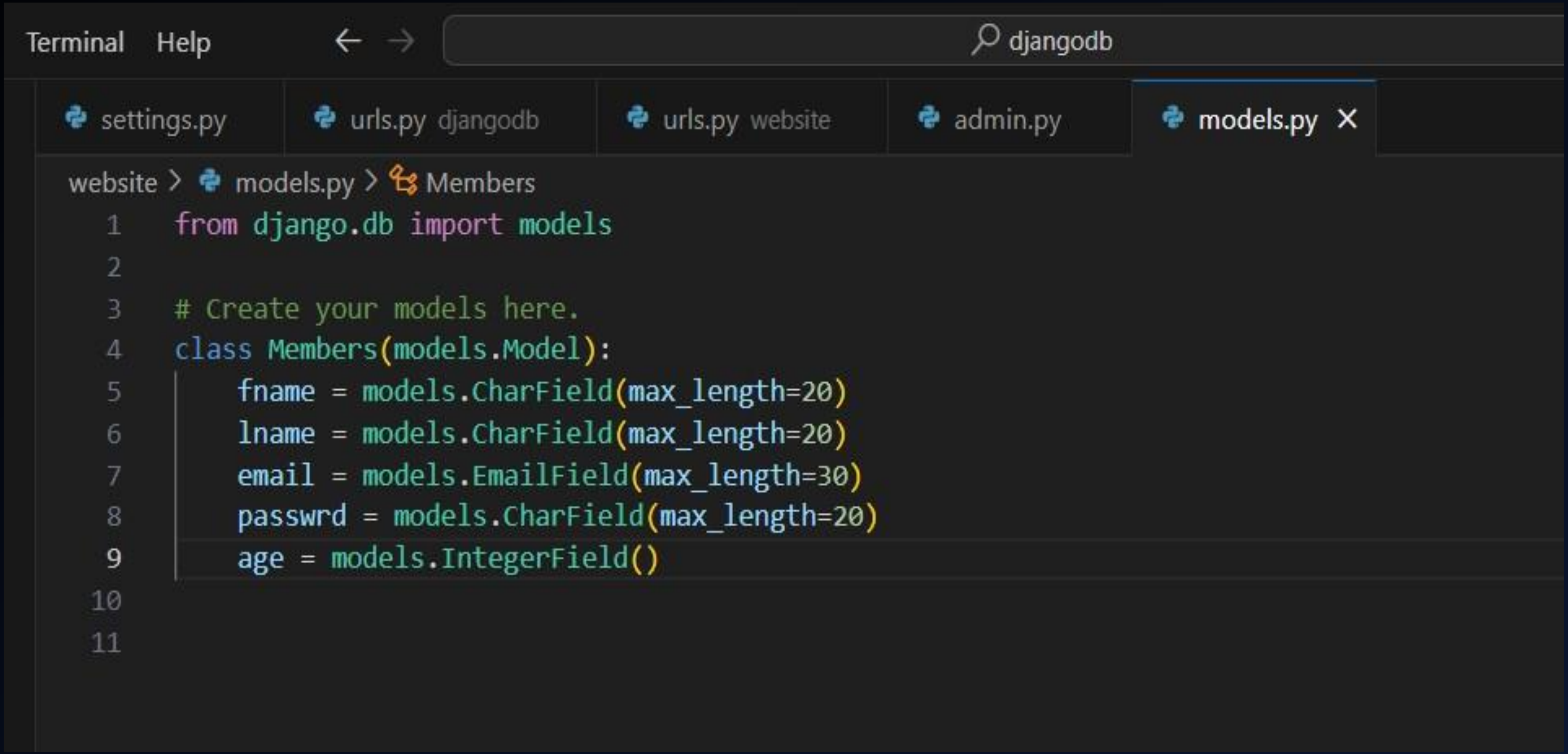
CHANGES BEFORE RUNNING THE INSTRUCTED COMMANDS

SETTINGS.PY



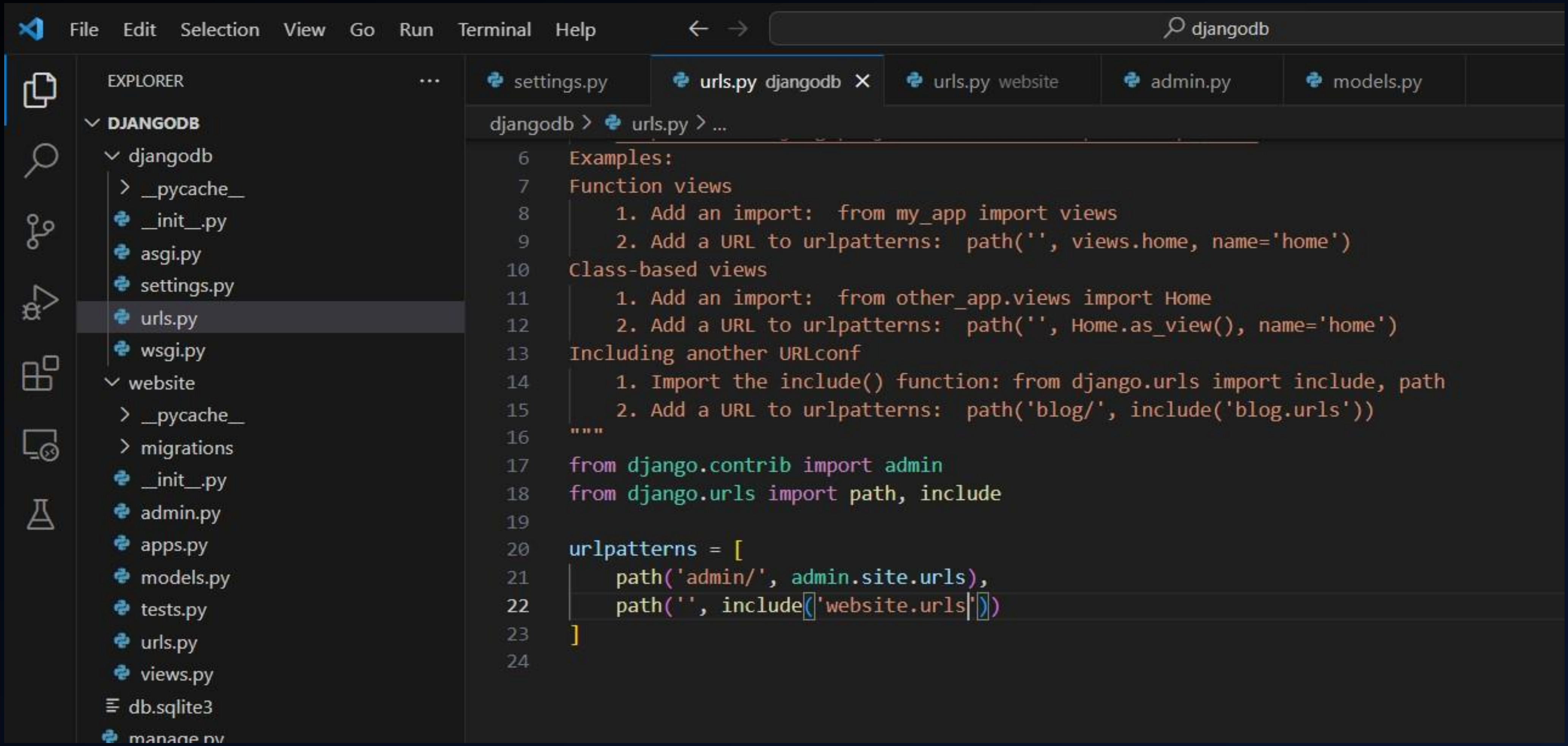
```
DEBUG = True

ALLOWED_HOSTS = []


# Application definition

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

MIDDLEWARE = [
    'django.middleware.security.SecurityMiddleware',
    'django.contrib.sessions.middleware.SessionMiddleware',
    'django.middleware.common.CommonMiddleware',
    'django.middleware.csrf.CsrfViewMiddleware',
    'django.contrib.auth.middleware.AuthenticationMiddleware',
    'django.contrib.messages.middleware.MessageMiddleware',
    'django.middleware.clickjacking.XFrameOptionsMiddleware',
```

MODELS.PY



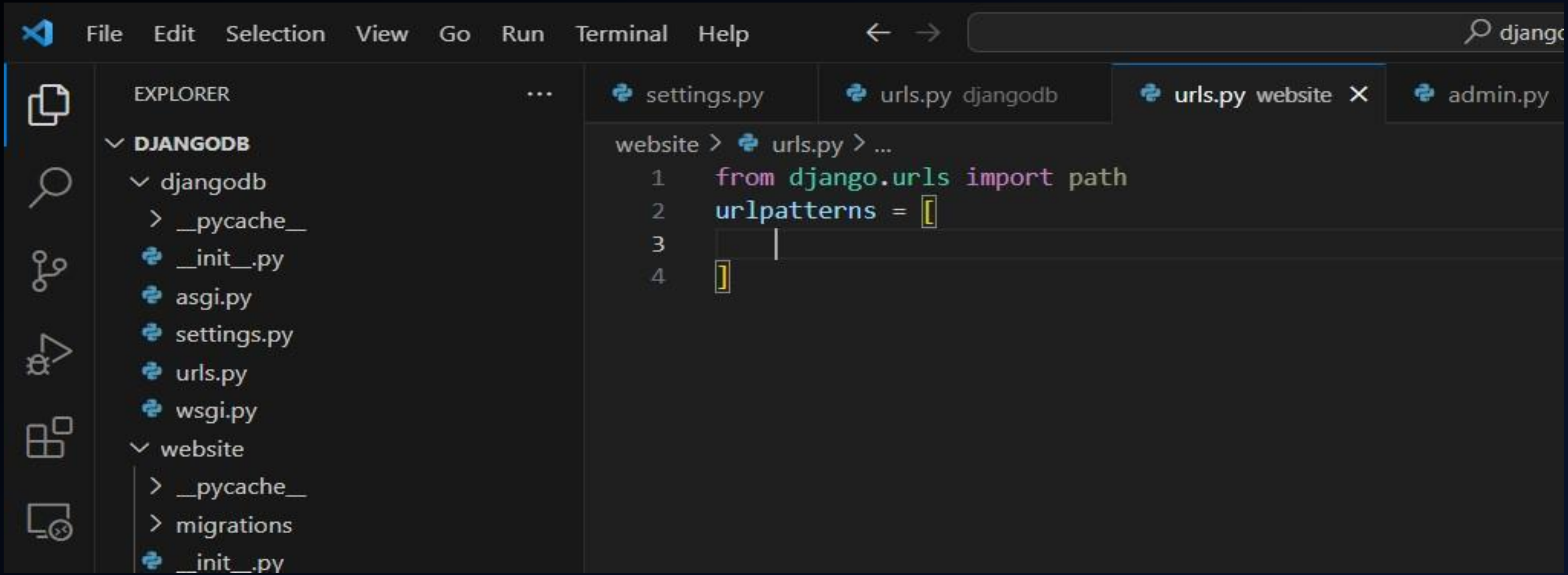
```python
from django.db import models

# Create your models here.
class Members(models.Model):
    fname = models.CharField(max_length=20)
    lname = models.CharField(max_length=20)
    email = models.EmailField(max_length=30)
    passwrd = models.CharField(max_length=20)
    age = models.IntegerField()


```

PROJECT – URLS.PY



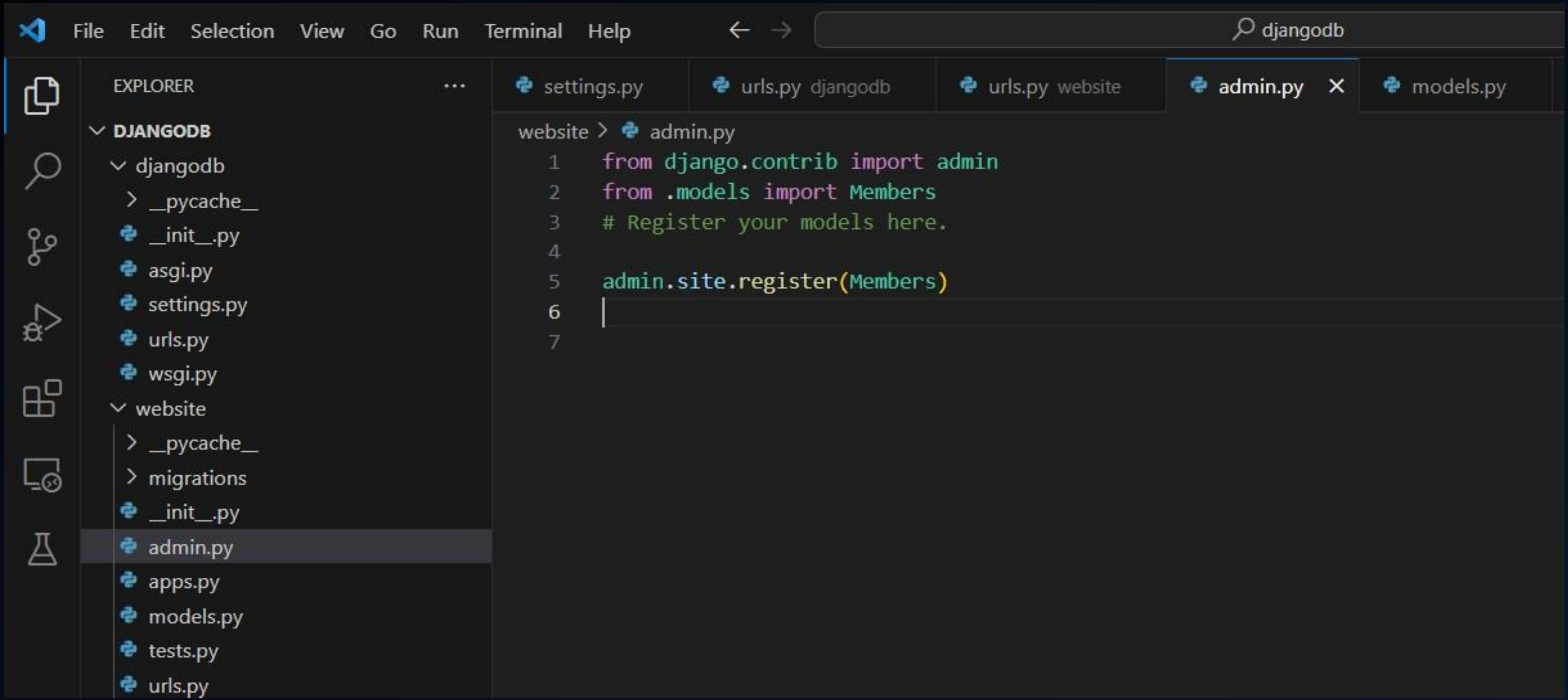
```
Examples:
Function views
    1. Add an import:  from my_app import views
    2. Add a URL to urlpatterns:  path('', views.home, name='home')
Class-based views
    1. Add an import:  from other_app.views import Home
    2. Add a URL to urlpatterns:  path('', Home.as_view(), name='home')
Including another URLconf
    1. Import the include() function: from django.urls import include, path
    2. Add a URL to urlpatterns:  path('blog/', include('blog.urls'))
"""
from django.contrib import admin
from django.urls import path, include

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

```

APP – URLS.PY



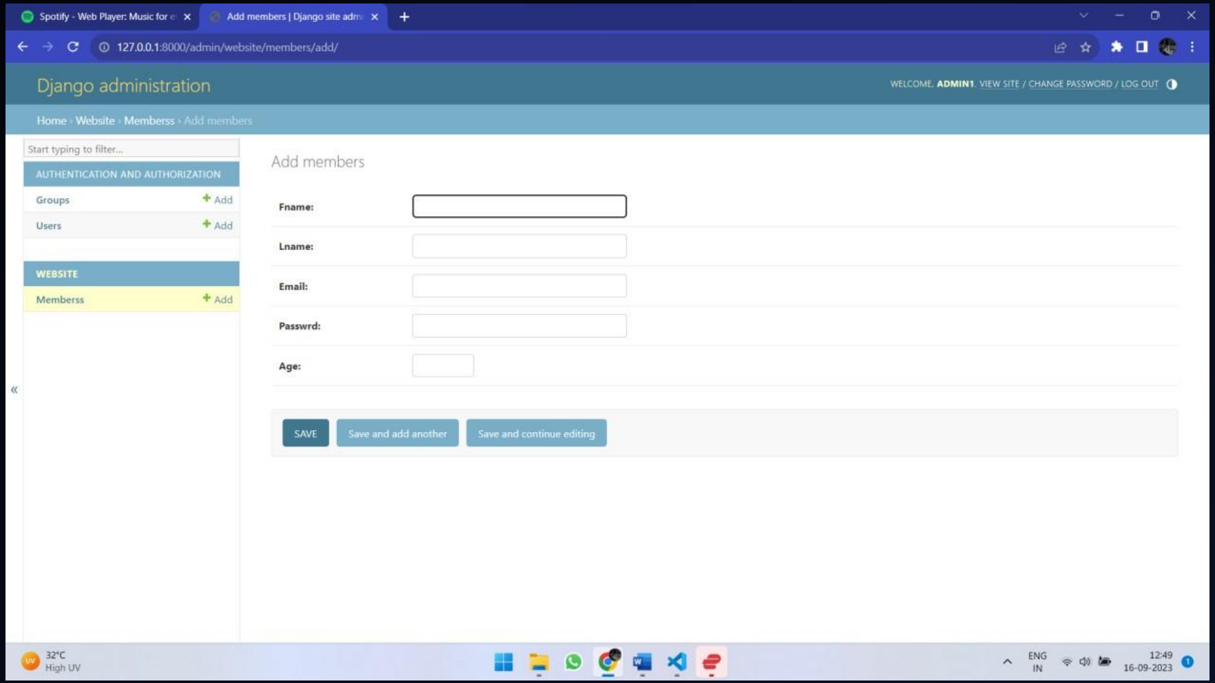
```
from django.urls import path
urlpatterns = [
    
]
```

