

## Topic: Models Part 2

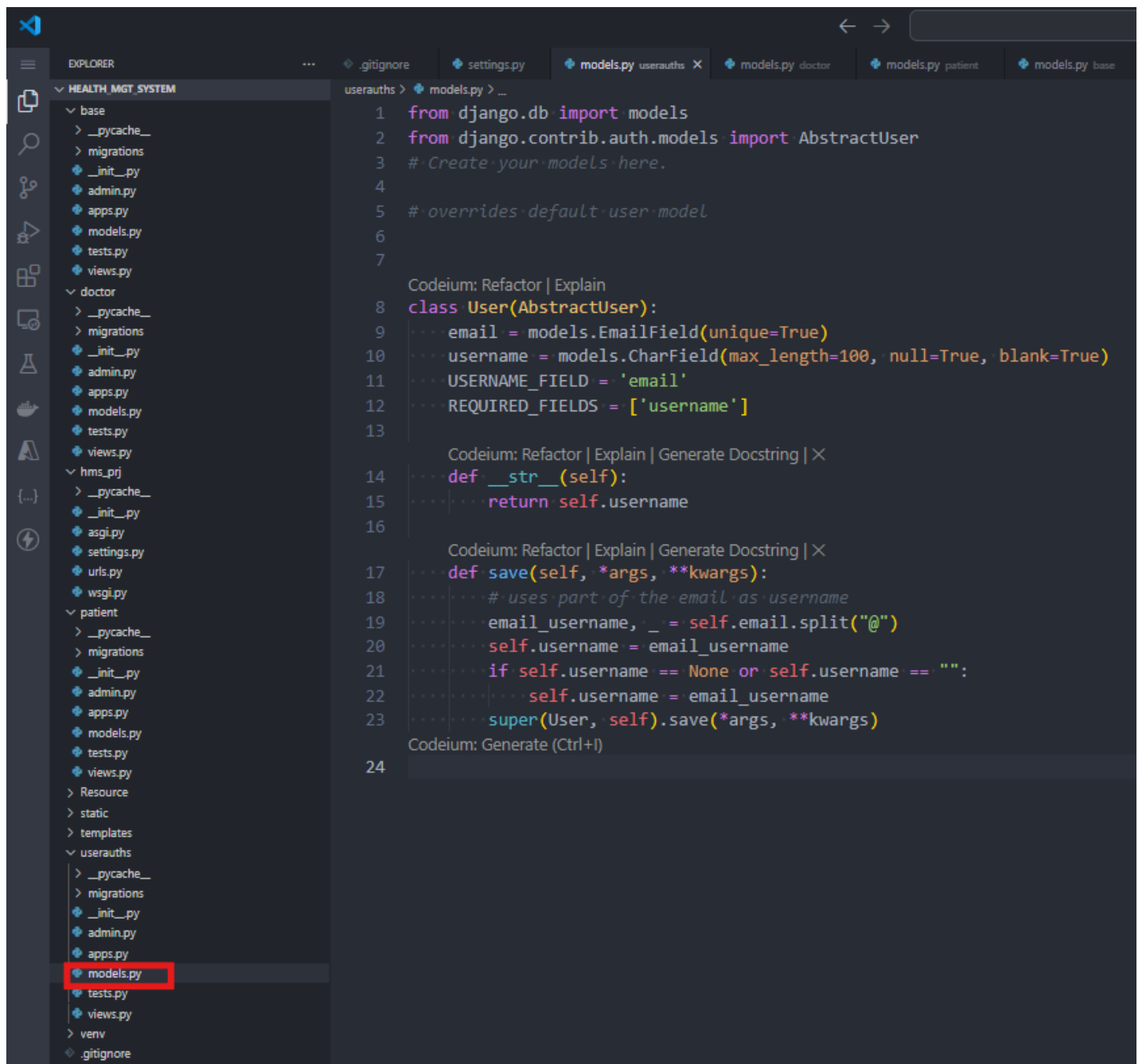
**Speaker:** / **Notebook:** *Health Management System Using Django*

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1. Unlinke using the default USER MODEL, we use the ABSTRACTUSER class, so we can customize the default USER model. Update the userauths' app MODELS.PY:

COMMON FIELDS HERE USE 'blank = True' FOR THE PURPOSE OF IMPORTING THE DATA FROM CSV FILE, so as not to break our code.



