We made a few modifications to create.sql

```
26c26
<       patient_ID INTEGER NOT NULL,
---
>       patient_ID SERIAL NOT NULL,
37c37
<       hospital_ID INTEGER NOT NULL,
---
>       hospital_ID SERIAL NOT NULL,
44c44
<       dept_ID INTEGER NOT NULL,
---
>       dept_ID SERIAL NOT NULL,
53c53
<       staff_ID INTEGER NOT NULL,
---
>       staff_ID SERIAL NOT NULL,
62c62
<       doctor_ID INTEGER NOT NULL,
---
>       doctor_ID SERIAL NOT NULL,
73c73
<       appnt_ID INTEGER NOT NULL,
---
>       appnt_ID SERIAL NOT NULL,
223a224,230
> -- Update sequences after all our data is inserted
> -- https://stackoverflow.com/a/9108929
> SELECT setval('patient_patient_id_seq', (SELECT MAX(patient_id) FROM Patient));
> SELECT setval('hospital_hospital_id_seq', (SELECT MAX(hospital_id) FROM Hospital));
> SELECT setval('staff_staff_id_seq', (SELECT MAX(staff_id) FROM Staff));
> SELECT setval('doctor_doctor_id_seq', (SELECT MAX(doctor_id) FROM Doctor));
> SELECT setval('appointment_appnt_id_seq', (SELECT MAX(appnt_id) FROM Appointment));
```

By changing the data type of the IDs to SERIAL, inserting new values automatically increments the ID.

1) Add Doctor: Ask the user for details of a Doctor and add it to the database. (Jason)

```
MAIN MENU
---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 1
Enter doctor name (max 128 chars): New Doctor
Enter doctor specialty (max 24 chars): SQL
Enter doctor department id: 1
Successfully added doctor.
```

```
jlin155_DB=# SELECT * FROM Doctor ORDER BY doctor_id DESC LIMIT 1;
 doctor_id |    name    | specialty | did
-----------+------------+-----------+-----
       252 | New Doctor | SQL       |   1
```

2) Add Patient: Ask the user for details of a Patient and add it to the database. (Jason)

```
MAIN MENU
 ---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 2
Enter patient name (max 128 chars): New Patient
Enter patient gender ('F' or 'M') (max 1 chars): G
Invalid choice.
Enter patient gender ('F' or 'M') (max 1 chars): F
Enter age: 18
Enter address (max 256 chars): 123 Riverside St.
Successfully added patient.
```

Also a demonstration of input validation, the gender 'G' is not allowed.

```
jlin155_DB=# SELECT * FROM Patient ORDER BY patient_id DESC LIMIT 1;
 patient_id |    name     | gtype | age |      address      | number_of_appts
------------+-------------+-------+-----+-------------------+-----------------
        251 | New Patient | F     |  18 | 123 Riverside St. |               0
(1 row)
```

3) Add Appointment: Ask the user for details of an Appointment and add it to the database. (Jason)

```
MAIN MENU
 ---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 3
Enter appointment date (max 10 chars): 2021-06-11
Enter time slot (max 11 chars): 12:00-13:00
Enter appointment status (max 2 chars): AV
Successfully added appointment .
```

```
jlin155_DB=# SELECT * FROM Appointment ORDER BY appnt_id DESC LIMIT 1;
 appnt_id |   adate    |  time_slot  | status
----------+------------+-------------+--------
      552 | 2021-06-11 | 12:00-13:00 | AV
```

4) Make an appointment: Given a patient, a doctor and an appointment of the doctor that s/he wants to take, determine the status of the appointment (Waitlisted/Available/ Active/Past) and add the appointment to the database with appropriate status. (Jason)

```
MAIN MENU
---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 4
Enter patient id: 1
Enter doctor id: 1
Enter appointment id: 552
The status of this appointment is AV.
Successfully reserved appointment.
```

The appointment status has changed from Available to Active.

```
jlin155_DB=# SELECT * FROM Appointment ORDER BY appnt_id DESC LIMIT 1;
 appnt_id |   adate    |  time_slot  | status
----------+------------+-------------+--------
      552 | 2021-06-11 | 12:00-13:00 | AC
```