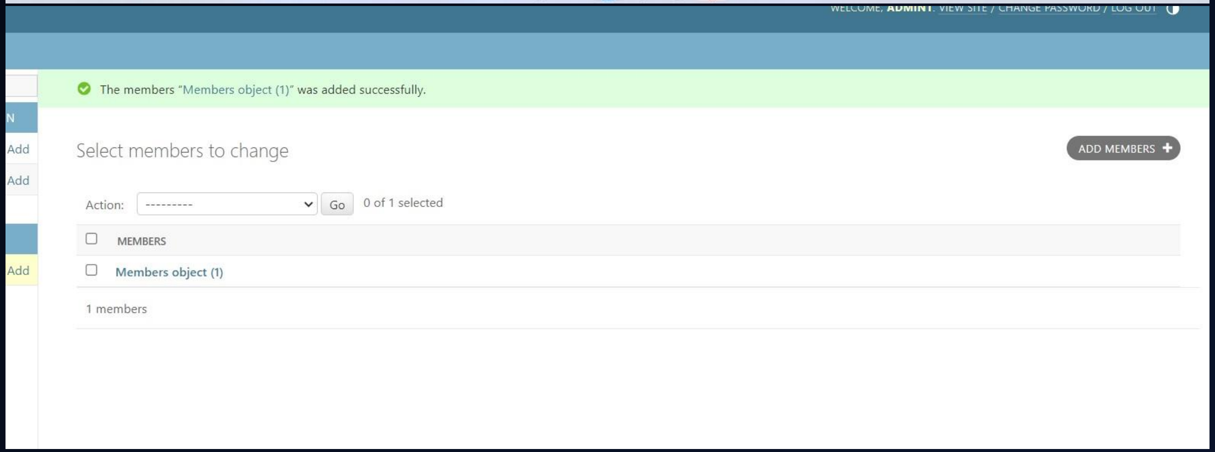
ADMIN.PY



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

admin.site.register(Members)

```

ADDING MEMBERS ON THE CLIENT SIDE


Spotify - Web Player: Music for e
Add members | Django site adm
127.0.0.1:8000/admin/website/members/add/
Django administration
WELCOME, ADMIN1. VIEW SITE / CHANGE PASSWORD / LOG OUT
Home › Website › Memberss › Add members
Start typing to filter...
AUTHENTICATION AND AUTHORIZATION
Groups + Add
Users + Add
WEBSITE
Memberss + Add
Add members
Fname:
Lname:
Email:
Passwrd:
Age:
SAVE
Save and add another
Save and continue editing
32°C
High UV
ENG
IN
12:49
16-09-2023



The members "Members object (1)" was added successfully.

Select members to change

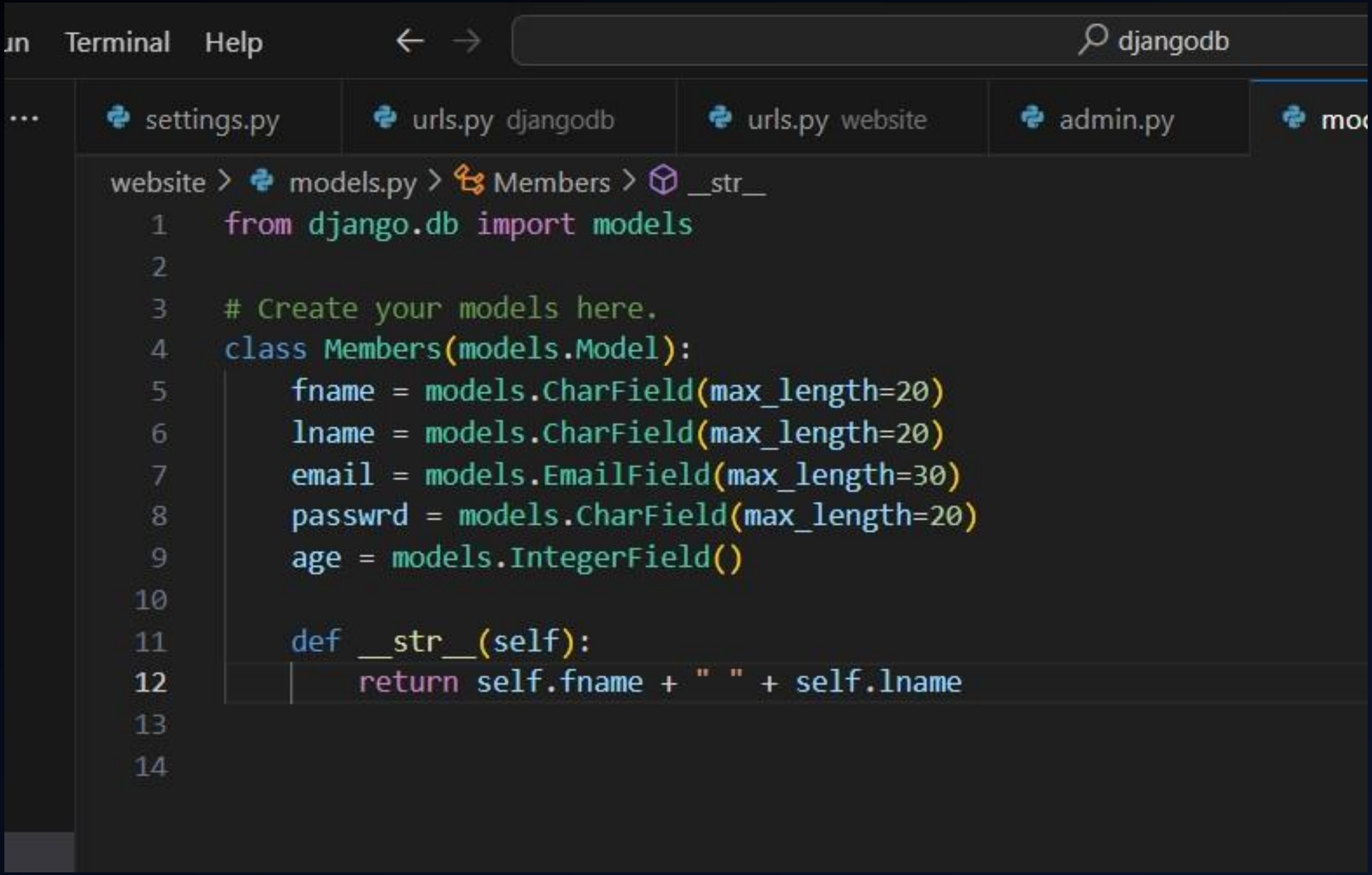
0 of 1 selected

□ MEMBERS

□ Members object (1)

1 members

UPDATED MODELS.PY – TO DISPLAY NAME LIST



```
from django.db import models

# Create your models here.
class Members(models.Model):
    fname = models.CharField(max_length=20)
    lname = models.CharField(max_length=20)
    email = models.EmailField(max_length=30)
    passwrd = models.CharField(max_length=20)
    age = models.IntegerField()

    def __str__(self):
        return self.fname + " " + self.lname
```

4.

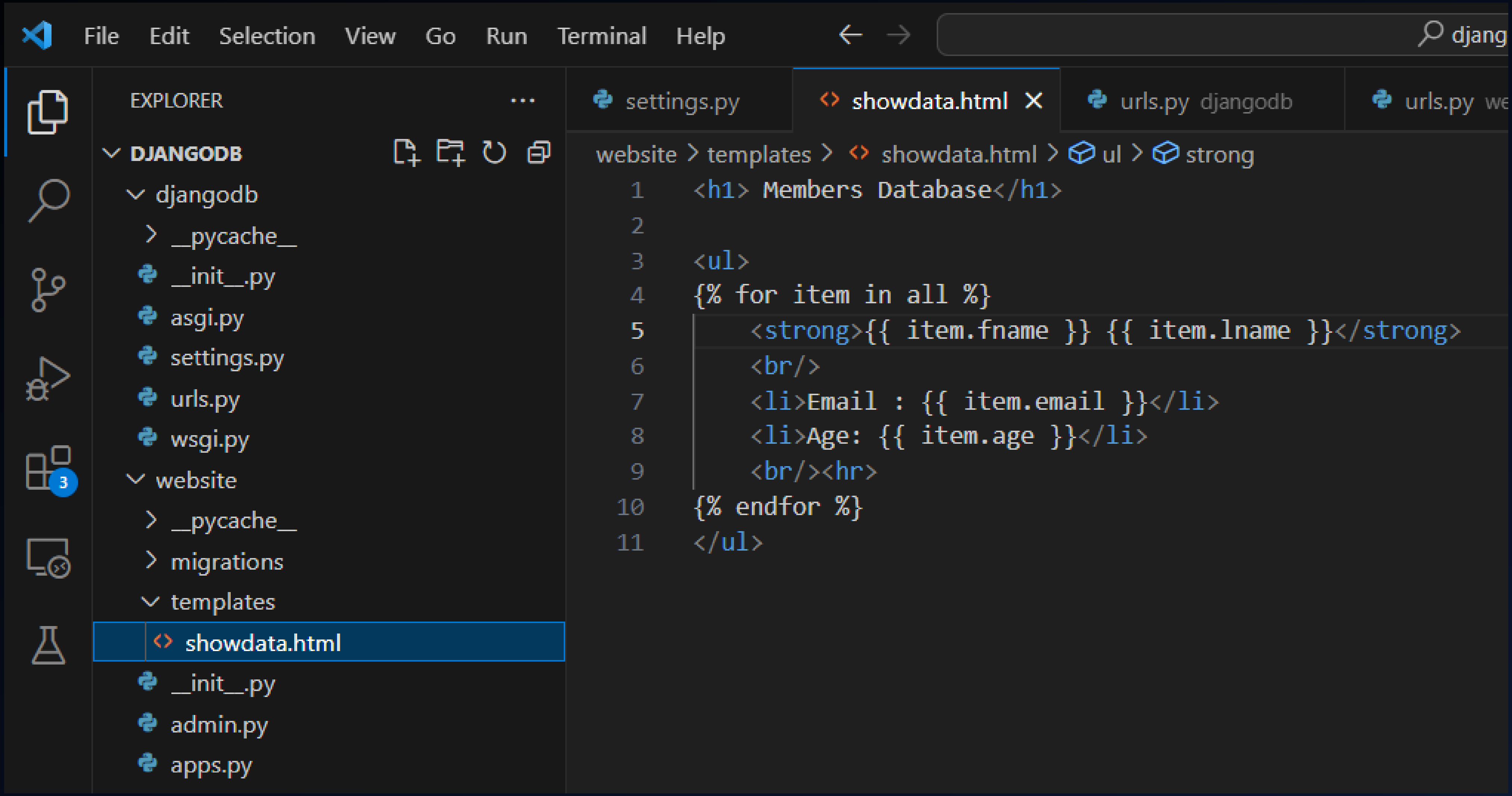
Pull data from database

EXTRACT DATA FROM DATABASE AND DISPLAY ON THE CLIENT SIDE

INSTRUCTIONS

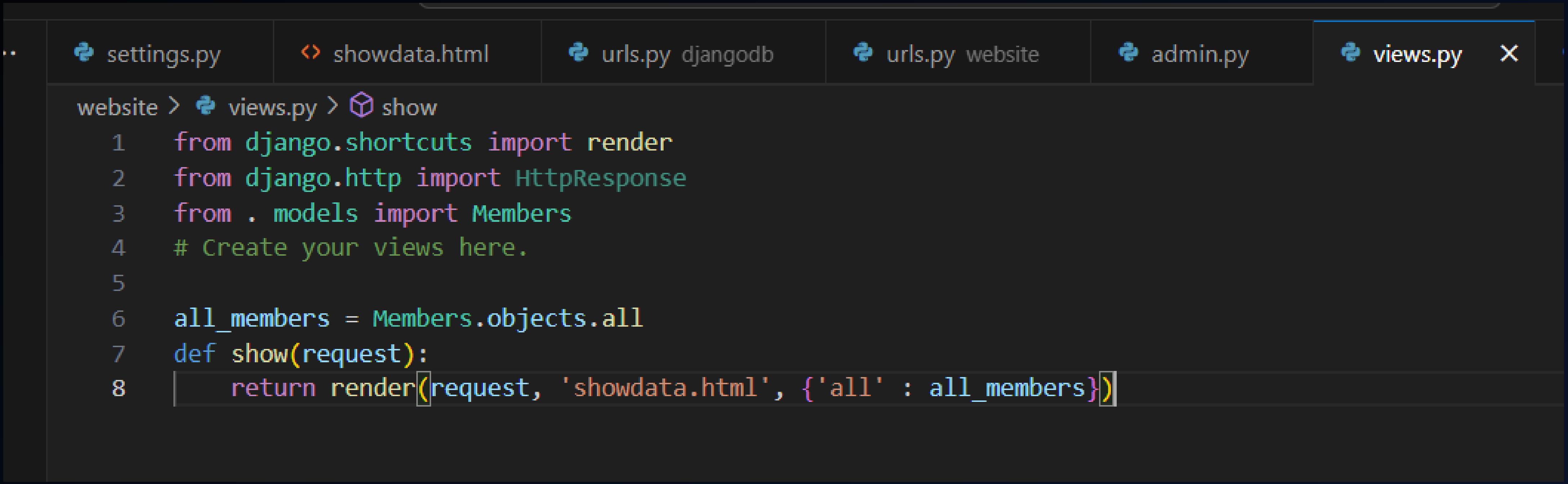
- This is continuation of the previous project in which we display the content of the database on to the client screen.
- These data are entered by the user in the admin panel earlier.
- We need to create an html file for this
- Let’s name it showdata.html
- Make changes to the html page in the templates

SHOWDATA.HTML



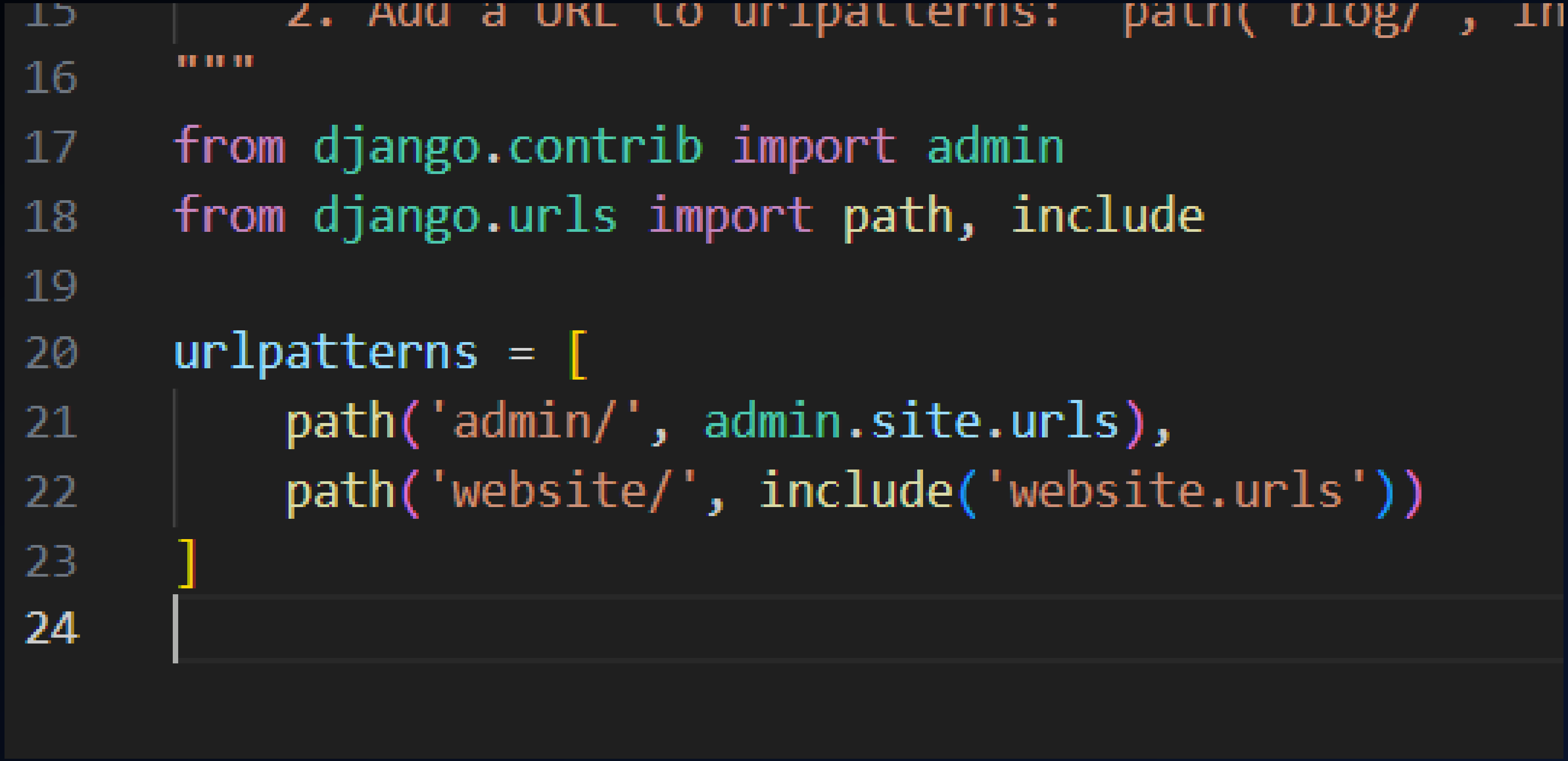
```
<h1> Members Database</h1>

