Assesment:

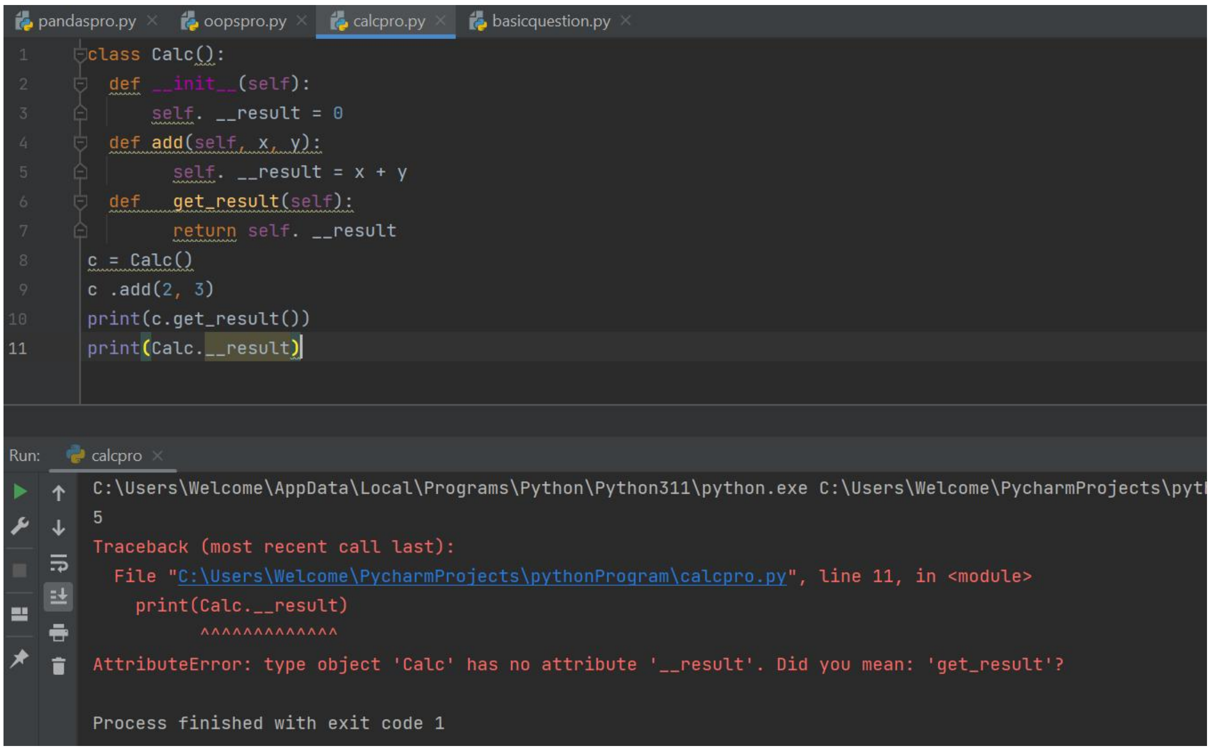
Solution 1: in Python, when you assign arr2=arr1 we are not creating a new list; we are making arr2 reference the same list object arr1. it means that arr2 and arr1 point to the same list , so we are changing one that reflect in another.arr3=arr1[:]creates a new list arr3 this is a shallow copy arr1 .This means that arr3 is a new list object containing the same elements arr1 , but it is a separate list Changes made in arr3 will not effect arr1

Therefore,arr2==arr3 will True because both arr2 and arr3 contain the same elements, even though they are different object in memory

Solution 2:

To hide class variables from being accessed outside the class, we have to use concept of encapsulation in oops In python we will use private variable private variable initialize by double __

```
class Calc():
 def __init__(self):
      self. __result = 0
 def add(self, x, y):
        self. __result = x + y
def   get_result(self):
        return self. __result
c = Calc()
c .add(2, 3)
print(c.get_result())
print(calc.__result) this will raise an attribute error because we are trying to print the __result
```



```python
class Calc():
  def __init__(self):
      self. __result = 0
  def add(self, x, y):
        self. __result = x + y
  def   get_result(self):
        return self. __result
c = Calc()
c .add(2, 3)
print(c.get_result())
print(Calc.__result)
```

```
C:\Users\Welcome\AppData\Local\Programs\Python\Python311\python.exe C:\Users\Welcome\PycharmProjects\pyt
5
Traceback (most recent call last):
  File "C:\Users\Welcome\PycharmProjects\pythonProgram\calcpro.py", line 11, in <module>
    print(Calc.__result)
          ^^^^^^^^^^^^^
AttributeError: type object 'Calc' has no attribute '__result'. Did you mean: 'get_result'?

Process finished with exit code 1
```

Solution3:

1:prepare PostgreSQL database

2:Initial Data migration.