In the case where we try to make an appointment to an already active appointment, we create a new waitlisted appointment.

```
MAIN MENU
 ---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 4
Enter patient id: 1
Enter doctor id: 1
Enter appointment id: 552
The status of this appointment is AC.
Appointment is already reserved, adding to the waitlist.
Successfully waitlisted new appointment. Appointment ID: 553
```

The original appointment and the new waitlisted appointment

```
jlin155_DB=# SELECT * FROM Appointment ORDER BY appnt_id DESC LIMIT 2;
 appnt_id |   adate    |  time_slot  | status
----------+------------+-------------+--------
      553 | 2021-06-11 | 12:00-13:00 | WL
      552 | 2021-06-11 | 12:00-13:00 | AC
```

5) List appointments of a given doctor: Given a doctor ID and a date range, find the list of active and available appointments of the doctor. (Crystal)

```
MAIN MENU
 ---------
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 5
Enter doctor ID: 1
Enter beginning date of date range (max 24 chars): 2020-01-01
Enter end date of date range (max 24 chars): 2021-12-30
Doctor 1 has the following active and available appointments in this date range:
appnt_id        adate   time_slot       status
551     2021-06-11      12:00-13:00     AC
552     2021-06-11      12:00-13:00     AC
```

6) List all available appointments of a given department: Given a department name and a specific date, find the list of available appointments of the department. (Crystal)

```
MAIN MENU
 ————————
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 6
Enter department name (max 32 chars): Allergy and Immunology
Enter date (max 24 chars): 2021-06-12
The Allergy and Immunology department in hospital 0 has the following appointments available on that date:
appnt_id        adate   time_slot
556     2021-06-12      13:00-14:00

The Allergy and Immunology department in hospital 1 has the following appointments available on that date:

The Allergy and Immunology department in hospital 2 has the following appointments available on that date:

The Allergy and Immunology department in hospital 3 has the following appointments available on that date:

The Allergy and Immunology department in hospital 4 has the following appointments available on that date:
```

7) List total number of different types of appointments per doctor in descending order. (Crystal)

```
MAIN MENU
 ————————
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 7
Doctor 128: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 192: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 1: 2 WL, 2 PA, 2 AC, 0 AV
Doctor 2: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 130: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 4: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 197: 1 AV, 0 WL, 0 PA, 0 AC
Doctor 70: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 8: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 12: 1 AV, 0 WL, 0 PA, 0 AC
Doctor 15: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 16: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 24: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 88: 1 AV, 0 WL, 0 PA, 0 AC
Doctor 25: 1 AC, 0 WL, 0 PA, 0 AV
Doctor 26: 1 AV, 0 WL, 0 PA, 0 AC
Doctor 32: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 35: 1 WL, 1 PA, 0 AC, 0 AV
Doctor 36: 1 WL, 1 PA, 0 AC, 0 AV
```

(more results follow…)

8) Find total number of patients per doctor with a given status: Given an appointment status, return the number of patients per doctor with the given status. (Jason)

```
MAIN MENU
─────────
1. Add Doctor
2. Add Patient
3. Add Appointment
4. Make an Appointment
5. List appointments of a given doctor
6. List all available appointments of a given department
7. List total number of different types of appointments per doctor in descending order
8. Find total number of patients per doctor with a given status
9. < EXIT
Enter choice: 8
Enter appointment status (max 2 chars): AV
Doctor 120 has 1 AV appointments.
Doctor 55 has 1 AV appointments.
Doctor 12 has 1 AV appointments.
Doctor 237 has 1 AV appointments.
Doctor 88 has 1 AV appointments.
Doctor 118 has 1 AV appointments.
Doctor 230 has 1 AV appointments.
Doctor 26 has 1 AV appointments.
Doctor 240 has 1 AV appointments.
Doctor 197 has 1 AV appointments.
Doctor 121 has 1 AV appointments.
```

The number of appointments a doctor has is the same as the number of patients the doctor has, since there is only 1 patient per appointment.