2. Update the doctor's app MODELS.PY

```
1 from django.db import models
2 from userauths import models as userauths_models
3 from django.utils import timezone
4
5 NOTIFICATION_TYPE = (
6     ("New Appointment", "New Appointment"),
7     ("Appointment Canceled", "Appointment Canceled"),
8 )
9
10 Codeium: Refactor | Explain
11 class Doctor(models.Model):
12     user = models.OneToOneField(
13         userauths_models.User, on_delete=models.CASCADE)
14     image = models.FileField(upload_to='images', blank=True, null=True)
15     fullname = models.CharField(max_length=100, null=True, blank=True)
16     mobile = models.CharField(max_length=100, null=True, blank=True)
17     country = models.CharField(max_length=100, null=True, blank=True)
18     bio = models.CharField(max_length=100, null=True, blank=True)
19     specialization = models.CharField(max_length=100, null=True, blank=True)
20     qualifications = models.CharField(max_length=100, null=True, blank=True)
21     years_of_experience = models.CharField(
22         max_length=100, null=True, blank=True)
23     next_available_appointment_date = models.CharField(
24         max_length=100, null=True, blank=True)
25     created_at = models.DateTimeField(auto_now_add=True)
26
27     Codeium: Refactor | Explain | Generate Docstring | X
28     def __str__(self):
29         return f"Dr. {self.fullname}"
30
31 Codeium: Refactor | Explain
32 class Notification(models.Model):
33     doctor = models.ForeignKey(
34         Doctor, on_delete=models.SET_NULL, null=True, blank=True)
35     appointment = models.ForeignKey("base.Appointment", on_delete=models.CASCADE,
36                                     null=True, blank=True, related_name="doctor_appointment_notification")
37     notification_type = models.CharField(
38         max_length=100, choices=NOTIFICATION_TYPE)
39     seen = models.BooleanField(default=False)
40     created_at = models.DateTimeField(auto_now_add=True)
41
42     Codeium: Refactor | Explain
43     class Meta:
44         verbose_name_plural = "Notification"
45
46     Codeium: Refactor | Explain | Generate Docstring | X
47     def __str__(self):
48         return f"Dr. {self.doctor.fullname} Notification"
```

3. Update the patient's app MODELS.PY

```
1 from django.db import models
2 from userauths import models as userauths_models
3 from django.utils import timezone
4
5 NOTIFICATION_TYPE = (
6     ("Appointment Scheduled", "Appointment Scheduled"),
7     ("Appointment Canceled", "Appointment Canceled"),
8 )
9
10
11 class Patient(models.Model):
12     user = models.OneToOneField(
13         userauths_models.User, on_delete=models.CASCADE)
14     image = models.FileField(upload_to='images', blank=True, null=True)
15     fullname = models.CharField(max_length=100, null=True, blank=True)
16     email = models.CharField(max_length=100, null=True, blank=True)
17     mobile = models.CharField(max_length=100, null=True, blank=True)
18     address = models.CharField(max_length=100, null=True, blank=True)
19     gender = models.CharField(max_length=100, null=True, blank=True)
20     blood_group = models.CharField(max_length=100, null=True, blank=True)
21     dob = models.CharField(
22         max_length=100, null=True, blank=True)
23     created_at = models.DateTimeField(auto_now_add=True)
24
25     def __str__(self):
26         return self.fullname
27
28
29 class Notification(models.Model):
30     patient = models.ForeignKey(
31         Patient, on_delete=models.SET_NULL, null=True, blank=True)
32     appointment = models.ForeignKey("base.Appointment", on_delete=models.CASCADE,
33                                     null=True, blank=True, related_name="doctor_appointment_notification")
34     notification_type = models.CharField(
35         max_length=100, choices=NOTIFICATION_TYPE)
36     seen = models.BooleanField(default=False)
37     created_at = models.DateTimeField(auto_now_add=True)
38
39     class Meta:
40         verbose_name_plural = "Notification"
41
42     def __str__(self):
43         return f"{self.patient.fullname} Notification"
```