<ul>
{% for item in all %}
    <strong>{{ item.fname }} {{ item.lname }}</strong>
    <br/>
    <li>Email : {{ item.email }}</li>
    <li>Age: {{ item.age }}</li>
    <br/><hr>
{% endfor %}
</ul>
```

VIEWS.PY



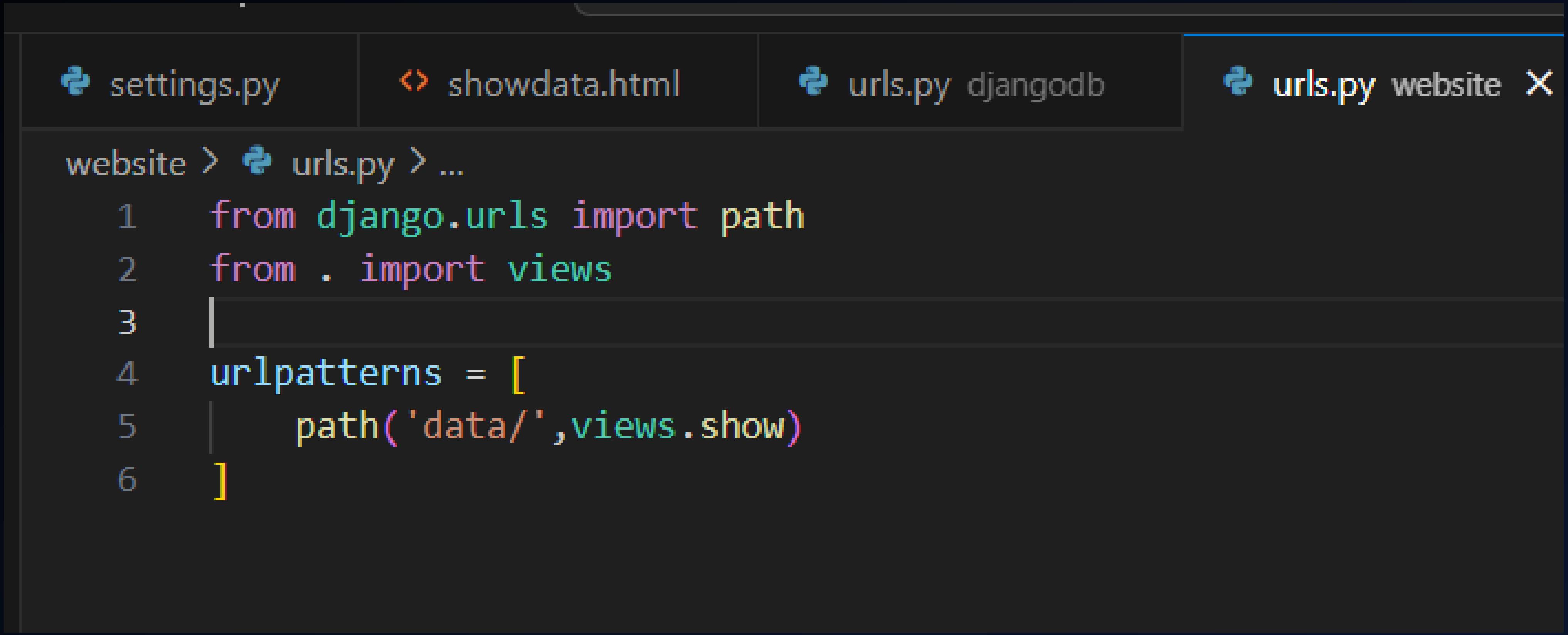
```python
from django.shortcuts import render
from django.http import HttpResponse
from . models import Members
# Create your views here.

all_members = Members.objects.all
def show(request):
    return render(request, 'showdata.html', {'all' : all_members})
```

PROJECT – URLS.PY



```
    2. Add a URL to urlpatterns:  path('blog/', in
"""
from django.contrib import admin
from django.urls import path, include

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

```

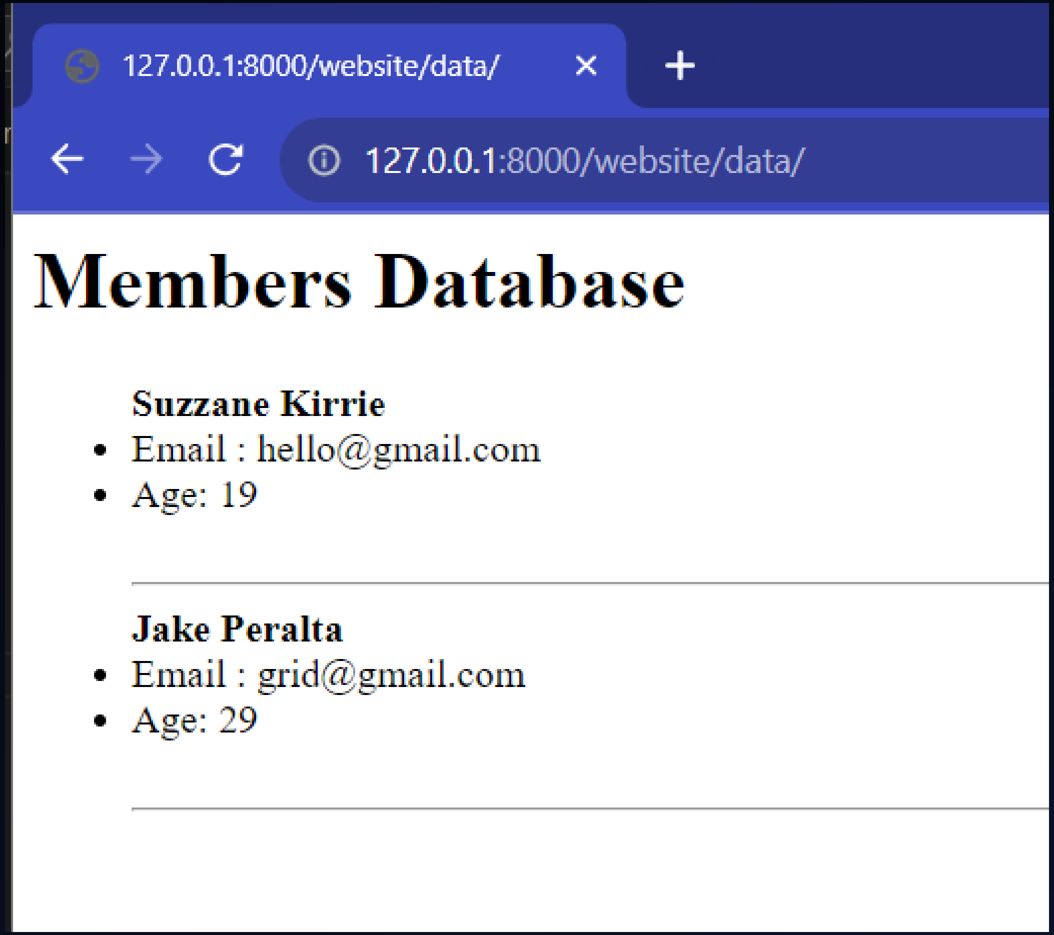
APP – URLS.PY



```python
from django.urls import path
from . import views

urlpatterns = [
    path('data/',views.show)
]
```

No change in admin.py and models.py

CLIENT SIDE



Members Database

Suzzane Kirrie

- Email : hello@gmail.com
- Age: 19

Jake Peralta

- Email : grid@gmail.com
- Age: 29

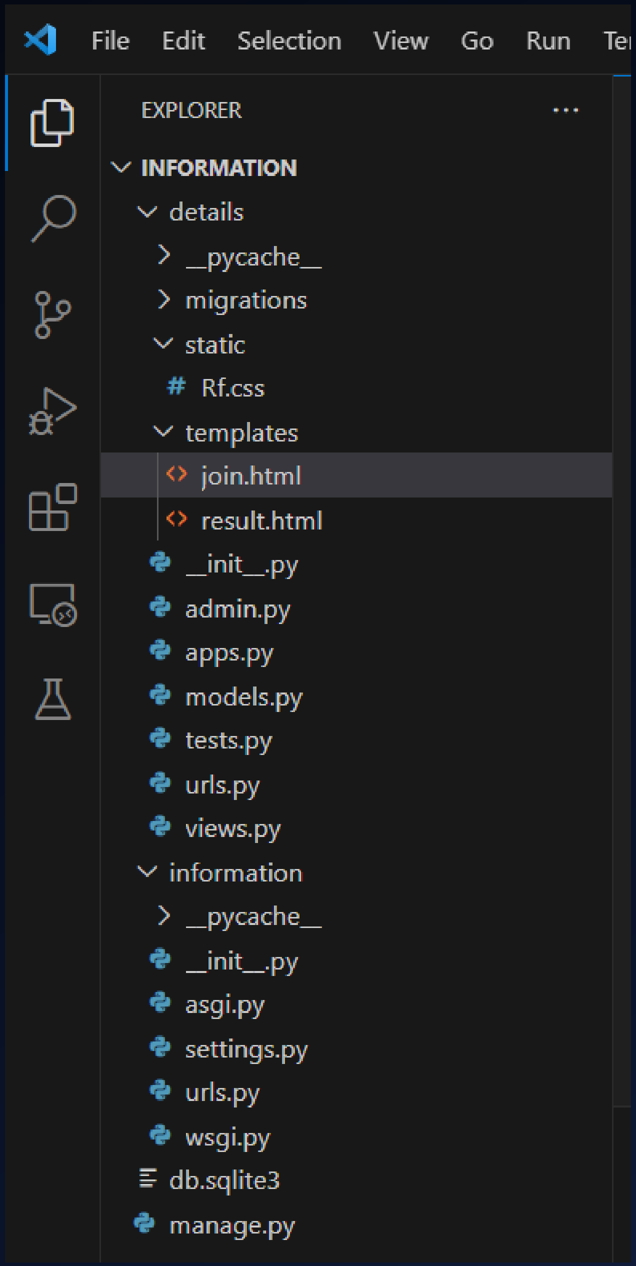
5.

Creating Form and applying CSS

TAKING INPUT FROM USER AND SHOWING DESIRED OUTPUT

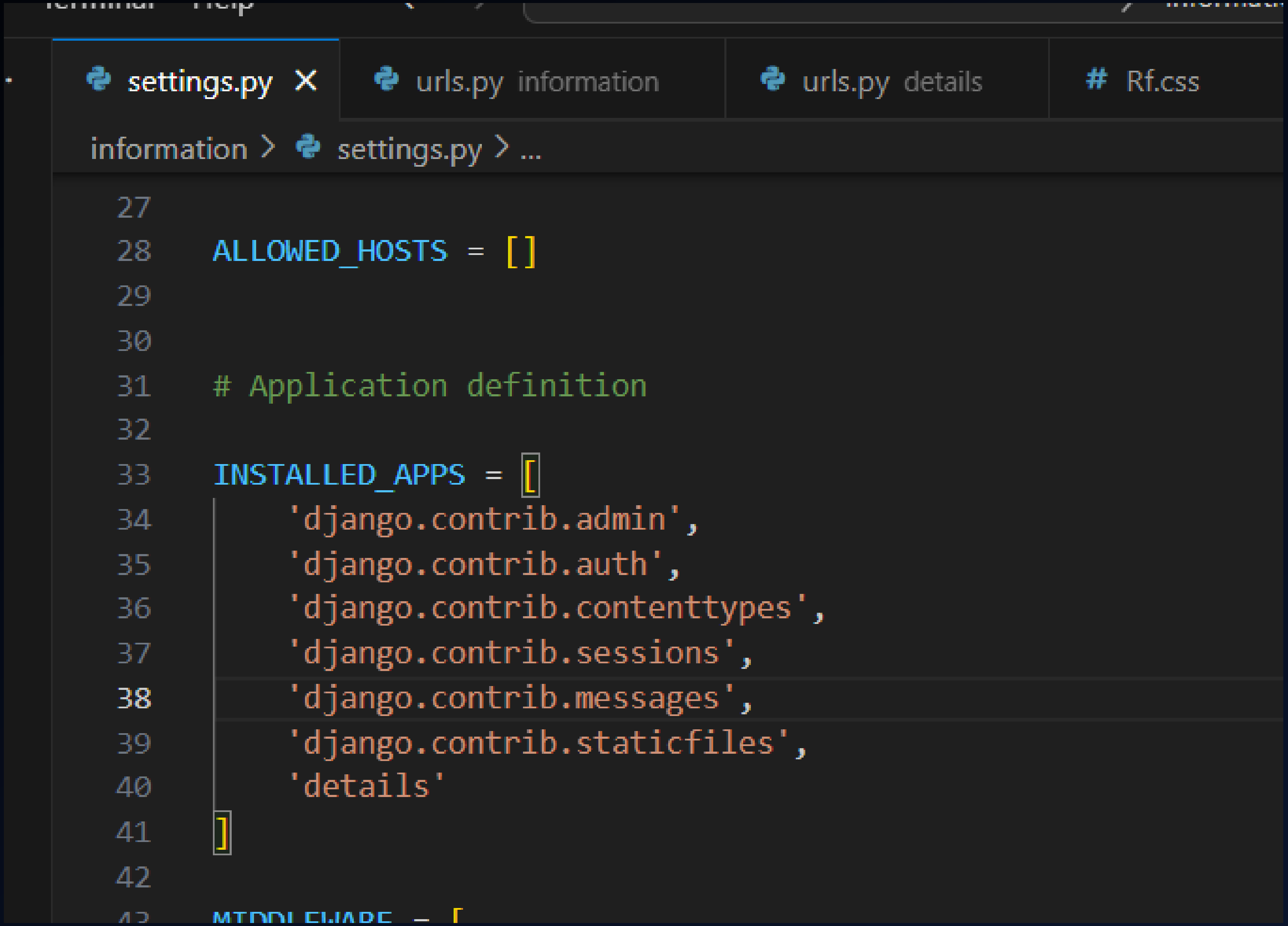
INSTRUCTIONS

- Directory name = INFO
- Project name = information
- App name = details
- Html page 1 = join.html
- Html page 2 = result.html
- Views.py functions = join(), result()
- Make the following changes



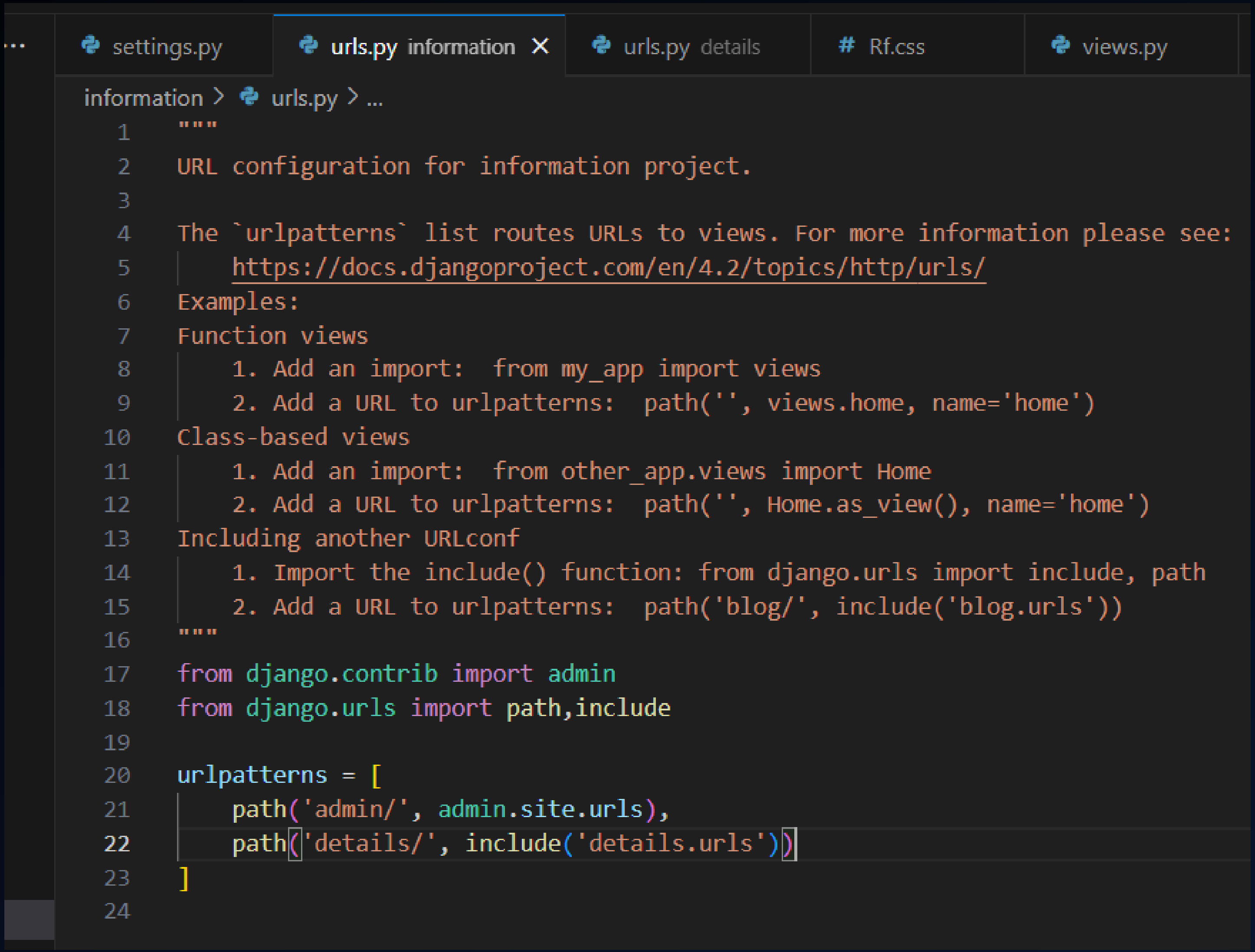
```
INFORMATION
  details
    __pycache__
    migrations
    static
      Rf.css
    templates
      join.html
      result.html
    __init__.py
    admin.py
    apps.py
    models.py
    tests.py
    urls.py
    views.py
  information
    __pycache__
    __init__.py
    asgi.py
    settings.py
    urls.py
    wsgi.py
  db.sqlite3
  manage.py
```

SETTINGS.PY



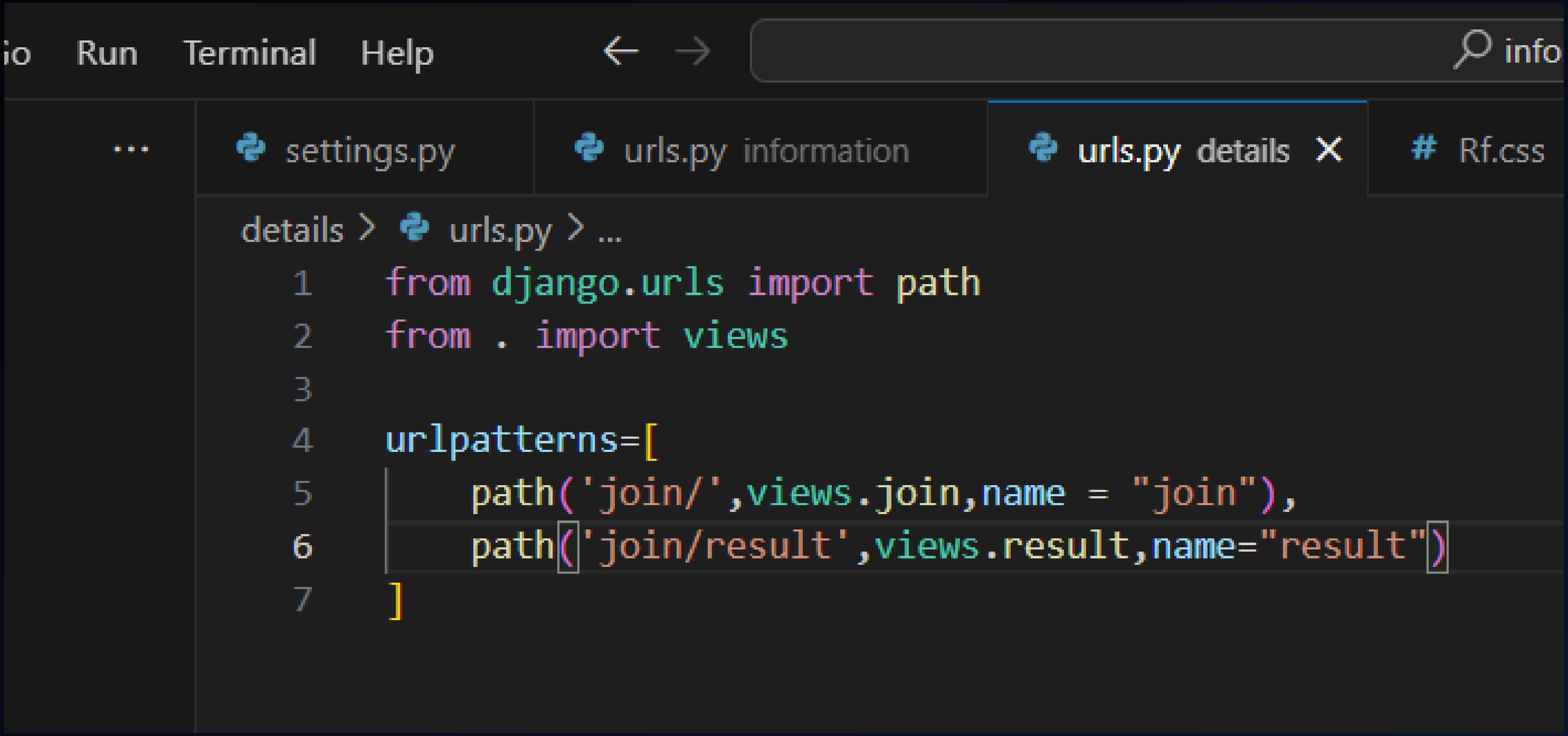
```
ALLOWED_HOSTS = []