3:Enable Replication

4:Incremental Data synchronization

5:switch application to PostgreSQL

6:final data synchronization

7:Decommission mysql

Solution 4:

Task1:

User profile image generation api:

1:We have to use PIL library to generate user profile image based on the user name and gender

2: Save the generated image

Install pil library:

```
#Code for the image to generate
from PIL import Image, ImageDraw, ImageFont;
import os
def generate_profile_image(username, gender):
    # Assuming you have a directory named 'profile_images' to save the images
    os.makedirs('profile_images', exist_ok=True)
    filename = f"profile_images/{username}.png"
    image = Image.new('RGB', (200, 200), color='white')
    draw = ImageDraw.Draw(image)
    font = ImageFont.load_default()
    Generate image based on gender
    if gender.lower() == 'male':
        color = 'green'
    else:
    color = 'pink'
    draw.text((50, 50), username, fill=color, font=font)
    image.save(filename)
    return filename
```

Task 2:

2 :User Search Api:

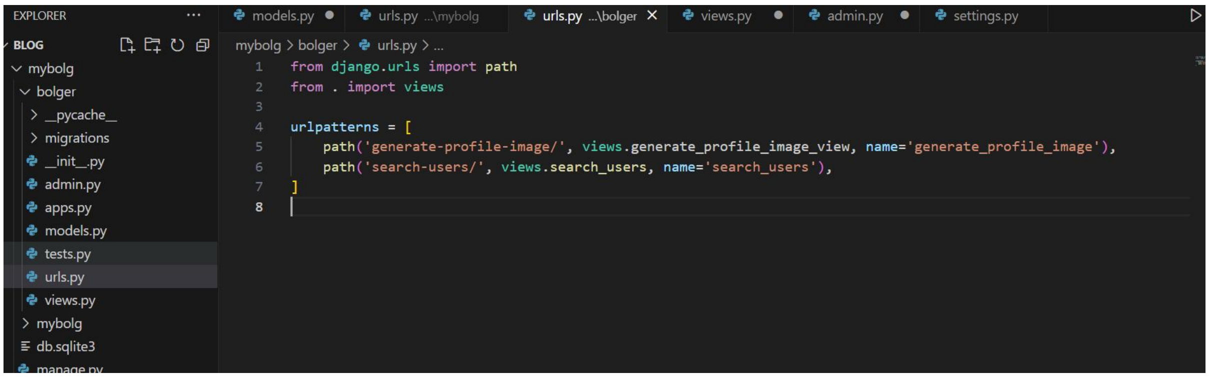
```
    from django.http import JsonResponse
    from django.views.decorators.http import require_HTTP_methods
    from .models import User
```

```
@require_http_methods(["GET"])
    def search_users(request):
      name = request.GET.get('name')
        email = request.GET.get('email')
        location = request.GET.get('location')

         Assuming  that we  have fields 'name', 'email', and 'location' in  our User model
            users = User.objects.filter(name__icontains=name, email__icontains=email,
           location__icontains=location)
        user_data = [{'name': user.name, 'email': user.email, 'location': user.location} for user in users]

        return JsonResponse({'users': user_data})
```

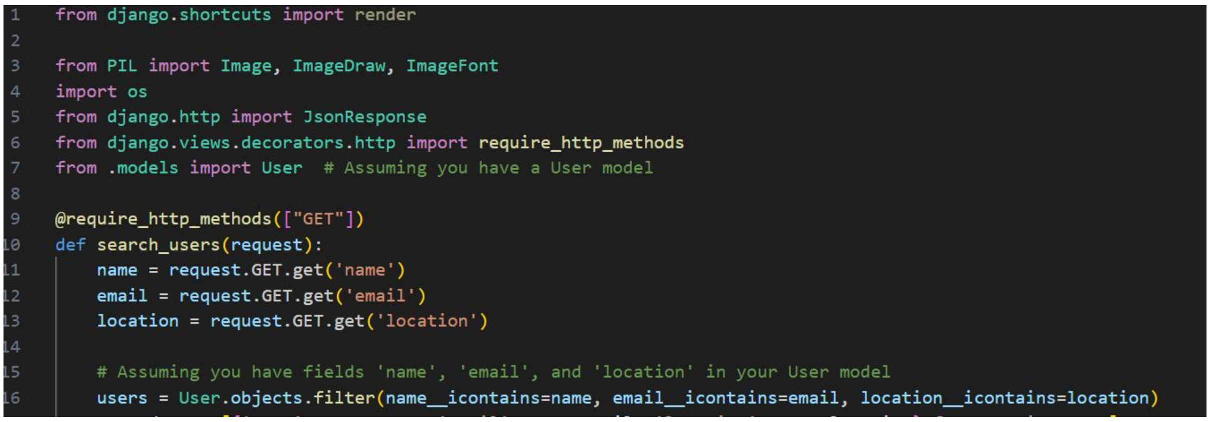
Created URL :