4. Update the base's app MODELS.PY

HEALTH\_MGT\_SYSTEM

base

\_\_pycache\_\_

migrations

\_\_init\_\_.py

admin.py

apps.py

models.py

tests.py

views.py

doctor

\_\_pycache\_\_

migrations

\_\_init\_\_.py

admin.py

apps.py

models.py

tests.py

views.py

hms\_prj

\_\_pycache\_\_

\_\_init\_\_.py

asgi.py

settings.py

urls.py

wsgi.py

patient

\_\_pycache\_\_

migrations

\_\_init\_\_.py

admin.py

apps.py

models.py

tests.py

views.py

Resource

static

templates

userauths

\_\_pycache\_\_

migrations

\_\_init\_\_.py

admin.py

apps.py

models.py

tests.py

views.py

venv

.gitignore

db.sqlite3

manage.py

requirements.txt

base > models.py > ...

1 from django.db import models

2 from shortuuid.django\_fields import ShortUUIDField

3

4 from doctor import models as doctor\_models

5 from patient import models as patient\_models

6

7

Codeium: Refactor | Explain

8 class Service(models.Model):

9 """image = models.FileField(upload\_to='images', blank=True, null=True)

10 """name = models.CharField(max\_length=100)

11 """description = models.TextField(null=True, blank=True)

12 """cost = models.DecimalField(max\_digits=10, decimal\_places=2)

13 """available\_doctors = models.ManyToManyField(

14 """doctor\_models.Doctor, blank=True)

15

Codeium: Refactor | Explain | Generate Docstring | X

16 """def \_\_str\_\_(self):

17 """return f"{self.name} - {self.cost}"

18

19

Codeium: Refactor | Explain

20 class Appointment(models.Model):

21 """STATUS = [

22 """('Scheduled', 'Scheduled'),

23 """('Completed', 'Completed'),

24 """('Pending', 'Pending'),

25 """('Cancelled', 'Cancelled')

26 """]

27

28 """service = models.ForeignKey(Service, on\_delete=models.SET\_NULL,

29 """null=True, blank=True, related\_name='service\_appointments')

30 """doctor = models.ForeignKey(doctor\_models.Doctor, on\_delete=models.SET\_NULL,

31 """null=True, blank=True, related\_name='doctor\_appointments')

32 """patient = models.ForeignKey(patient\_models.Patient, on\_delete=models.SET\_NULL,

33 """null=True, blank=True, related\_name='appointments\_patient')

34 """appointment\_date = models.DateTimeField(null=True, blank=True)

35 """issues = models.TextField(blank=True, null=True)

36 """symptoms = models.TextField(blank=True, null=True)

37 """appointment\_id = ShortUUIDField(

38 """length=6, max\_length=10, alphabet="1234567890")

39 """status = models.CharField(max\_length=120, choices=STATUS)

40

Codeium: Refactor | Explain | Generate Docstring | X

41 """def \_\_str\_\_(self):

42 """return f"{self.patient.full\_name} with {self.doctor.full\_name}"

43

```
45 class MedicalRecord(models.Model):
46     appointment = models.ForeignKey(Appointment, on_delete=models.CASCADE)
47     diagnosis = models.TextField()
48     treatment = models.TextField()
49
50     Codeium: Refactor | Explain | Generate Docstring | X
51     def __str__(self):
52         return f"Medical Record for {self.appointment.patient.full_name}"
53
54     Codeium: Refactor | Explain
55 class LabTest(models.Model):
56     appointment = models.ForeignKey(Appointment, on_delete=models.CASCADE)
57     test_name = models.CharField(max_length=255)
58     description = models.TextField(blank=True, null=True)
59     result = models.TextField(blank=True, null=True)
60
61     Codeium: Refactor | Explain | Generate Docstring | X
62     def __str__(self):
63         return f"{self.test_name}"
64
65     Codeium: Refactor | Explain
66 class Prescription(models.Model):
67     appointment = models.ForeignKey(Appointment, on_delete=models.CASCADE)
68     medications = models.TextField(blank=True, null=True)
69
70     Codeium: Refactor | Explain | Generate Docstring | X
71     def __str__(self):
72         return f"Prescription for {self.appointment.patient.full_name}"
73
74     Codeium: Refactor | Explain
75 class Billing(models.Model):
76     patient = models.ForeignKey(patient_models.Patient, on_delete=models.SET_NULL,
77                                null=True, blank=True, related_name='billings')
78     appointment = models.ForeignKey(
79         Appointment, on_delete=models.CASCADE, related_name='billing', blank=True, null=True)
80     sub_total = models.DecimalField(max_digits=10, decimal_places=2)
81     tax = models.DecimalField(max_digits=10, decimal_places=2)
82     total = models.DecimalField(max_digits=10, decimal_places=2)
83     status = models.CharField(max_length=120, choices=[
84         ('Paid', 'Paid'), ('Unpaid', 'Unpaid')])
85     billing_id = ShortUUIDField(length=6, max_length=10, alphabet="1234567890")
86
87     Codeium: Refactor | Explain | Generate Docstring | X
88     def __str__(self):
89         return f"Billing for {self.patient.full_name} - Total: {self.total}"
90
```