# Application definition

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

MIDDLEWARE = [
```

PROJECT – URLS.PY



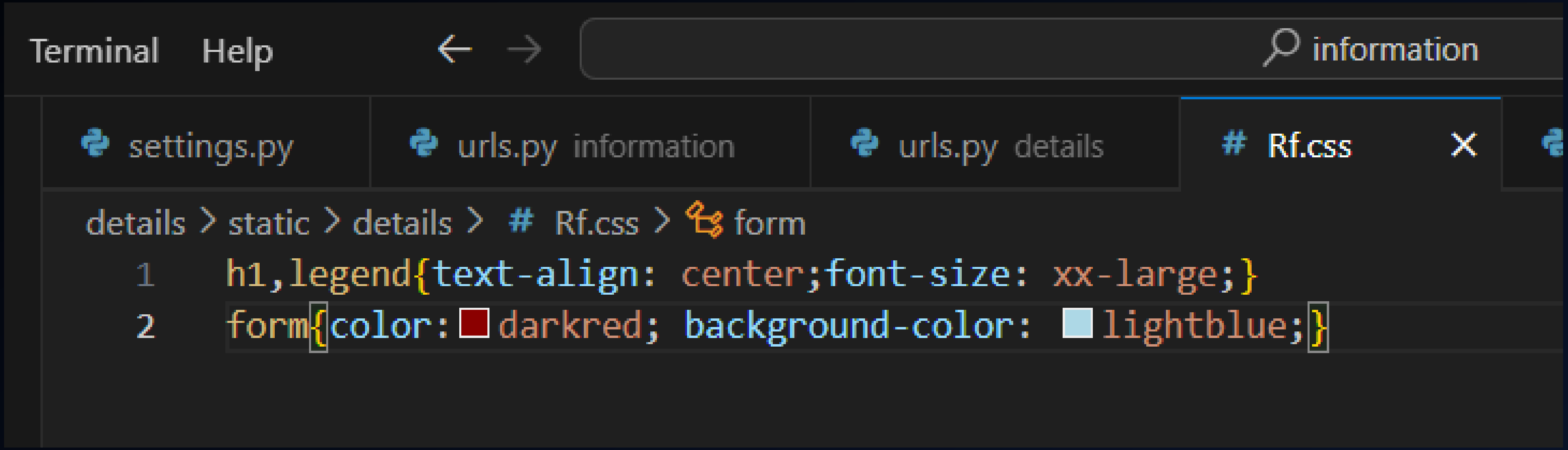
```python
"""
URL configuration for information project.

The `urlpatterns` list routes URLs to views. For more information please see:
    https://docs.djangoproject.com/en/4.2/topics/http/urls/
Examples:
Function views
    1. Add an import:  from my_app import views
    2. Add a URL to urlpatterns:  path('', views.home, name='home')
Class-based views
    1. Add an import:  from other_app.views import Home
    2. Add a URL to urlpatterns:  path('', Home.as_view(), name='home')
Including another URLconf
    1. Import the include() function: from django.urls import include, path
    2. Add a URL to urlpatterns:  path('blog/', include('blog.urls'))
"""
from django.contrib import admin
from django.urls import path,include

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

APP – URLS.PY



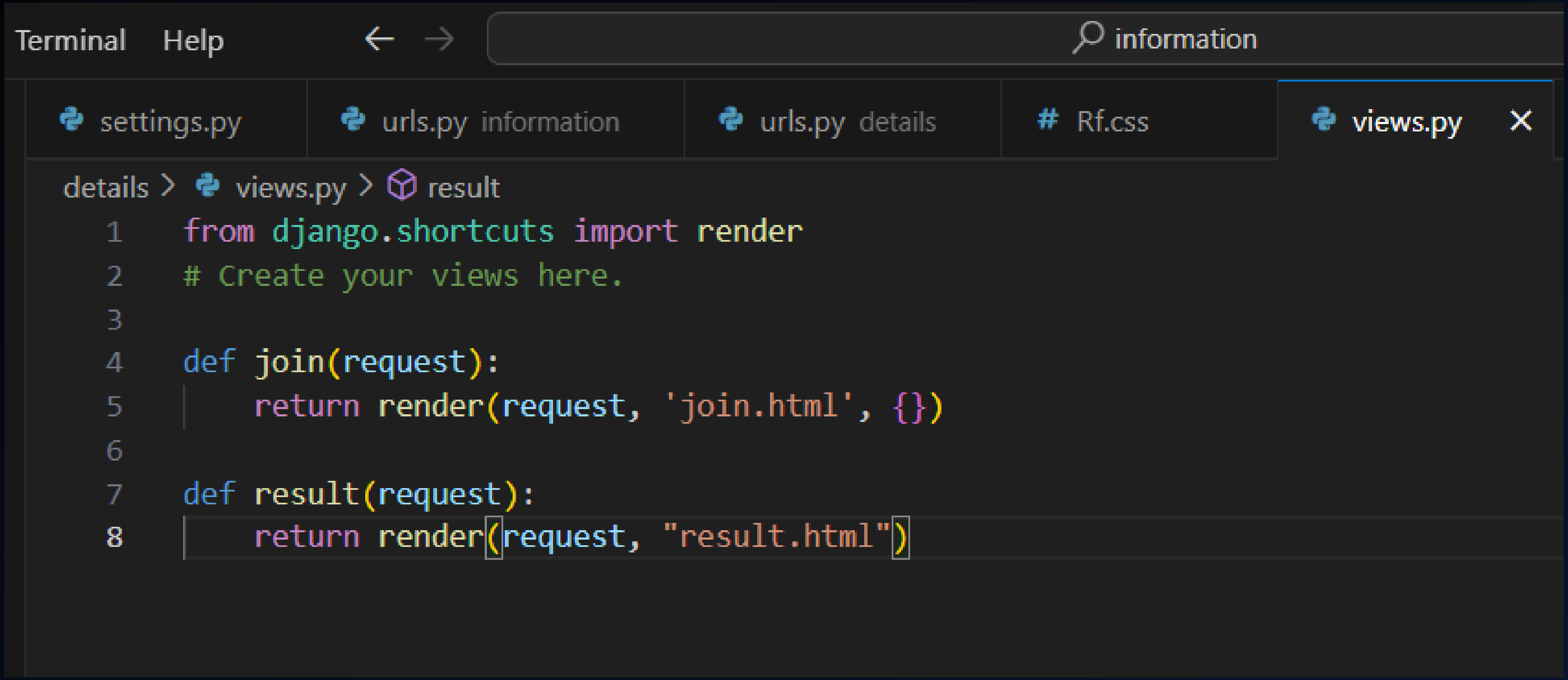
```
from django.urls import path
from . import views

urlpatterns=[
    path('join/',views.join,name = "join"),
    path('join/result',views.result,name="result")
]
```

STYLESHEET – RF.CSS



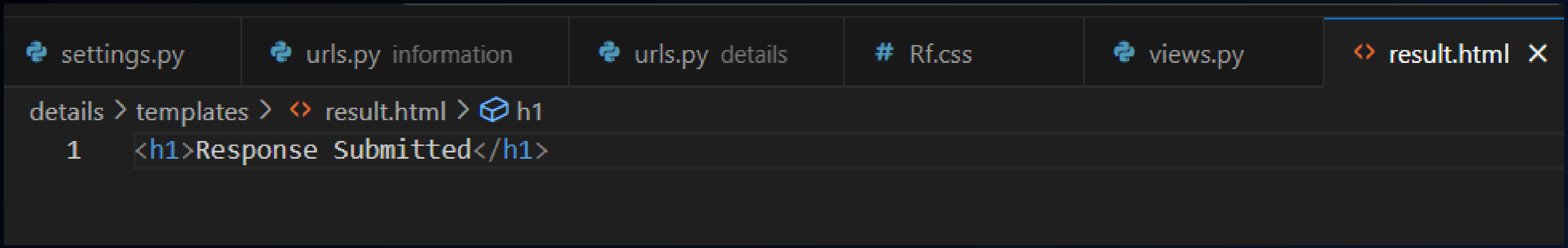
```css
h1,legend{text-align: center;font-size: xx-large;}
form{color: darkred; background-color: lightblue;}
```

VIEWS.PY



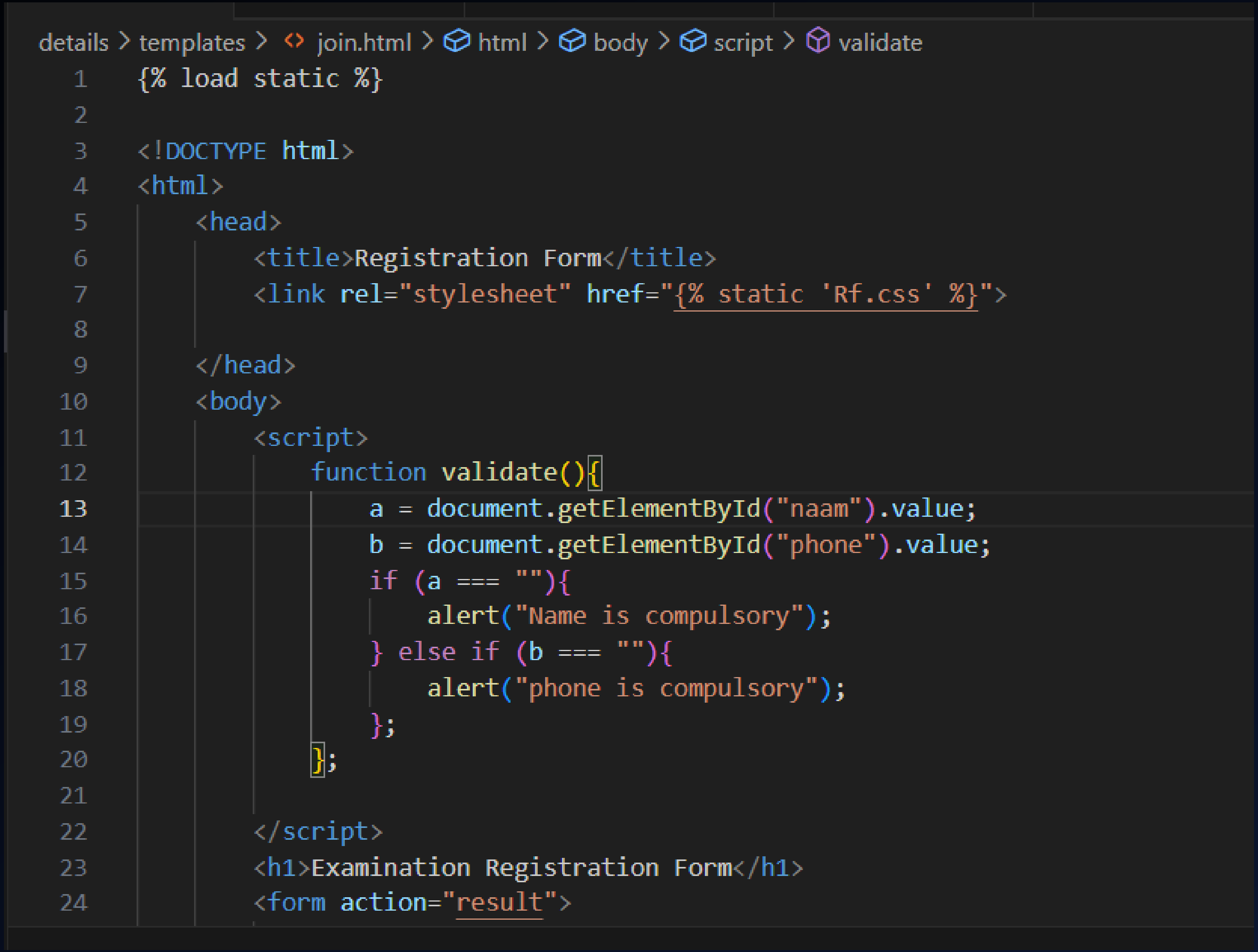
```python
from django.shortcuts import render
# Create your views here.

def join(request):
    return render(request, 'join.html', {})

def result(request):
    return render(request, "result.html")
```