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

    urlpatterns = [
 path('generate-profile-image/', views.generate_profile_image_view,
name='generate_profile_image'),
        path('search-users/', views.search_users, name='search_users'),
    ]
```

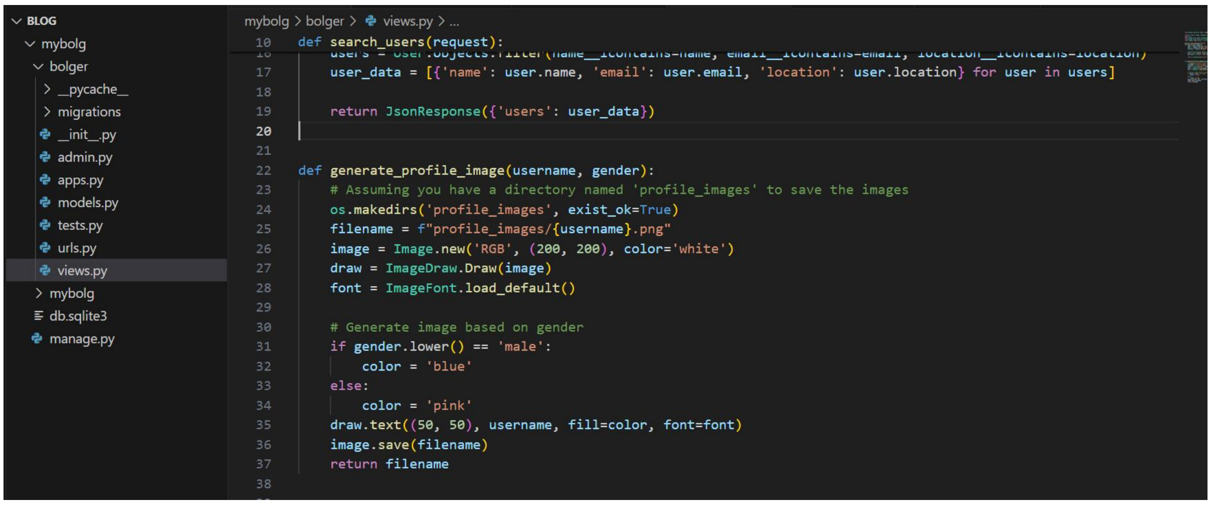
HI sir I am adding here screenshot of VS Code please check it for better understanding:



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

urlpatterns = [
    path('generate-profile-image/', views.generate_profile_image_view, name='generate_profile_image'),
    path('search-users/', views.search_users, name='search_users'),
]

```



```python
from django.shortcuts import render

from PIL import Image, ImageDraw, ImageFont
import os
from django.http import JsonResponse
from django.views.decorators.http import require_http_methods
from .models import User  # Assuming you have a User model

@require_http_methods(["GET"])
def search_users(request):
    name = request.GET.get('name')
    email = request.GET.get('email')
    location = request.GET.get('location')

    # Assuming you have fields 'name', 'email', and 'location' in your User model
    users = User.objects.filter(name__icontains=name, email__icontains=email, location__icontains=location)
```



```python
def search_users(request):
    users = User.objects.filter(name__icontains=name, email__icontains=email, location__icontains=location)
    user_data = [{'name': user.name, 'email': user.email, 'location': user.location} for user in users]

    return JsonResponse({'users': user_data})


def generate_profile_image(username, gender):
    # Assuming you have a directory named 'profile_images' to save the images
    os.makedirs('profile_images', exist_ok=True)
    filename = f"profile_images/{username}.png"
    image = Image.new('RGB', (200, 200), color='white')
    draw = ImageDraw.Draw(image)
    font = ImageFont.load_default()

    # Generate image based on gender
    if gender.lower() == 'male':
        color = 'blue'
    else:
        color = 'pink'
    draw.text((50, 50), username, fill=color, font=font)
    image.save(filename)
    return filename

```