5. Update the ADMIN.PY

PATIENTS - ADMIN.PY

```
1 from django.contrib import admin
2 from patient import models
3
4
5 class PatientAdmin(admin.ModelAdmin):
6     list_display = ['user', 'full_name', 'email', 'mobile', 'gender', 'dob']
7
8
9 class NotificationAdmin(admin.ModelAdmin):
10     list_display = ['patient', 'appointment', 'type', 'seen', 'date']
11
12
13 admin.site.register(models.Patient, PatientAdmin)
14 admin.site.register(models.Notification, NotificationAdmin)
15
```

DOCTORS - ADMIN.PY

```
1 from django.contrib import admin
2 from doctor import models
3
4
5 class DoctorAdmin(admin.ModelAdmin):
6     list_display = ['user', 'full_name', 'specialization',
7                     'qualifications', 'years_of_experience']
8
9
10 class NotificationAdmin(admin.ModelAdmin):
11     list_display = ['doctor', 'appointment', 'type', 'seen', 'date']
12
13
14 admin.site.register(models.Doctor, DoctorAdmin)
15 admin.site.register(models.Notification, NotificationAdmin)
16
```

BASE - ADMIN.PY



The screenshot shows a VS Code editor with a Django project named 'HEALTH\_MGT\_SYSTEM'. The Explorer sidebar on the left shows the project structure, with 'admin.py' highlighted under the 'base' directory. The main editor displays the code in 'admin.py', which includes imports for Django admin and models, and defines several inline admin classes and model admin classes. The code is as follows:

```
1 from django.contrib import admin
2 from base import models
3 # Register your models here.
4 from import_export.admin import ImportExportModelAdmin
5
6 class AppointmentInline(admin.TabularInline):
7     model = models.Appointment
8     extra = 1
9
10 class MedicalRecordInline(admin.TabularInline):
11     model = models.MedicalRecord
12     extra = 1
13
14 class LabTestInline(admin.TabularInline):
15     model = models.LabTest
16     extra = 1
17
18 class PrescriptionInline(admin.TabularInline):
19     model = models.Prescription
20     extra = 1
21
22 class BillingInline(admin.TabularInline):
23     model = models.Billing
24     extra = 1
25
26 class ServiceAdmin(ImportExportModelAdmin):
27     list_display = ['name', 'cost']
28     search_fields = ['name', 'description']
29     filter_horizontal = ['available_doctors']
30
31 class AppointmentAdmin(admin.ModelAdmin):
32     list_display = ['patient', 'doctor', 'appointment_date', 'status']
33     search_fields = ['patient_username', 'doctor_user_username']
34     inlines = [MedicalRecordInline, LabTestInline,
35               PrescriptionInline, BillingInline]
36
37 class MedicalRecordAdmin(admin.ModelAdmin):
38     list_display = ['appointment', 'diagnosis']
39
40 class LabTestAdmin(admin.ModelAdmin):
41     list_display = ['appointment', 'test_name']
42
43 class PrescriptionAdmin(admin.ModelAdmin):
44     list_display = ['appointment', 'medications']
45
46 class BillingAdmin(admin.ModelAdmin):
47     list_display = ['patient', 'total', 'status', 'date']
48
49 admin.site.register(models.Service, ServiceAdmin)
50 admin.site.register(models.Appointment, AppointmentAdmin)
51 admin.site.register(models.MedicalRecord, MedicalRecordAdmin)
52 admin.site.register(models.LabTest, LabTestAdmin)
53 admin.site.register(models.Prescription, PrescriptionAdmin)
54 admin.site.register(models.Billing, BillingAdmin)
```

6. We commented out PATIENTS AND DOCTORS and BASE MODELS.PY AND ADMIN.PY and ran migrations app by app, so as not to have dependency conflict (CIRCULAR DEPENDENCY i.e. doctor is dependent to base, base is dependent to doctor.)