RESULT.HTML



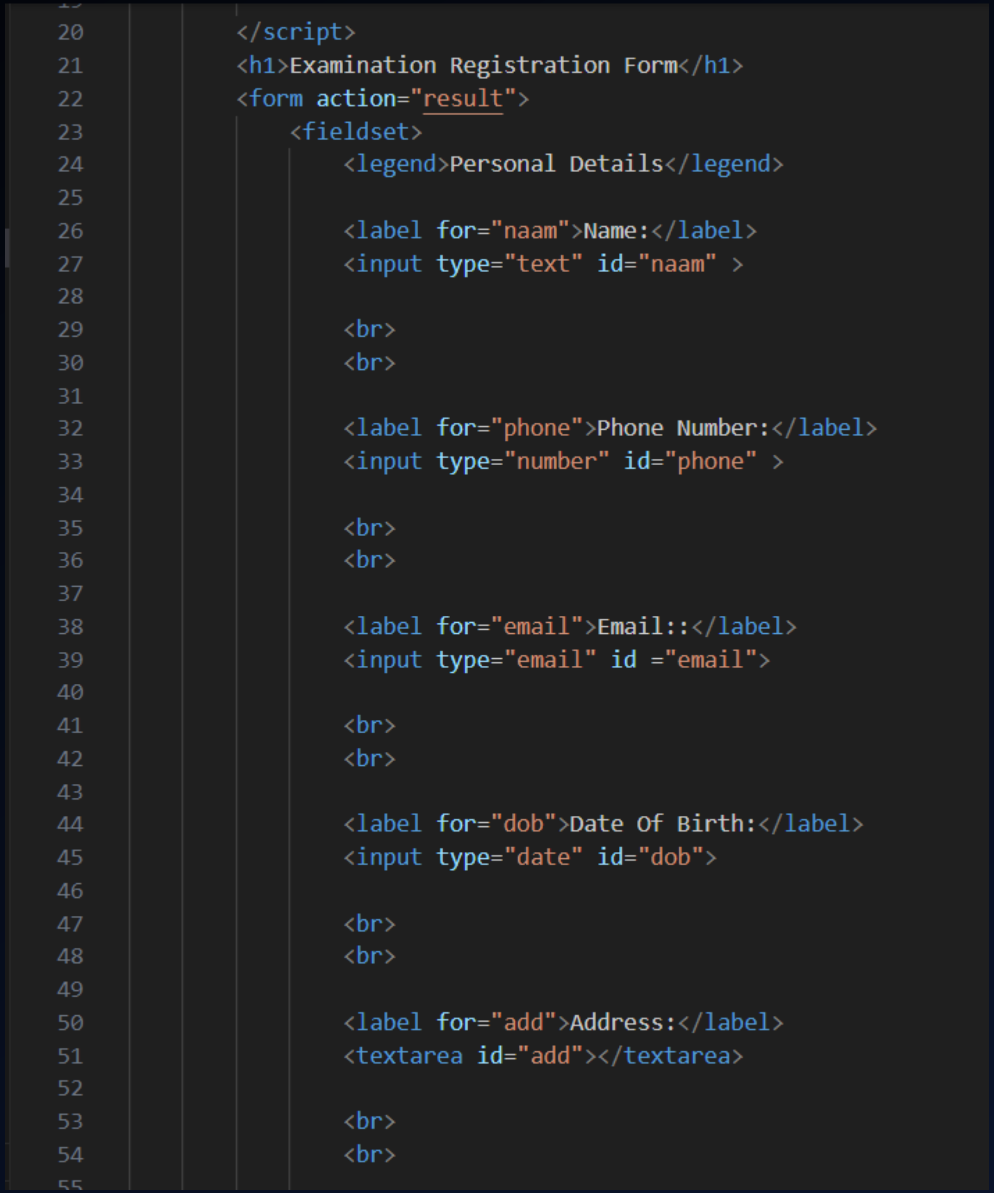
```html
<h1>Response Submitted</h1>
```

JOIN.HTML - 1


details > templates > join.html > html > body > script > validate

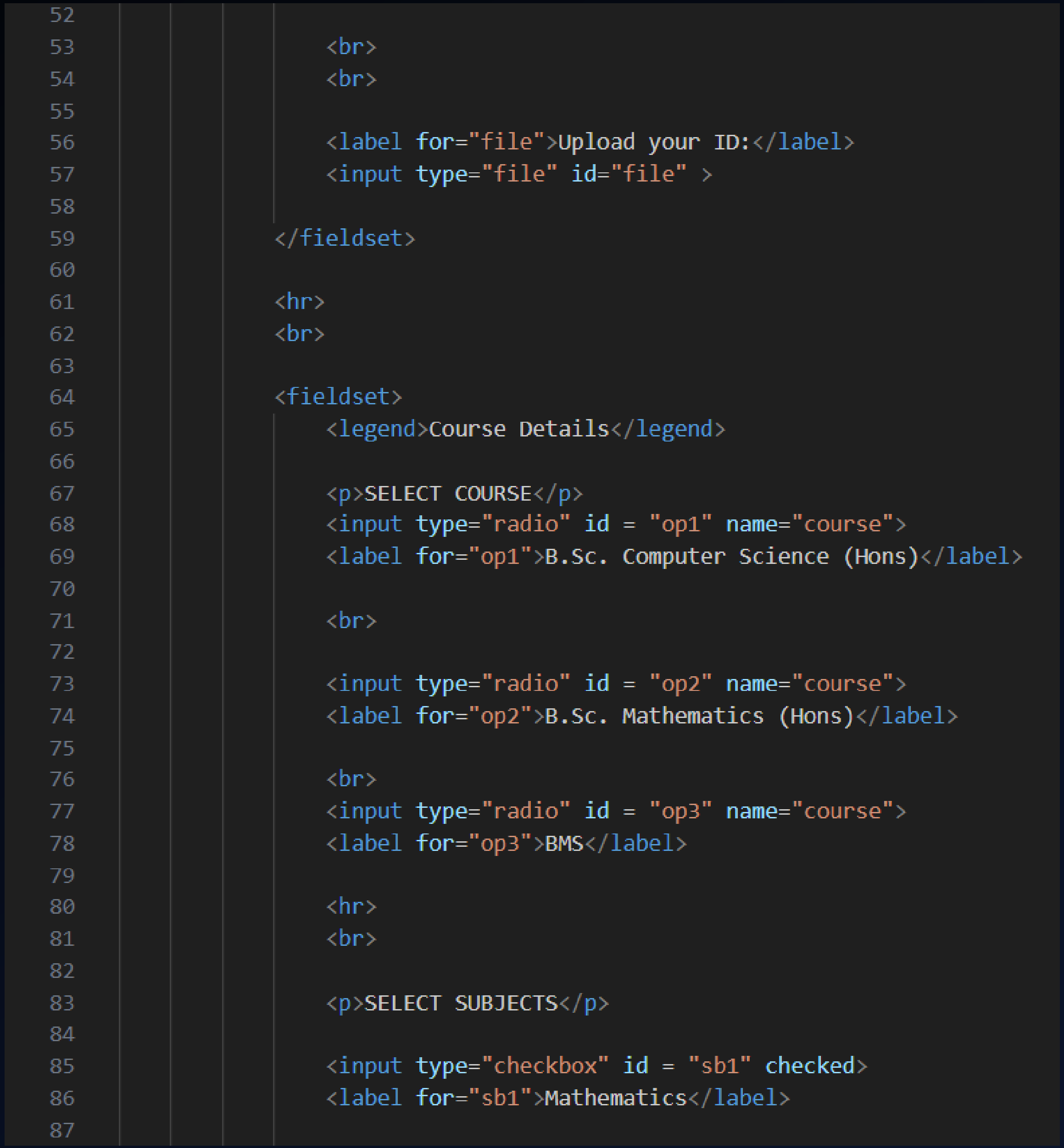
```html
{% load static %}

<!DOCTYPE html>
<html>
    <head>
        <title>Registration Form</title>
        <link rel="stylesheet" href="{% static 'Rf.css' %}">

    </head>
    <body>
        <script>
            function validate(){
                a = document.getElementById("naam").value;
                b = document.getElementById("phone").value;
                if (a === ""){
                    alert("Name is compulsory");
                } else if (b === ""){
                    alert("phone is compulsory");
                };
            };

        </script>
        <h1>Examination Registration Form</h1>
        <form action="result">
```

JOIN.HTML - 2



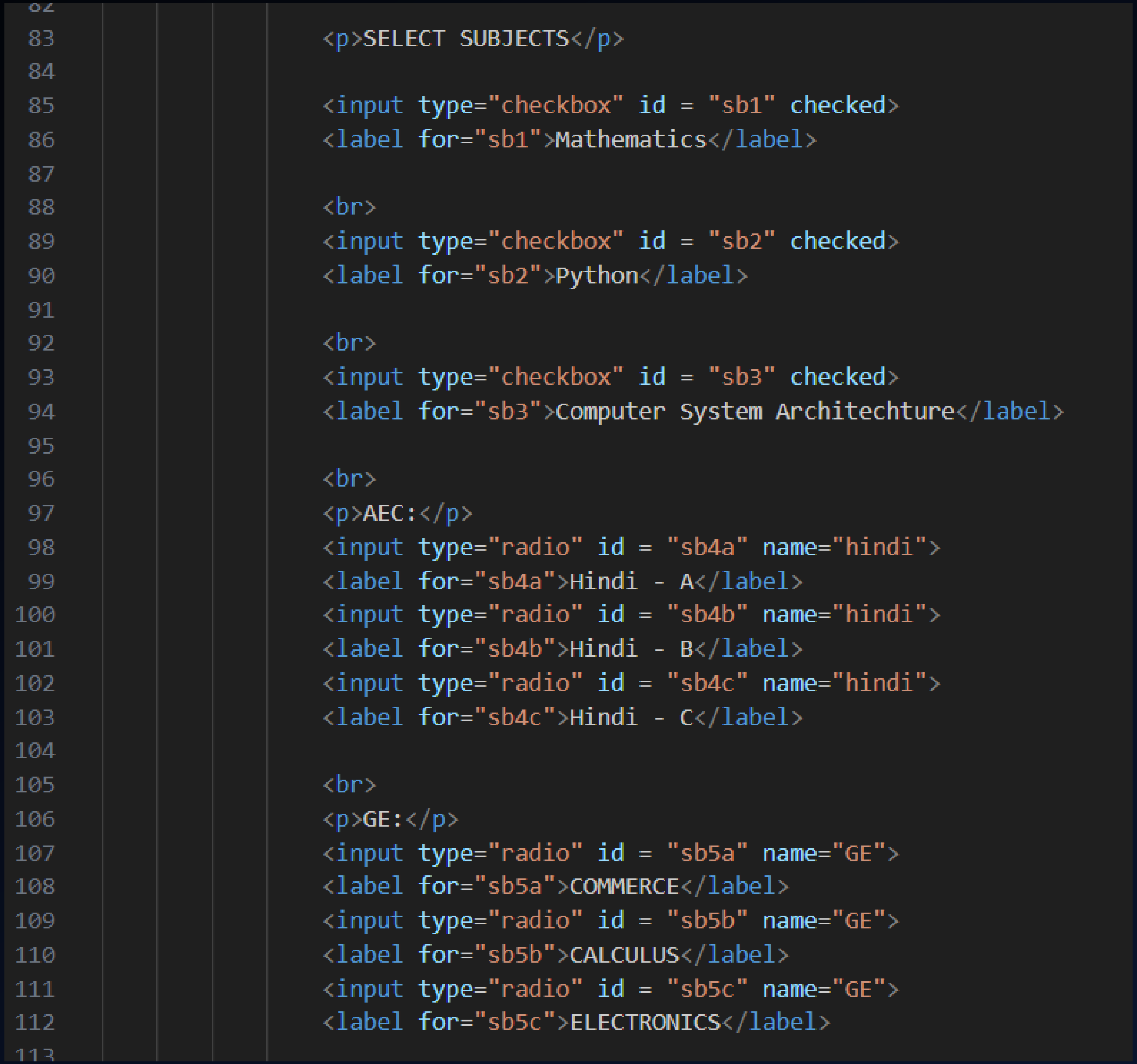
```html
        </script>
        <h1>Examination Registration Form</h1>
        <form action="result">
            <fieldset>
                <legend>Personal Details</legend>

                <label for="naam">Name:</label>
                <input type="text" id="naam" >

                <br>
                <br>

                <label for="phone">Phone Number:</label>
                <input type="number" id="phone" >

                <br>
                <br>

                <label for="email">Email::</label>
                <input type="email" id ="email">

                <br>
                <br>

                <label for="dob">Date Of Birth:</label>
                <input type="date" id="dob">

                <br>
                <br>

                <label for="add">Address:</label>
                <textarea id="add"></textarea>

                <br>
                <br>
```

JOIN.HTML - 3



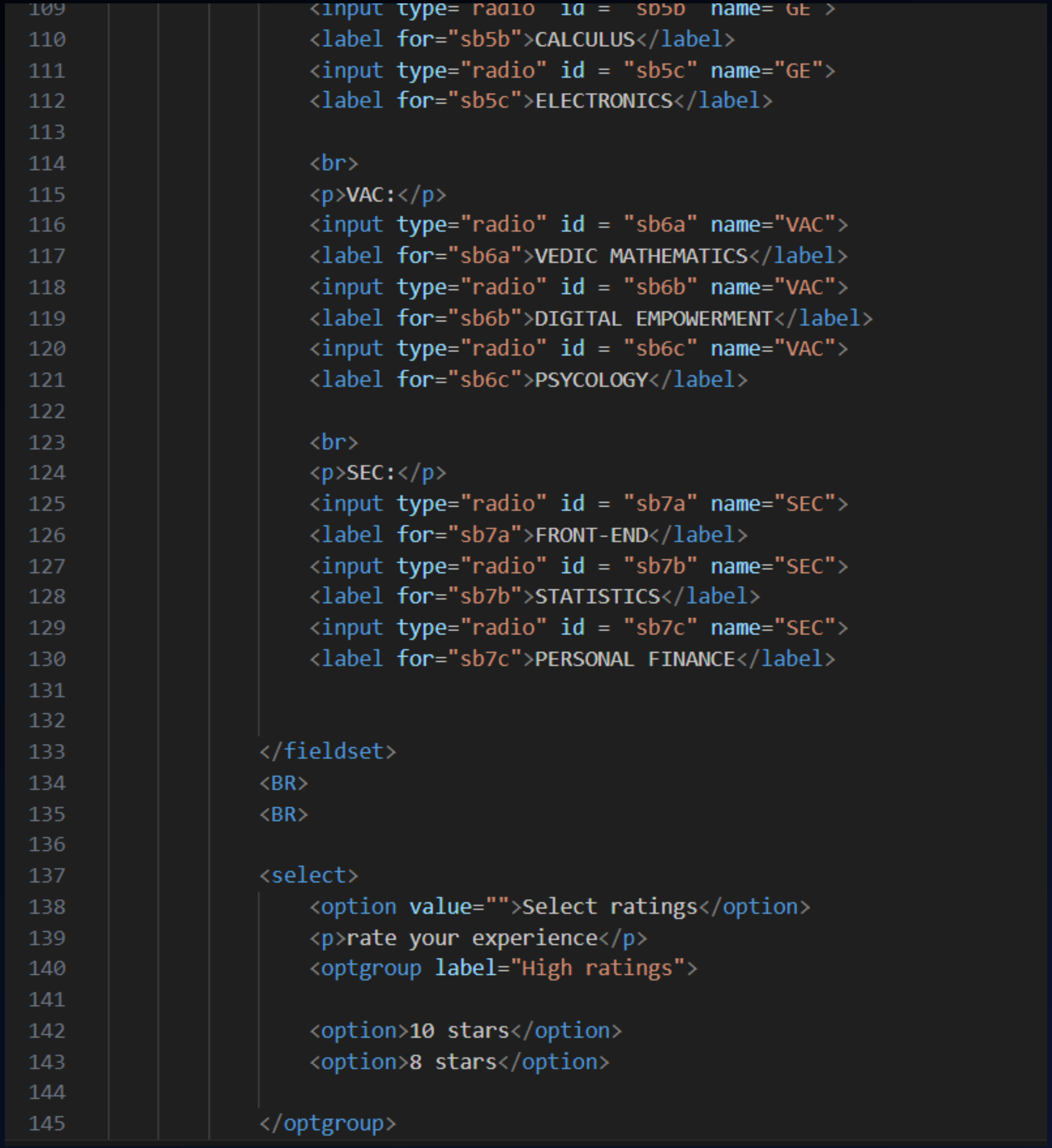
```html

                <br>
                <br>

                <label for="file">Upload your ID:</label>
                <input type="file" id="file" >

            </fieldset>

            <hr>
            <br>

            <fieldset>
                <legend>Course Details</legend>

                <p>SELECT COURSE</p>
                <input type="radio" id = "op1" name="course">
                <label for="op1">B.Sc. Computer Science (Hons)</label>

                <br>

                <input type="radio" id = "op2" name="course">
                <label for="op2">B.Sc. Mathematics (Hons)</label>

                <br>
                <input type="radio" id = "op3" name="course">
                <label for="op3">BMS</label>

                <hr>
                <br>

                <p>SELECT SUBJECTS</p>

                <input type="checkbox" id = "sb1" checked>
                <label for="sb1">Mathematics</label>

```

JOIN.HTML - 4



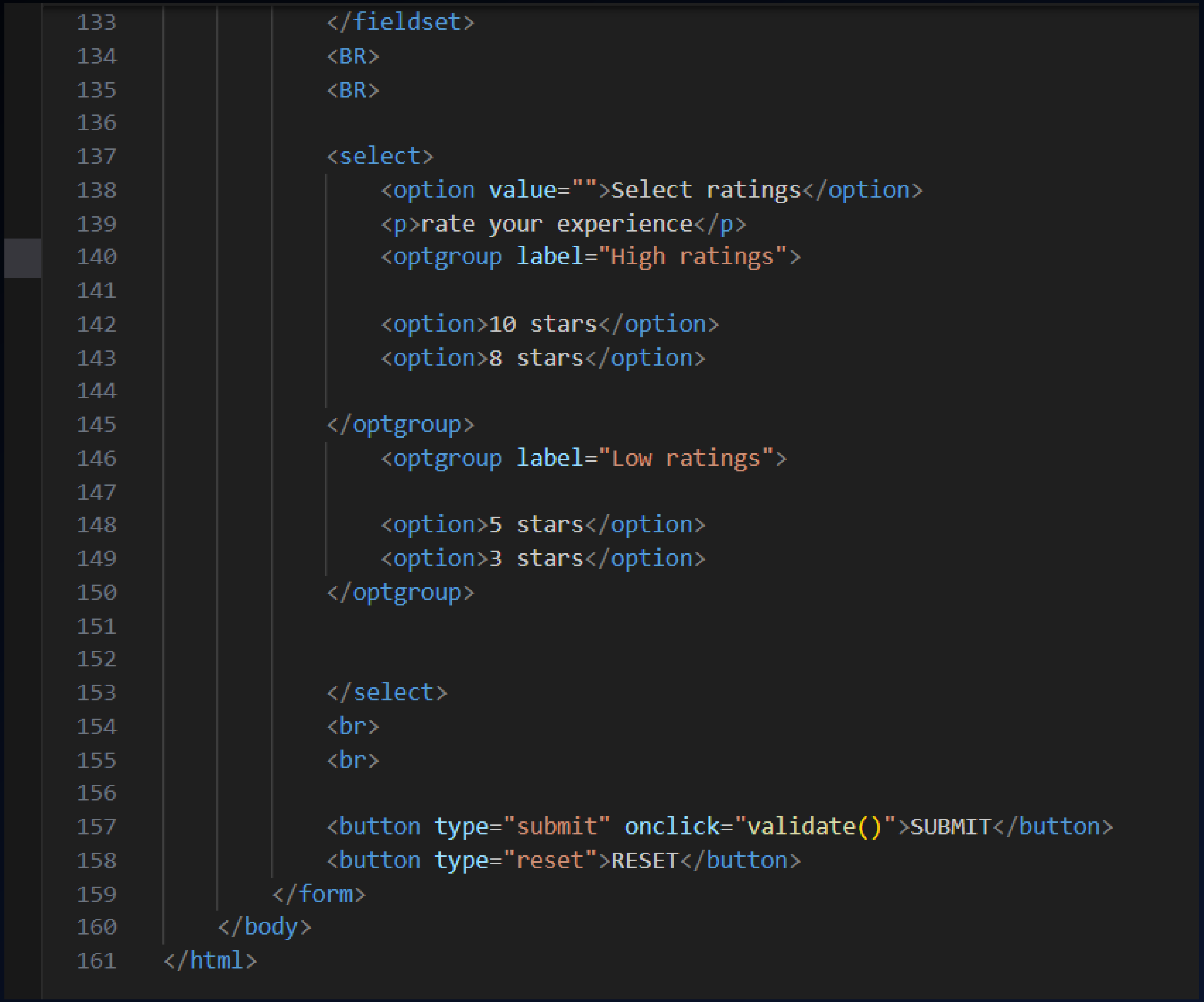
```
<p>SELECT SUBJECTS</p>

<input type="checkbox" id = "sb1" checked>
<label for="sb1">Mathematics</label>

<br>
<input type="checkbox" id = "sb2" checked>
<label for="sb2">Python</label>

<br>
<input type="checkbox" id = "sb3" checked>
<label for="sb3">Computer System Architechture</label>

<br>
<p>AEC:</p>
<input type="radio" id = "sb4a" name="hindi">
<label for="sb4a">Hindi - A</label>
<input type="radio" id = "sb4b" name="hindi">
<label for="sb4b">Hindi - B</label>
<input type="radio" id = "sb4c" name="hindi">
<label for="sb4c">Hindi - C</label>

<br>
<p>GE:</p>
<input type="radio" id = "sb5a" name="GE">
<label for="sb5a">COMMERCE</label>
<input type="radio" id = "sb5b" name="GE">
<label for="sb5b">CALCULUS</label>
<input type="radio" id = "sb5c" name="GE">
<label for="sb5c">ELECTRONICS</label>
```

JOIN.HTML - 5



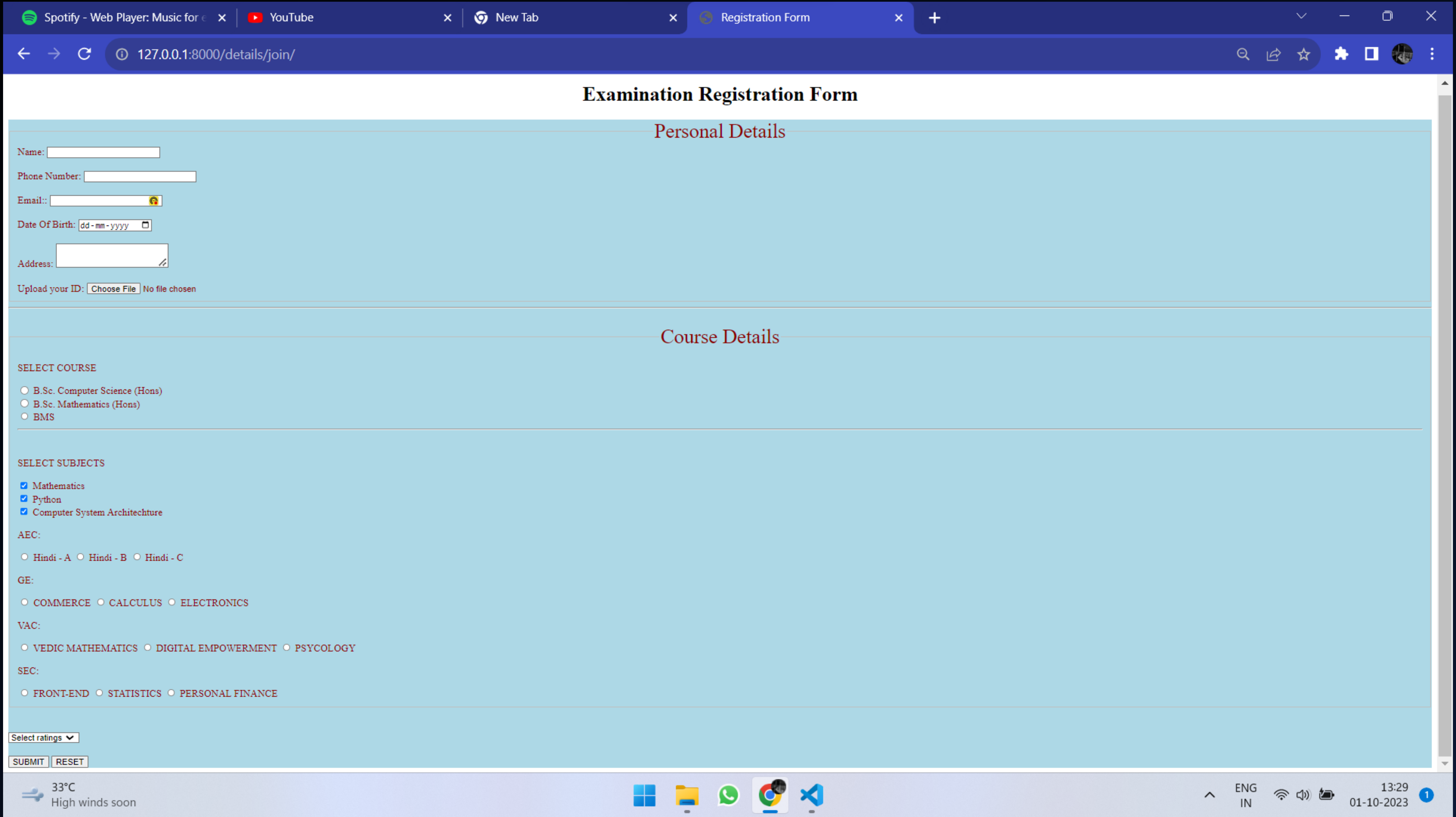
```
                <input type="radio" id = "sb5b" name="GE">
                <label for="sb5b">CALCULUS</label>
                <input type="radio" id = "sb5c" name="GE">
                <label for="sb5c">ELECTRONICS</label>

                <br>
                <p>VAC:</p>
                <input type="radio" id = "sb6a" name="VAC">
                <label for="sb6a">VEDIC MATHEMATICS</label>
                <input type="radio" id = "sb6b" name="VAC">
                <label for="sb6b">DIGITAL EMPOWERMENT</label>
                <input type="radio" id = "sb6c" name="VAC">
                <label for="sb6c">PSYCOLOGY</label>

                <br>
                <p>SEC:</p>
                <input type="radio" id = "sb7a" name="SEC">
                <label for="sb7a">FRONT-END</label>
                <input type="radio" id = "sb7b" name="SEC">
                <label for="sb7b">STATISTICS</label>
                <input type="radio" id = "sb7c" name="SEC">
                <label for="sb7c">PERSONAL FINANCE</label>


            </fieldset>
            <BR>
            <BR>

            <select>
                <option value="">Select ratings</option>
                <p>rate your experience</p>
                <optgroup label="High ratings">

                <option>10 stars</option>
                <option>8 stars</option>

            </optgroup>
```

JOIN.HTML - 6



```
            </fieldset>
            <BR>
            <BR>

            <select>
                <option value="">Select ratings</option>
                <p>rate your experience</p>
                <optgroup label="High ratings">

                <option>10 stars</option>
                <option>8 stars</option>

            </optgroup>
                <optgroup label="Low ratings">

                <option>5 stars</option>
                <option>3 stars</option>
            </optgroup>


            </select>
            <br>
            <br>

            <button type="submit" onclick="validate()">SUBMIT</button>
            <button type="reset">RESET</button>
        </form>
    </body>
</html>
```

BROWSER



Examination Registration Form

Personal Details

Name:

Phone Number:

Email::

Date Of Birth: dd-mm-yyyy

Address:

Upload your ID: Choose File No file chosen

Course Details

SELECT COURSE

○ B.Sc. Computer Science (Hons)
○ B.Sc. Mathematics (Hons)
○ BMS

SELECT SUBJECTS

☑ Mathematics
☑ Python
☑ Computer System Architechture

AEC:

○ Hindi - A ○ Hindi - B ○ Hindi - C

GE:

○ COMMERCE ○ CALCULUS ○ ELECTRONICS

VAC:

○ VEDIC MATHEMATICS ○ DIGITAL EMPOWERMENT ○ PSYCOLOGY

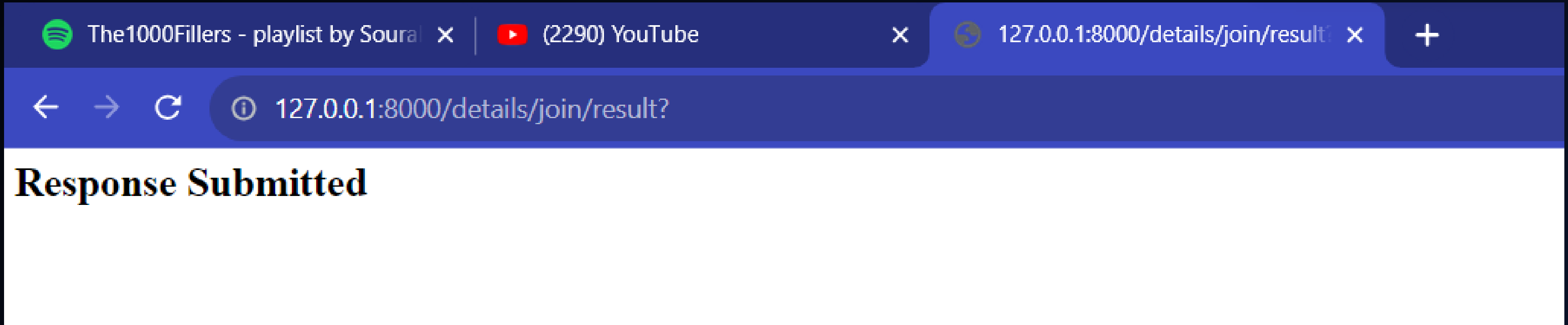
SEC:

○ FRONT-END ○ STATISTICS ○ PERSONAL FINANCE

Select ratings

SUBMIT RESET

BROWSER – AFTER SUBMIT



The1000Fillers - playlist by Soural
(2290) YouTube
127.0.0.1:8000/details/join/result
127.0.0.1:8000/details/join/result?

Response Submitted

6.

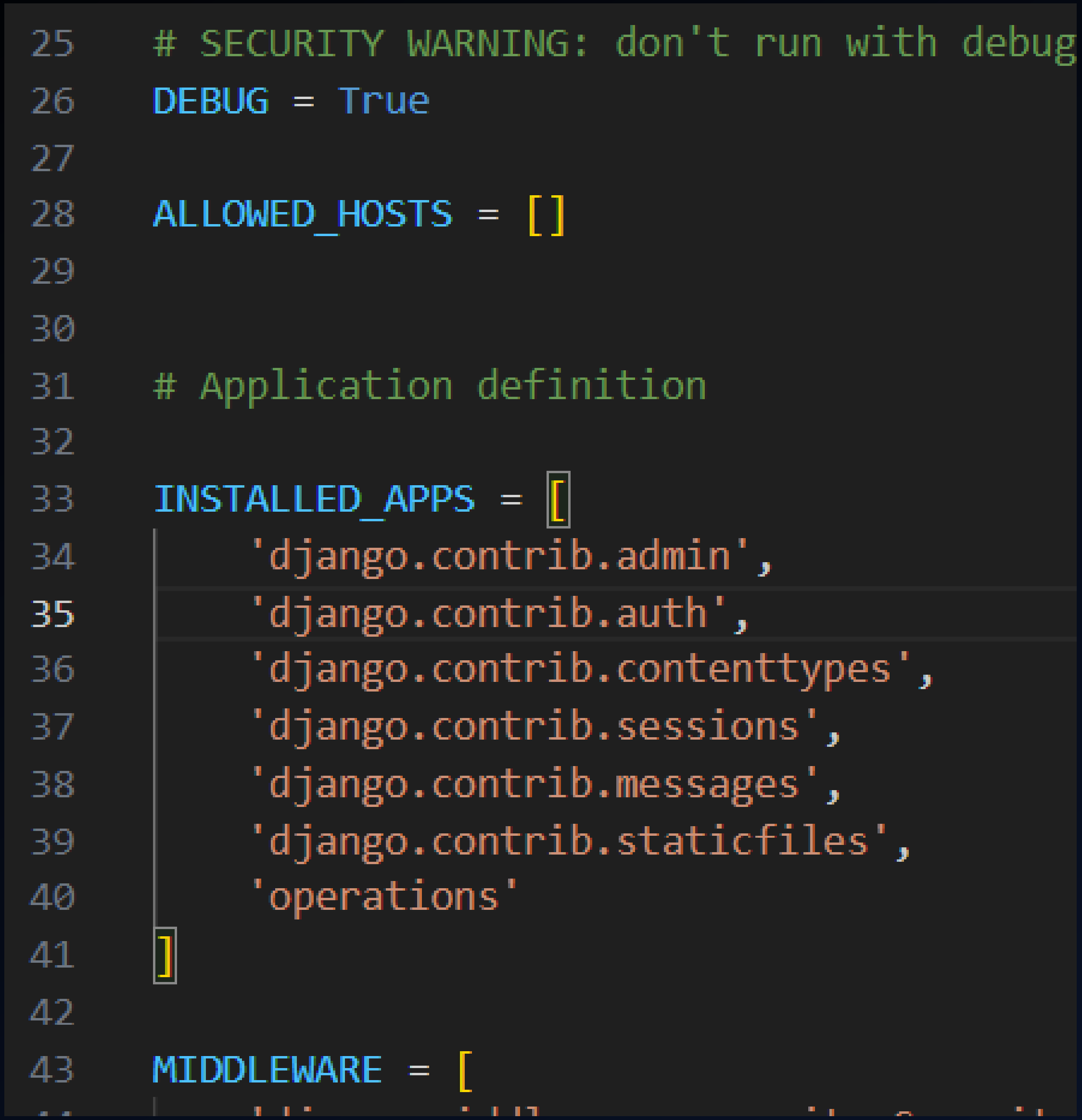
Creating Evaluation Form (GET & POST methods) – with CSS

TAKING INPUT FROM USER AND SHOWING EVALUATED OUTPUT

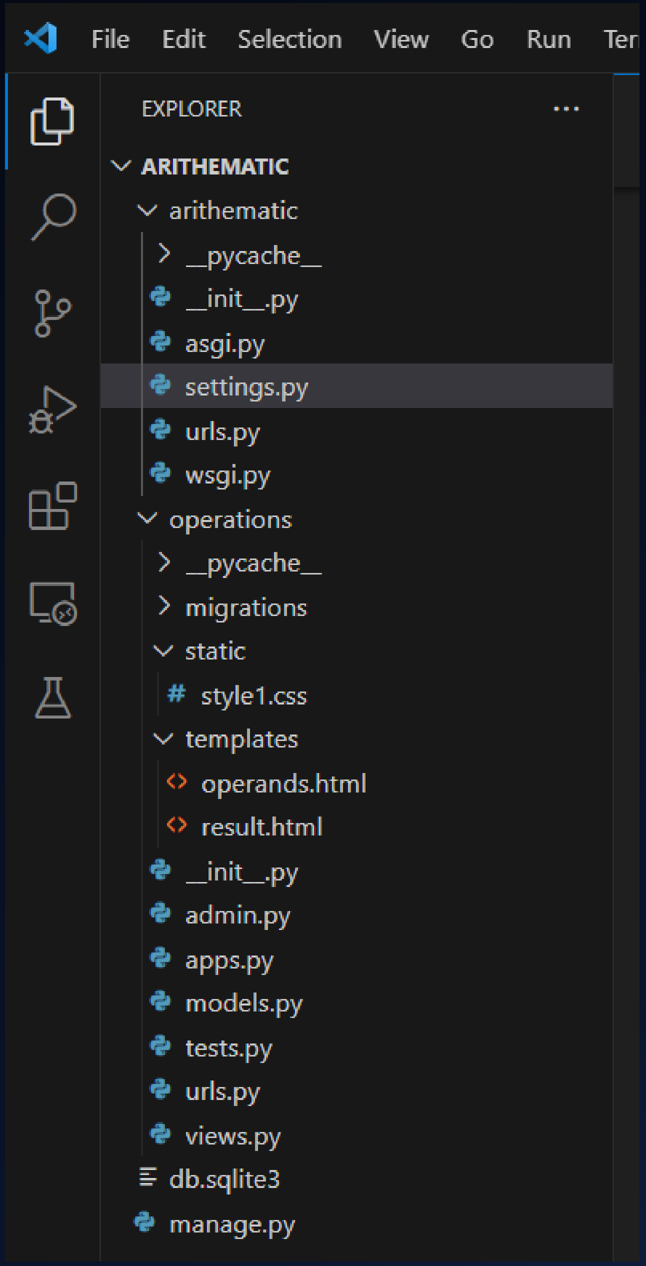
INSTRUCTIONS

- Directory name = Arithematic
- Project name = arithematic
- App name = operations
- Html page 1 =operands.html
- Html page 2 = result.html
- Views.py functions = enter(), add()
- Make the following changes

SETTINGS.PY

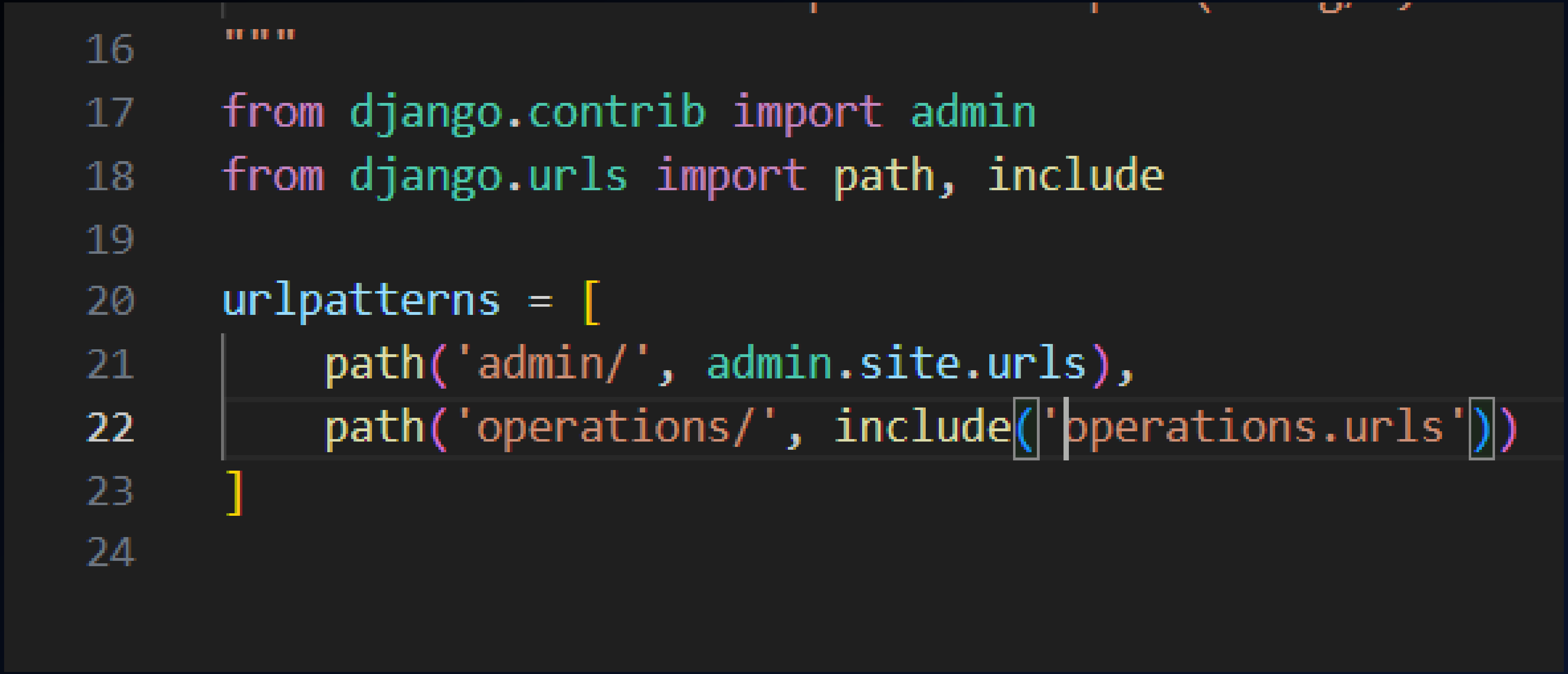


```python
# SECURITY WARNING: don't run with debug
DEBUG = True

ALLOWED_HOSTS = []


# Application definition

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

MIDDLEWARE = [
```



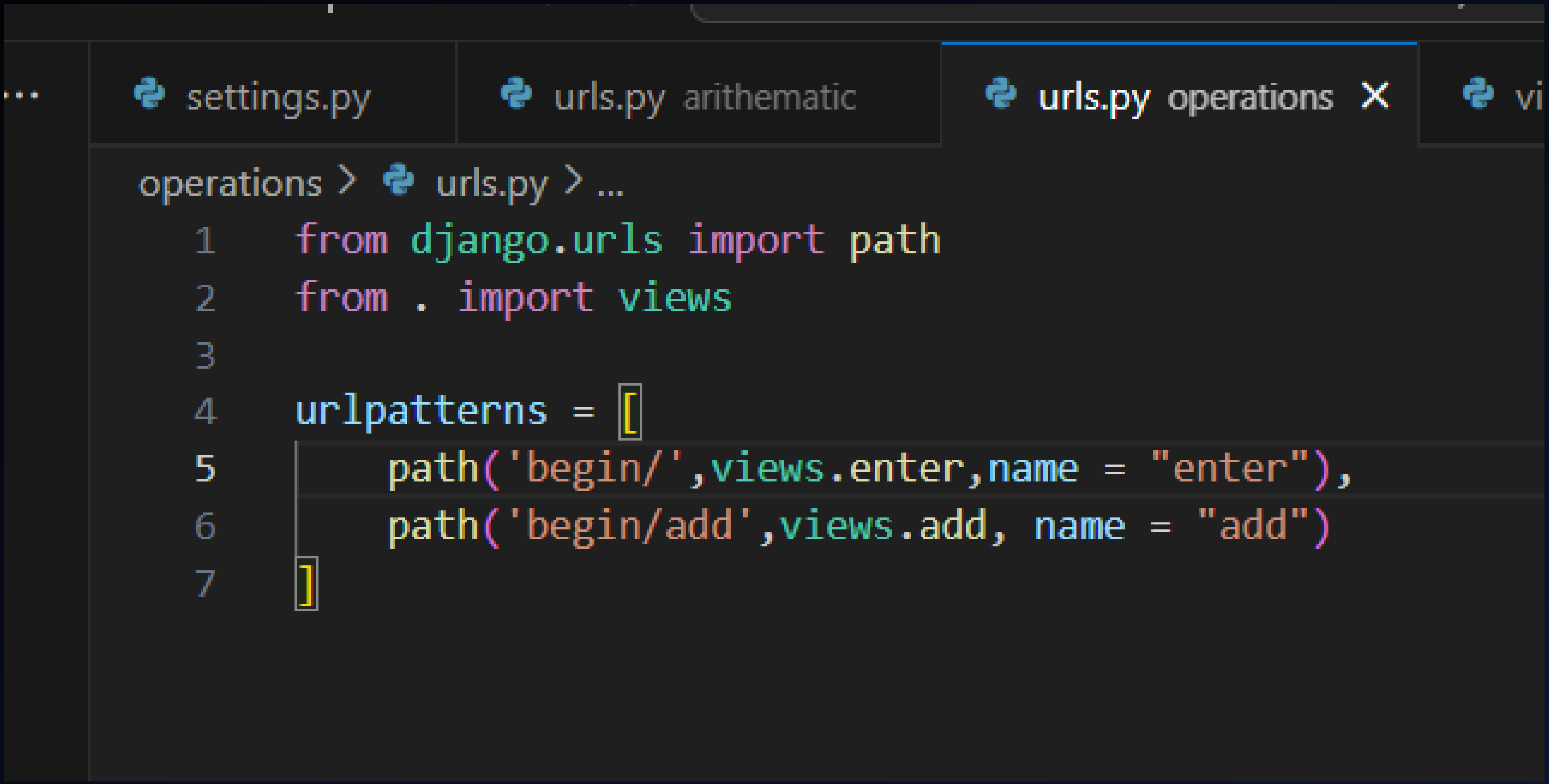
```
ARITHEMATIC
  arithematic
    __pycache__
    __init__.py
    asgi.py
    settings.py
    urls.py
    wsgi.py
  operations
    __pycache__
    migrations
    static
      style1.css
    templates
      operands.html
      result.html
    __init__.py
    admin.py
    apps.py
    models.py
    tests.py
    urls.py
    views.py
  db.sqlite3
  manage.py
```

PROJECT – URLS.PY



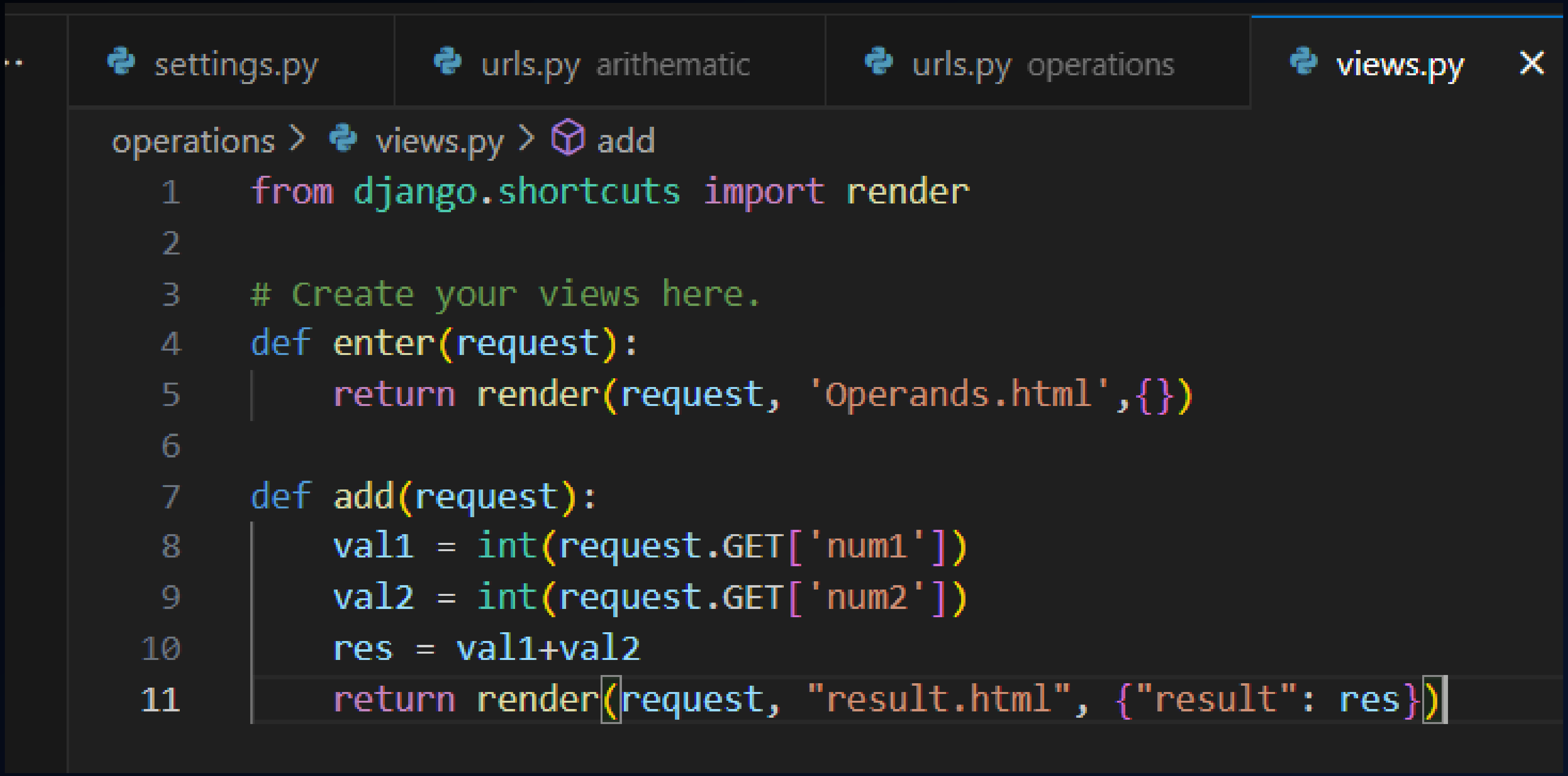
```
"""
from django.contrib import admin
from django.urls import path, include

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

APP – URLS.PY



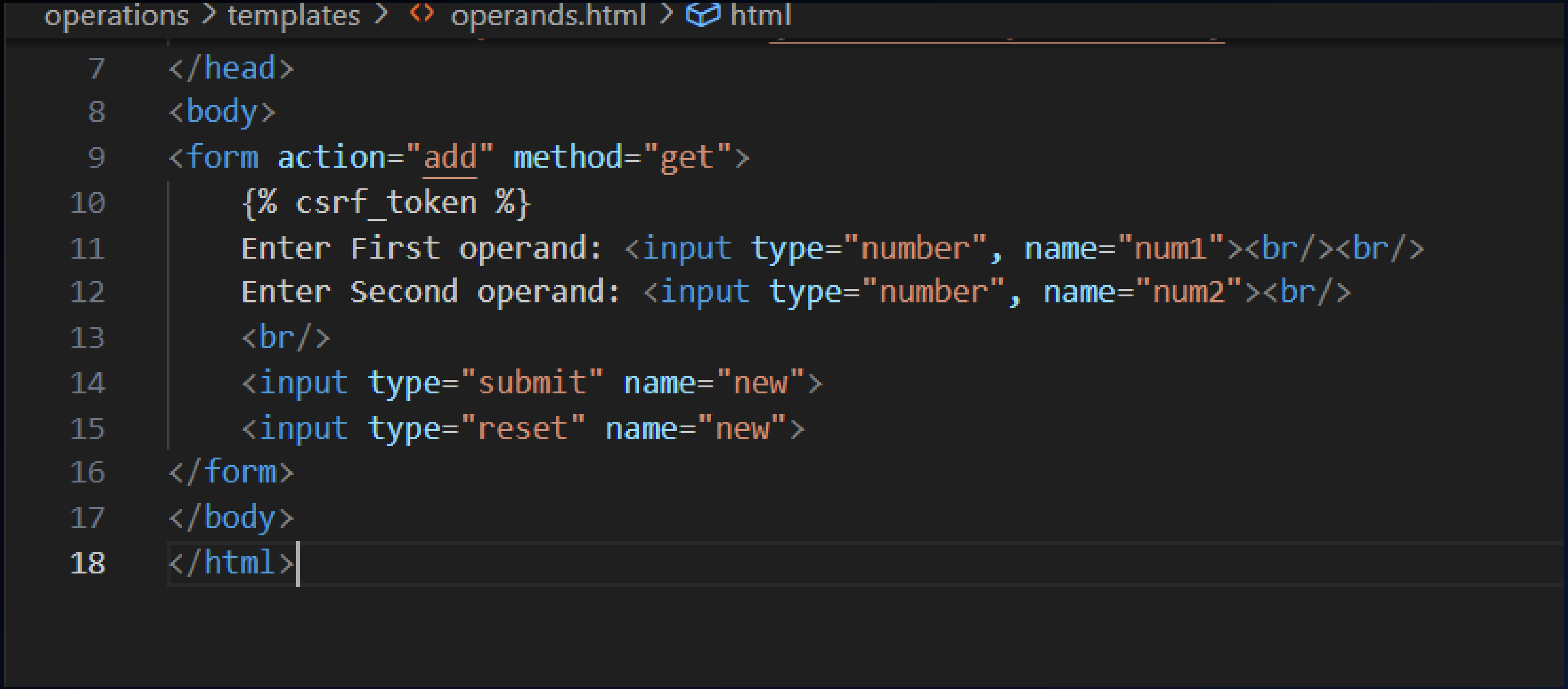
```python
from django.urls import path
from . import views