7. We first did our makemigrations and migrate command on USERAUTHS. It was causing us an error, so we removed the SQLITE and everything in the MIGRATIONS folder of USERAUTHS EXCEPT THE \_\_init\_\_.py



## 1. Reset the SQLite database (Optional)

If your project is new and you don't have any important data in your database, you can delete the `db.sqlite3` file and the migrations files in each of your apps (in the `migrations` folder, excluding the `__init__.py` file), and then rerun the migrations. Here's how:

- Delete `db.sqlite3`:

```
bash
```

[Copy code](#)

```
rm db.sqlite3
```

- Delete migration files: Go into each app's `migrations/` folder and delete all migration files except `__init__.py`.

## Steps to Clean Up Migrations

### 1. Delete Migration Files:

- Go into each app's `migrations/` folder.
- Delete all migration files except for `__init__.py`.

### 2. Delete `__pycache__` Folder:

- Inside each app's `migrations/` folder, delete the `__pycache__` folder if it exists.

### 3. Delete the Database:

- If you're starting fresh and don't need any data, delete `db.sqlite3`.

### 4. Rerun Migrations:

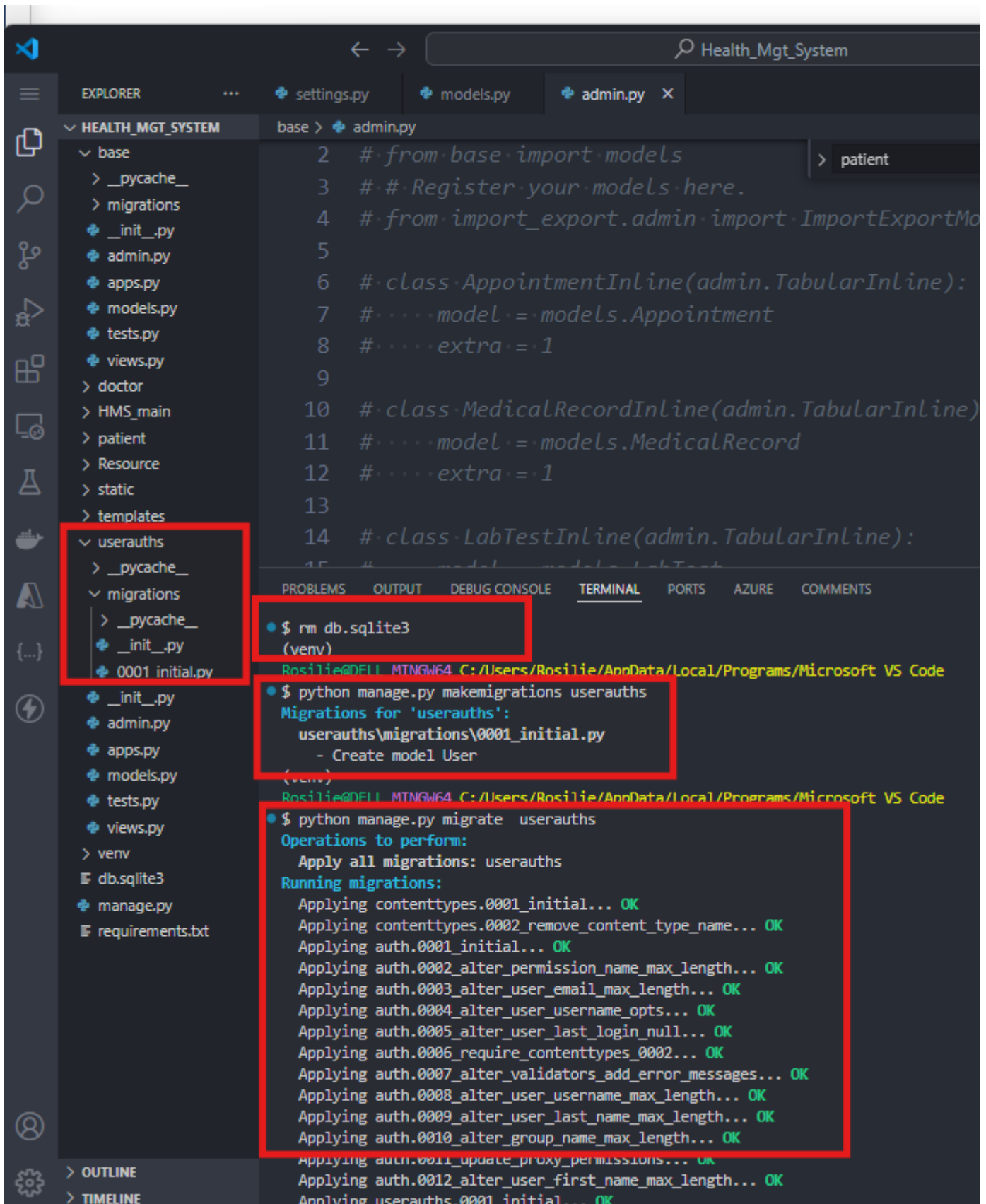
- After cleaning up, run:

```
bash
```

[Copy code](#)

```
python manage.py makemigrations  
python manage.py migrate
```

We run our migrations and `USERAUTHS` model works now. We then add our migrations on `BASE` app.



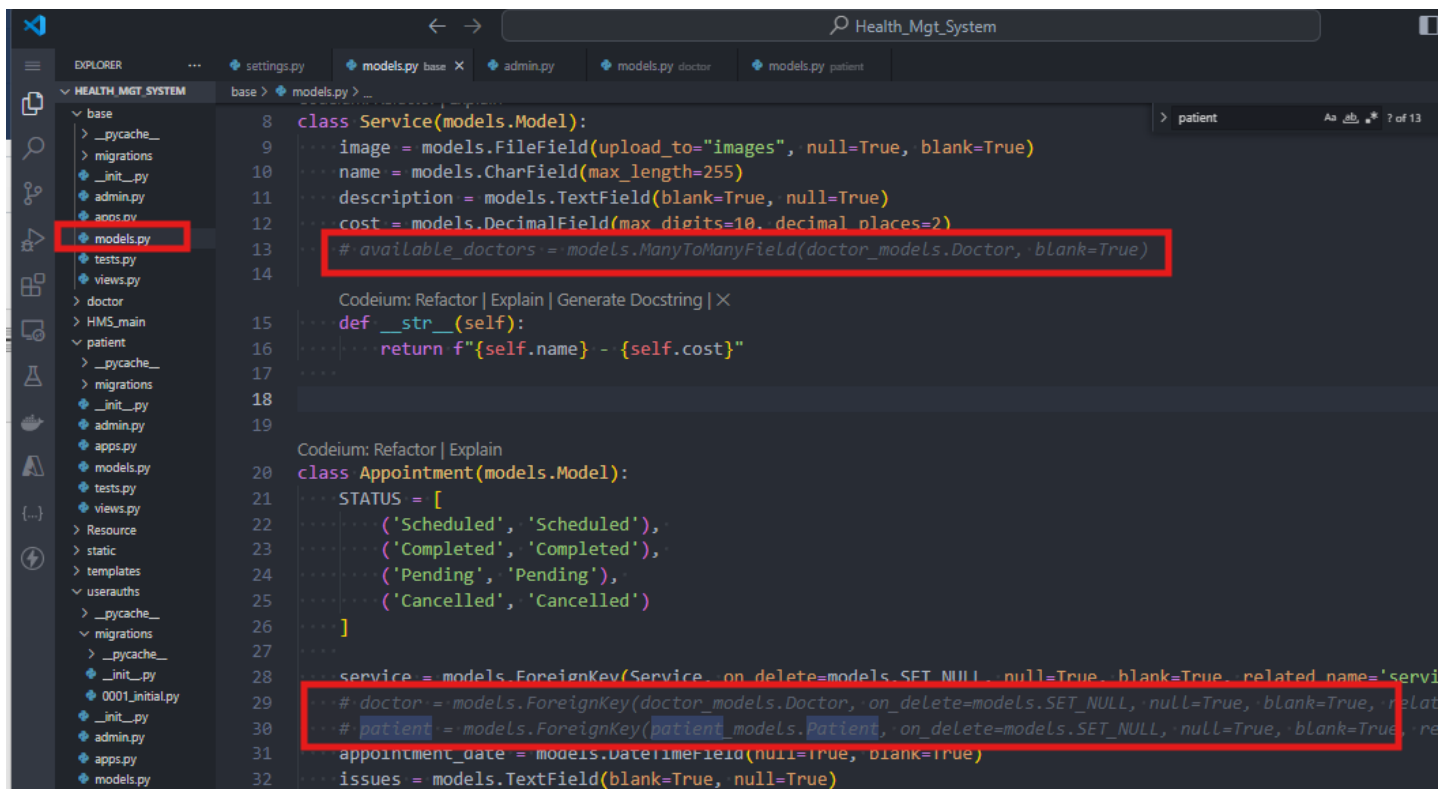
Since we commented out DOCTORS AND PATIENT model.py and admin.py, We undo this and execute our migrations next on them.

```
Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/M
• $ python manage.py migrate doctor
Operations to perform:
  Apply all migrations: doctor
Running migrations:
  Applying doctor.0001_initial... OK
(venv)

Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/M
• $ python manage.py makemigrations patient
Migrations for 'patient':
  patient\migrations\0001_initial.py
    - Create model Patient
    - Create model Notification
(venv)

Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/M
• $ python manage.py migrate patient
Operations to perform:
  Apply all migrations: patient
Running migrations:
  Applying patient.0001_initial... OK
(venv)
```