urlpatterns = [
    path('begin/',views.enter,name = "enter"),
    path('begin/add',views.add, name = "add")
]
```

VIEWS.PY



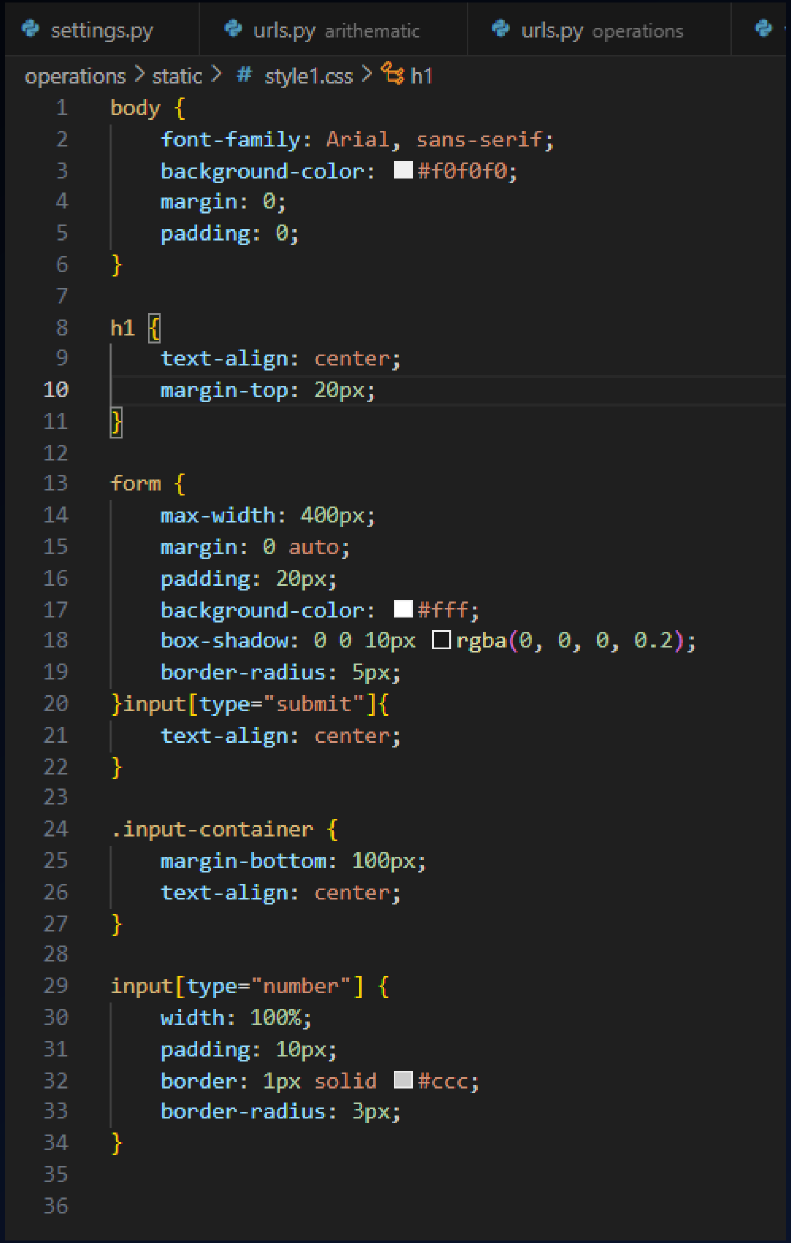
```python
from django.shortcuts import render

# Create your views here.
def enter(request):
    return render(request, 'Operands.html',{})

def add(request):
    val1 = int(request.GET['num1'])
    val2 = int(request.GET['num2'])
    res = val1+val2
    return render(request, "result.html", {"result": res})
```

OPERANDS.HTML



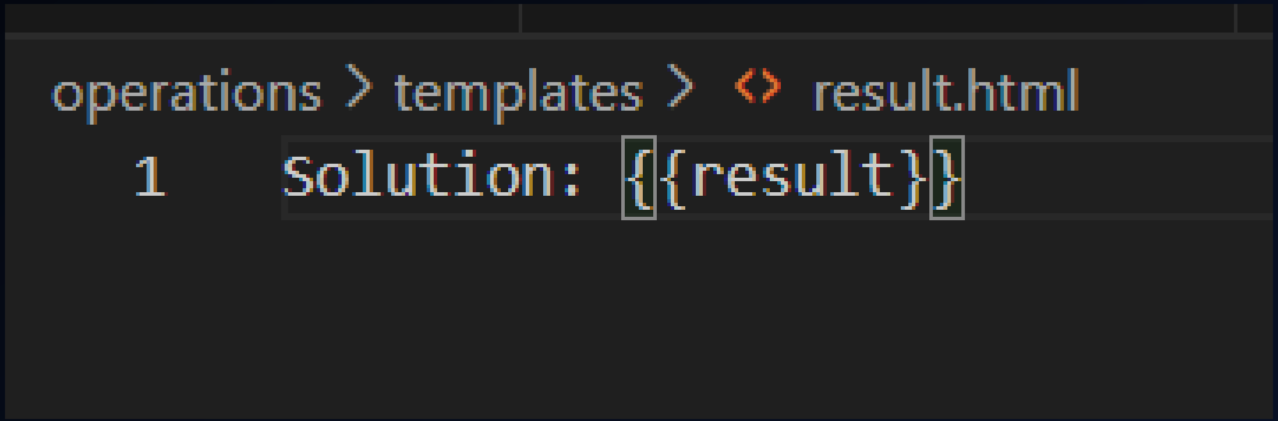
```html
</head>
<body>
<form action="add" method="get">
    {% csrf_token %}
    Enter First operand: <input type="number", name="num1"><br/><br/>
    Enter Second operand: <input type="number", name="num2"><br/>
    <br/>
    <input type="submit" name="new">
    <input type="reset" name="new">
</form>
</body>
</html>
```

STYLE1.CSS



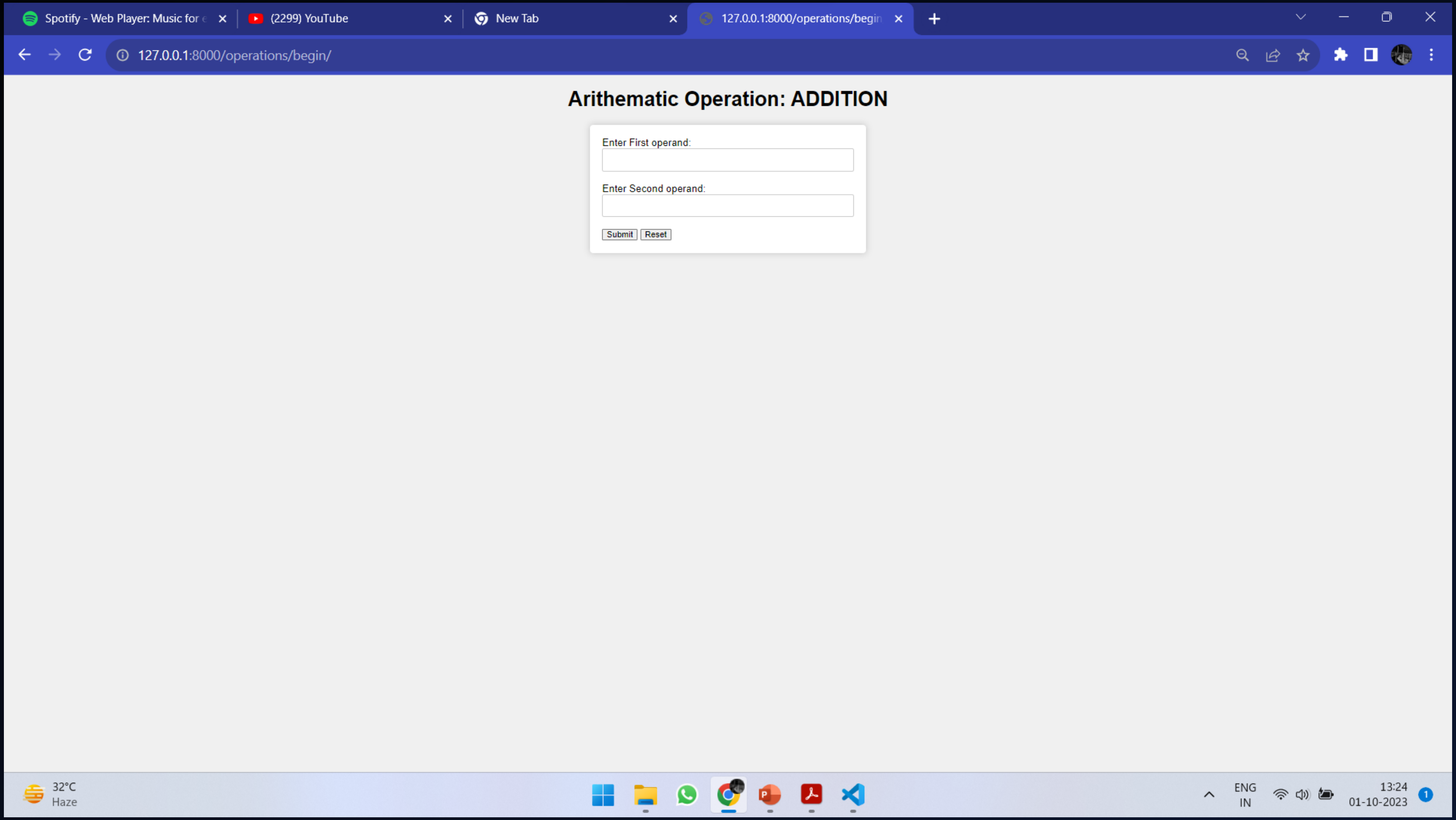
```css
body {
    font-family: Arial, sans-serif;
    background-color: #f0f0f0;
    margin: 0;
    padding: 0;
}

h1 {
    text-align: center;
    margin-top: 20px;
}

form {
    max-width: 400px;
    margin: 0 auto;
    padding: 20px;
    background-color: #fff;
    box-shadow: 0 0 10px rgba(0, 0, 0, 0.2);
    border-radius: 5px;
}input[type="submit"]{
    text-align: center;
}

.input-container {
    margin-bottom: 100px;
    text-align: center;
}

input[type="number"] {
    width: 100%;
    padding: 10px;
    border: 1px solid #ccc;
    border-radius: 3px;
}


```

RESULT.HTML



```
Solution: {{result}}
```

BROWSER



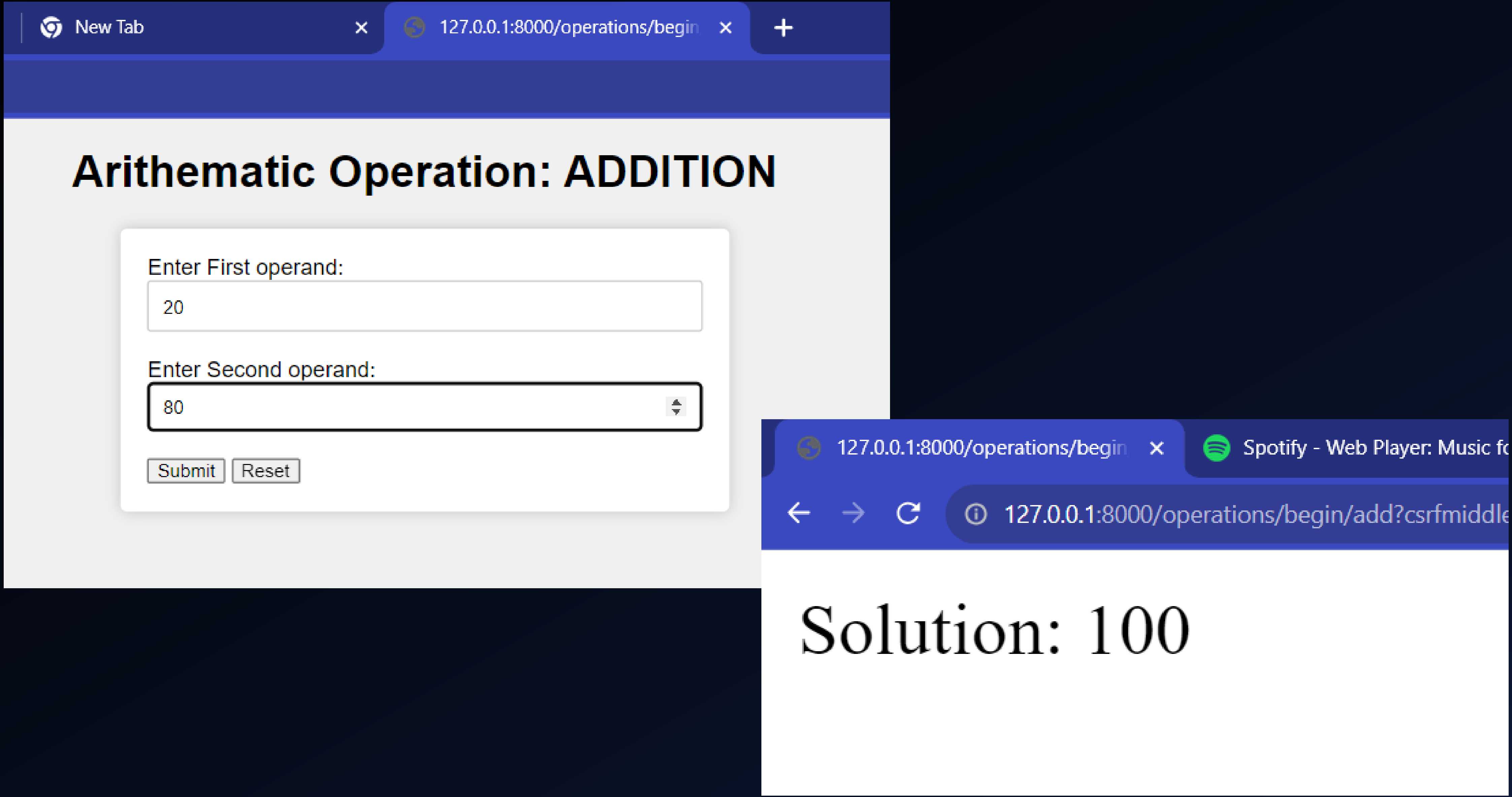
Arithematic Operation: ADDITION

Enter First operand:

Enter Second operand:

Spotify - Web Player: Music for
(2299) YouTube
New Tab
127.0.0.1:8000/operations/begin
127.0.0.1:8000/operations/begin/
Submit
Reset
32°C
Haze
ENG
IN
13:24
01-10-2023

BROWSER



New Tab
127.0.0.1:8000/operations/begin
+

Arithematic Operation: ADDITION

Enter First operand: 20

Enter Second operand: 80

Submit
Reset
127.0.0.1:8000/operations/begin
Spotify - Web Player: Music fo
127.0.0.1:8000/operations/begin/add?csrfmiddle

Solution: 100

LAST UPDATED ON: 26TH SEPTEMBER 2023