We then remove the commented lines in our BASE APP\MODELS.PY



```
HEALTH_MGT_SYSTEM
base > models.py
8 class Service(models.Model):
9     image = models.FileField(upload_to="images", null=True, blank=True)
10    name = models.CharField(max_length=255)
11    description = models.TextField(blank=True, null=True)
12    cost = models.DecimalField(max_digits=10, decimal_places=2)
13    # available_doctors = models.ManyToManyField(doctor_models.Doctor, blank=True)
14
15    def __str__(self):
16        return f"{self.name} - {self.cost}"
17
18
19
20 class Appointment(models.Model):
21     STATUS = [
22         ('Scheduled', 'Scheduled'),
23         ('Completed', 'Completed'),
24         ('Pending', 'Pending'),
25         ('Cancelled', 'Cancelled')
26     ]
27
28     service = models.ForeignKey(Service, on_delete=models.SET_NULL, null=True, blank=True, related_name='servi
29     # doctor = models.ForeignKey(doctor_models.Doctor, on_delete=models.SET_NULL, null=True, blank=True, relat
30     # patient = models.ForeignKey(patient_models.Patient, on_delete=models.SET_NULL, null=True, blank=True, re
31     appointment_date = models.DateTimeField(null=True, blank=True)
32     issues = models.TextField(blank=True, null=True)
```

We then run the general migrations for all the default models of Django project.

```
(venv)
Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/Microsoft VS Code
• $ python manage.py makemigrations base
Migrations for 'base':
  base\migrations\0002_appointment_doctor_appointment_patient_and_more.py
    - Add field doctor to appointment
    - Add field patient to appointment
    - Add field patient to billing
    - Add field available_doctors to service
(venv)
Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/Microsoft VS Code
• $ python manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, base, contenttypes, doctor, patient, sessions, userauths
Running migrations:
  Applying admin.0001_initial... OK
  Applying admin.0002_logentry_remove_auto_add... OK
  Applying admin.0003_logentry_add_action_flag_choices... OK
  Applying base.0002_appointment_doctor_appointment_patient_and_more... OK
  Applying sessions.0001_initial... OK
(venv)
Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/Microsoft VS Code
$ python manage.py makemigrations
• No changes detected
(venv)
Rosilie@DELL MINGW64 C:/Users/Rosilie/AppData/Local/Programs/Microsoft VS Code
• $ python manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, base, contenttypes, doctor, patient, sessions, userauths
Running migrations:
  No migrations to apply
```

Create a new superuser now.

Run the server again and use the email as the login credentials. This Login interface shows up instead.



Welcome to the RNL HealthCare, Login Now

Please enter the correct email and password for a staff account. Note that both fields may be case-sensitive.

Log in

When you remove the comments around ADMIN.PY of BASE, PATIENT, DOCTOR, the ADMIN DASHBOARD now looks like this:

