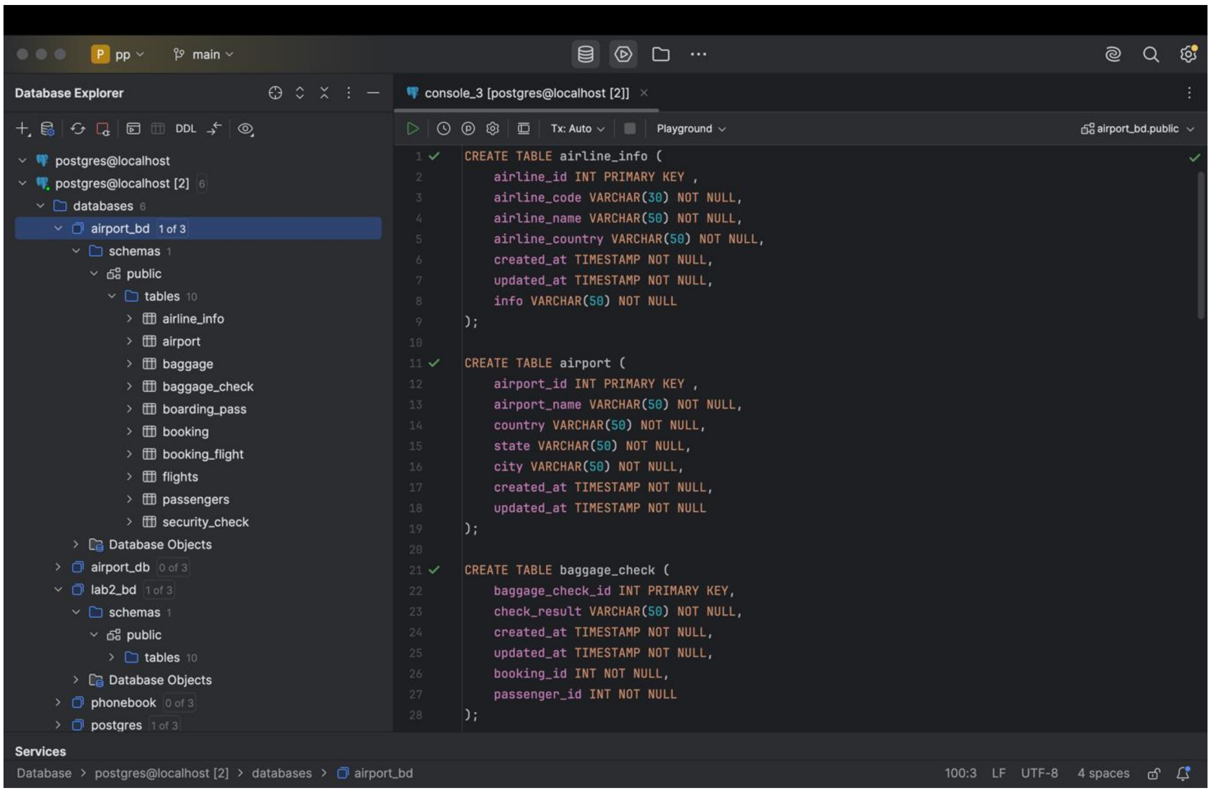
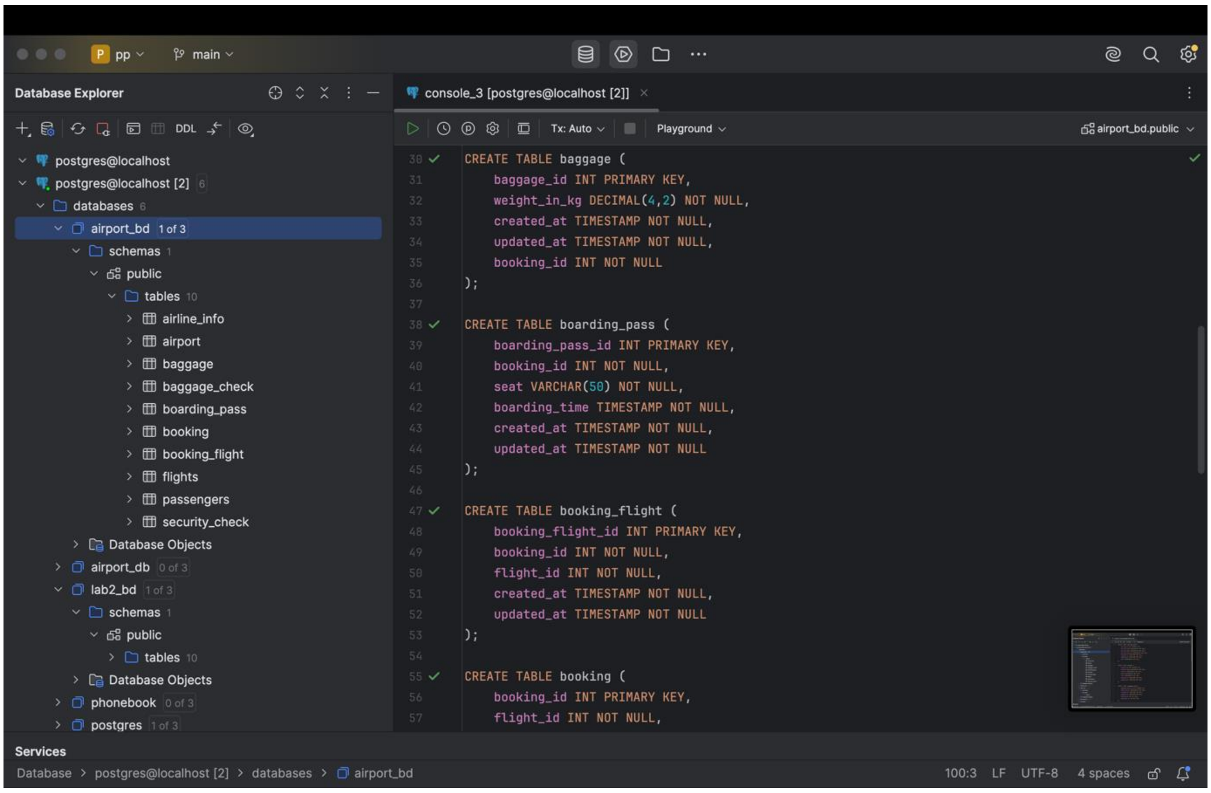
LAB 2

DDL

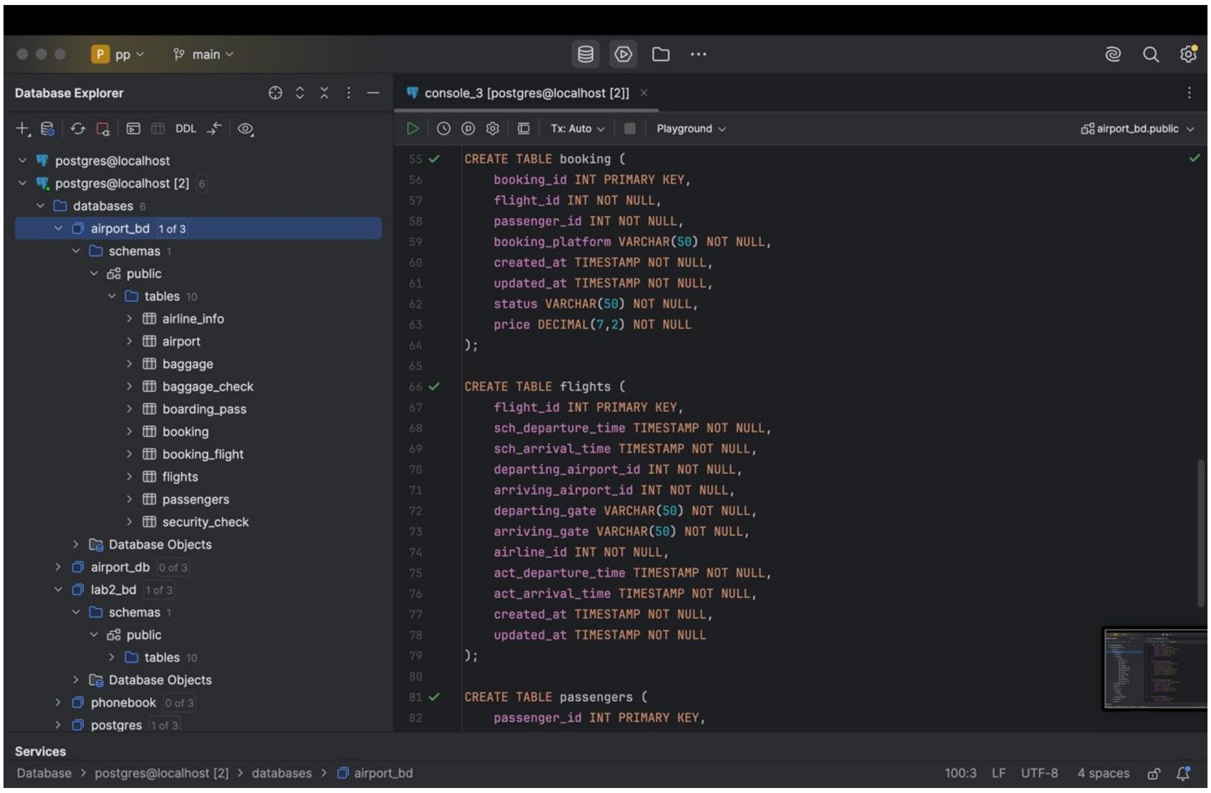
1. Create following tables with corresponding attributes:
2. Define Primary Keys for each tables;
3. Define for all attributes not null constraint;



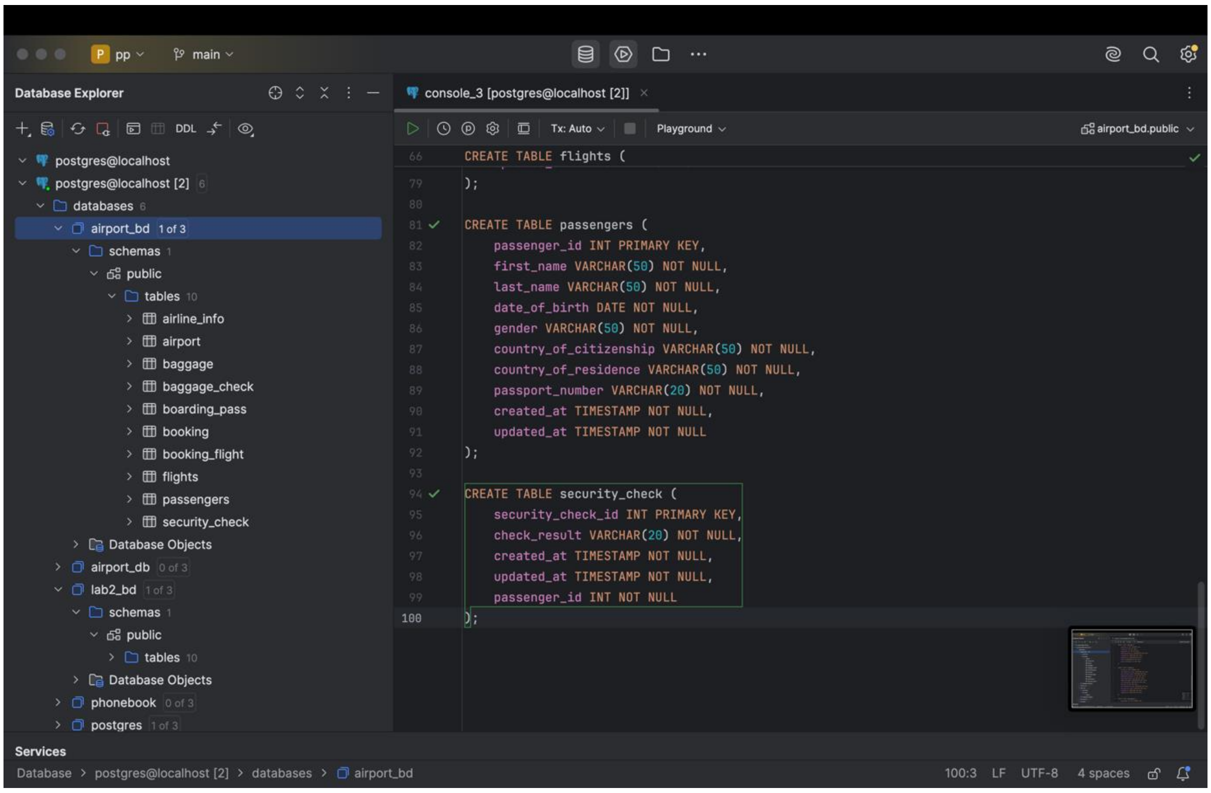
```sql
CREATE TABLE airline_info (
    airline_id INT PRIMARY KEY ,
    airline_code VARCHAR(30) NOT NULL,
    airline_name VARCHAR(50) NOT NULL,
    airline_country VARCHAR(50) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL,
    info VARCHAR(50) NOT NULL
);

CREATE TABLE airport (
    airport_id INT PRIMARY KEY ,
    airport_name VARCHAR(50) NOT NULL,
    country VARCHAR(50) NOT NULL,
    state VARCHAR(50) NOT NULL,
    city VARCHAR(50) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL
);

CREATE TABLE baggage_check (
    baggage_check_id INT PRIMARY KEY,
    check_result VARCHAR(50) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL,
    booking_id INT NOT NULL,
    passenger_id INT NOT NULL
);
```



```sql
CREATE TABLE baggage (
    baggage_id INT PRIMARY KEY,
    weight_in_kg DECIMAL(4,2) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL,
    booking_id INT NOT NULL
);

CREATE TABLE boarding_pass (
    boarding_pass_id INT PRIMARY KEY,
    booking_id INT NOT NULL,
    seat VARCHAR(50) NOT NULL,
    boarding_time TIMESTAMP NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL
);

CREATE TABLE booking_flight (
    booking_flight_id INT PRIMARY KEY,
    booking_id INT NOT NULL,
    flight_id INT NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL
);

CREATE TABLE booking (
    booking_id INT PRIMARY KEY,
    flight_id INT NOT NULL,
```

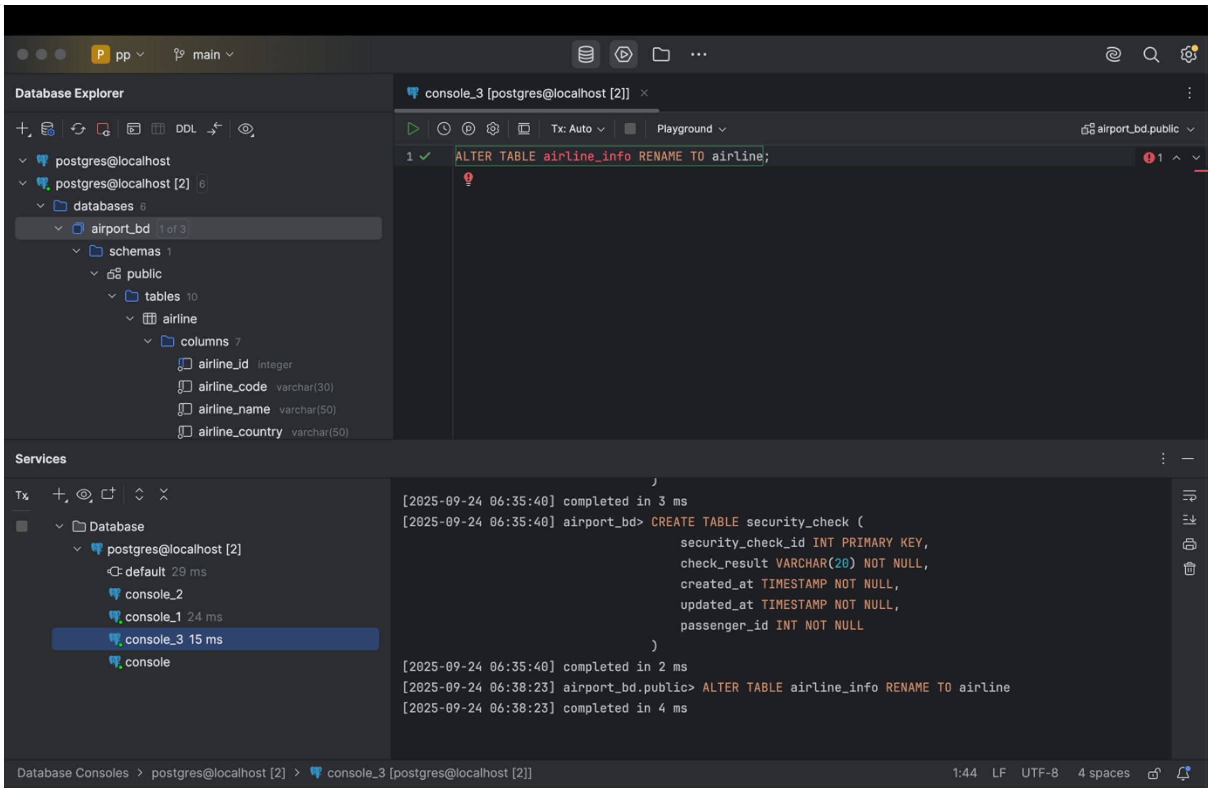


```sql
CREATE TABLE booking (
    booking_id INT PRIMARY KEY,
    flight_id INT NOT NULL,
    passenger_id INT NOT NULL,
    booking_platform VARCHAR(50) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL,
    status VARCHAR(50) NOT NULL,
    price DECIMAL(7,2) NOT NULL
);

CREATE TABLE flights (
    flight_id INT PRIMARY KEY,
    sch_departure_time TIMESTAMP NOT NULL,
    sch_arrival_time TIMESTAMP NOT NULL,
    departing_airport_id INT NOT NULL,
    arriving_airport_id INT NOT NULL,
    departing_gate VARCHAR(50) NOT NULL,
    arriving_gate VARCHAR(50) NOT NULL,
    airline_id INT NOT NULL,
    act_departure_time TIMESTAMP NOT NULL,
    act_arrival_time TIMESTAMP NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL
);

CREATE TABLE passengers (
    passenger_id INT PRIMARY KEY,
```



```sql
CREATE TABLE flights (
);

CREATE TABLE passengers (
    passenger_id INT PRIMARY KEY,
    first_name VARCHAR(50) NOT NULL,
    last_name VARCHAR(50) NOT NULL,
    date_of_birth DATE NOT NULL,
    gender VARCHAR(50) NOT NULL,
    country_of_citizenship VARCHAR(50) NOT NULL,
    country_of_residence VARCHAR(50) NOT NULL,
    passport_number VARCHAR(20) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL
);

CREATE TABLE security_check (
    security_check_id INT PRIMARY KEY,
    check_result VARCHAR(20) NOT NULL,
    created_at TIMESTAMP NOT NULL,
    updated_at TIMESTAMP NOT NULL,
    passenger_id INT NOT NULL
);
```

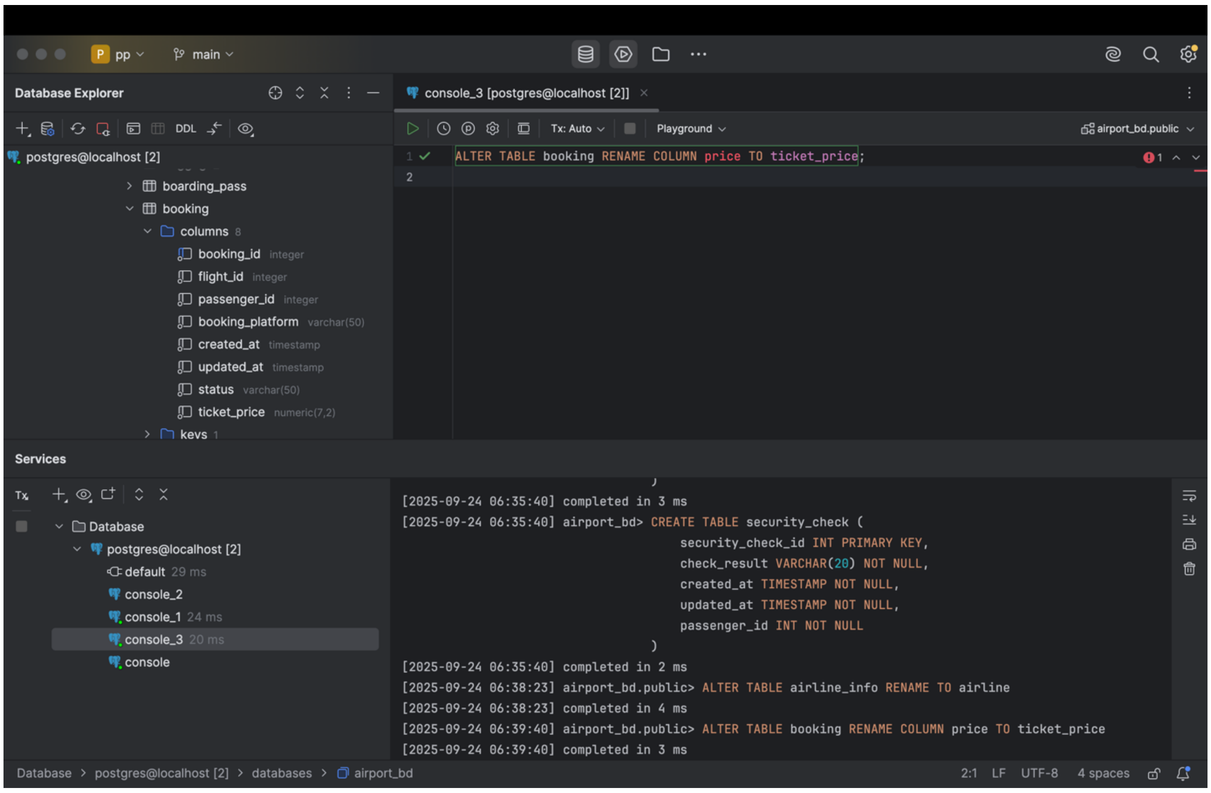
5. Rename airline_info table to airline;



```sql
ALTER TABLE airline_info RENAME TO airline;
```

```
[2025-09-24 06:35:40] completed in 3 ms
[2025-09-24 06:35:40] airport_bd> CREATE TABLE security_check (
                          security_check_id INT PRIMARY KEY,
                          check_result VARCHAR(20) NOT NULL,
                          created_at TIMESTAMP NOT NULL,
                          updated_at TIMESTAMP NOT NULL,
                          passenger_id INT NOT NULL
                      )
[2025-09-24 06:35:40] completed in 2 ms
[2025-09-24 06:38:23] airport_bd.public> ALTER TABLE airline_info RENAME TO airline
[2025-09-24 06:38:23] completed in 4 ms
```

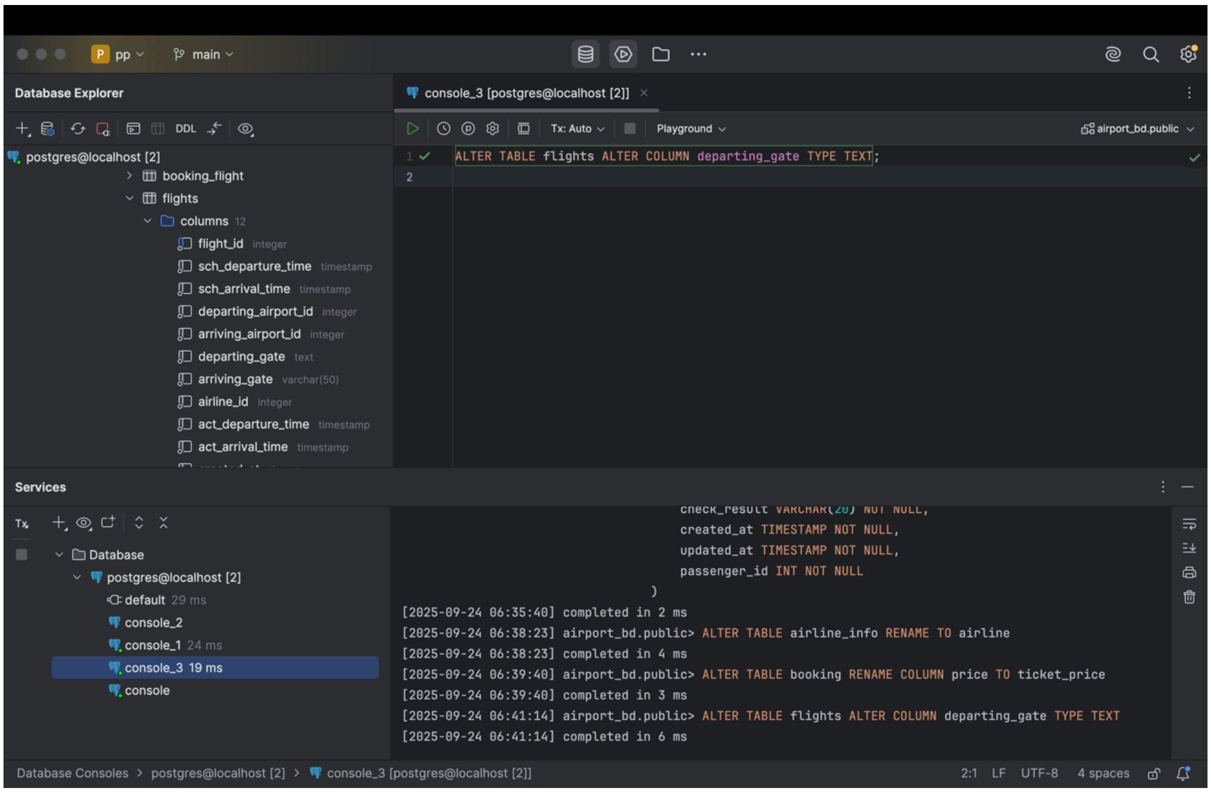
6. Rename column price to ticket_price in booking table;



```
ALTER TABLE booking RENAME COLUMN price TO ticket_price;
```

```
                                        )
[2025-09-24 06:35:40] completed in 3 ms
[2025-09-24 06:35:40] airport_bd> CREATE TABLE security_check (
                                      security_check_id INT PRIMARY KEY,
                                      check_result VARCHAR(20) NOT NULL,
                                      created_at TIMESTAMP NOT NULL,
                                      updated_at TIMESTAMP NOT NULL,
                                      passenger_id INT NOT NULL
                                  )
[2025-09-24 06:35:40] completed in 2 ms
[2025-09-24 06:38:23] airport_bd.public> ALTER TABLE airline_info RENAME TO airline
[2025-09-24 06:38:23] completed in 4 ms
[2025-09-24 06:39:40] airport_bd.public> ALTER TABLE booking RENAME COLUMN price TO ticket_price
[2025-09-24 06:39:40] completed in 3 ms
```

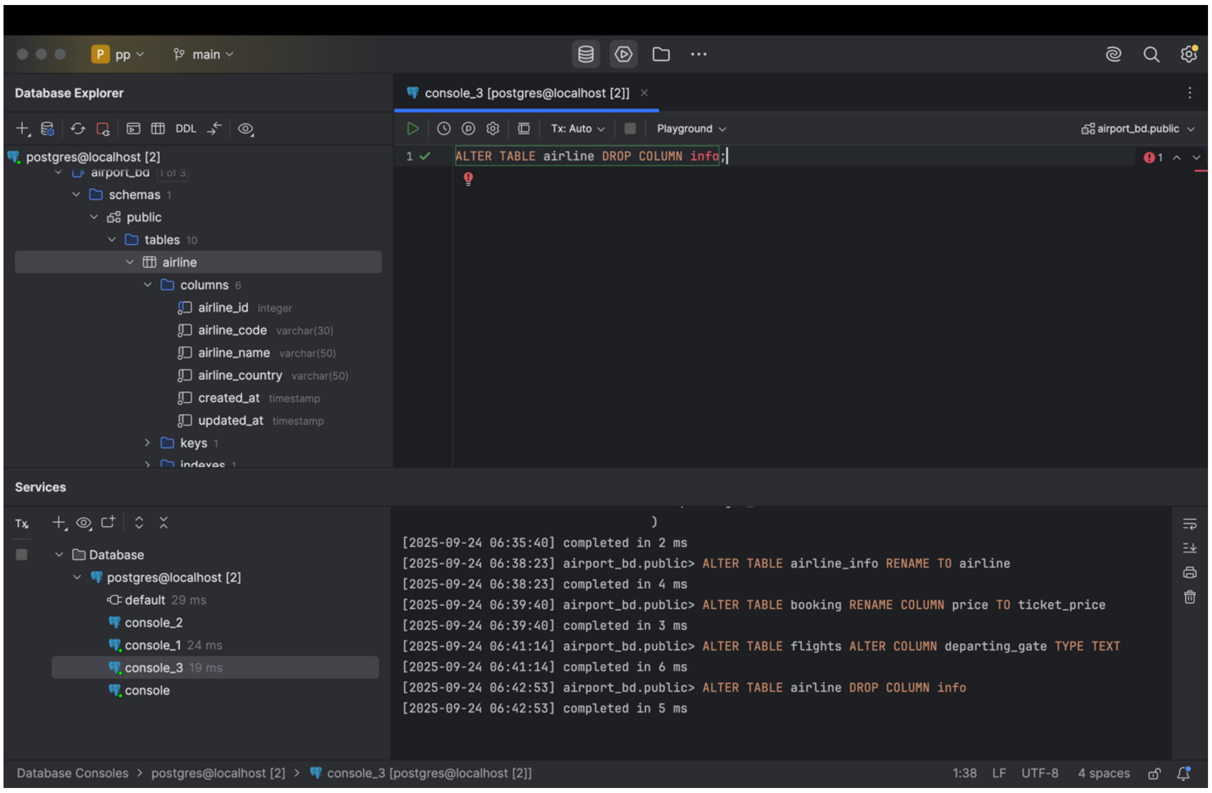
7. Change data type of departing_gate from varchar(50) to text;


Database Explorer
postgres@localhost [2]
booking_flight
flights
columns 12
flight_id integer
sch_departure_time timestamp
sch_arrival_time timestamp
departing_airport_id integer
arriving_airport_id integer
departing_gate text
arriving_gate varchar(50)
airline_id integer
act_departure_time timestamp
act_arrival_time timestamp
console_3 [postgres@localhost [2]]
Tx: Auto
Playground
airport_bd.public
Services
Database
postgres@localhost [2]
default 29 ms
console_2
console_1 24 ms
console_3 19 ms
console
Database Consoles > postgres@localhost [2] > console_3 [postgres@localhost [2]]

```
ALTER TABLE flights ALTER COLUMN departing_gate TYPE TEXT;
```

```
                                      check_result VARCHAR(20) NOT NULL,
                                      created_at TIMESTAMP NOT NULL,
                                      updated_at TIMESTAMP NOT NULL,
                                      passenger_id INT NOT NULL
                                  )
[2025-09-24 06:35:40] completed in 2 ms
[2025-09-24 06:38:23] airport_bd.public> ALTER TABLE airline_info RENAME TO airline
[2025-09-24 06:38:23] completed in 4 ms
[2025-09-24 06:39:40] airport_bd.public> ALTER TABLE booking RENAME COLUMN price TO ticket_price
[2025-09-24 06:39:40] completed in 3 ms
[2025-09-24 06:41:14] airport_bd.public> ALTER TABLE flights ALTER COLUMN departing_gate TYPE TEXT
[2025-09-24 06:41:14] completed in 6 ms
```

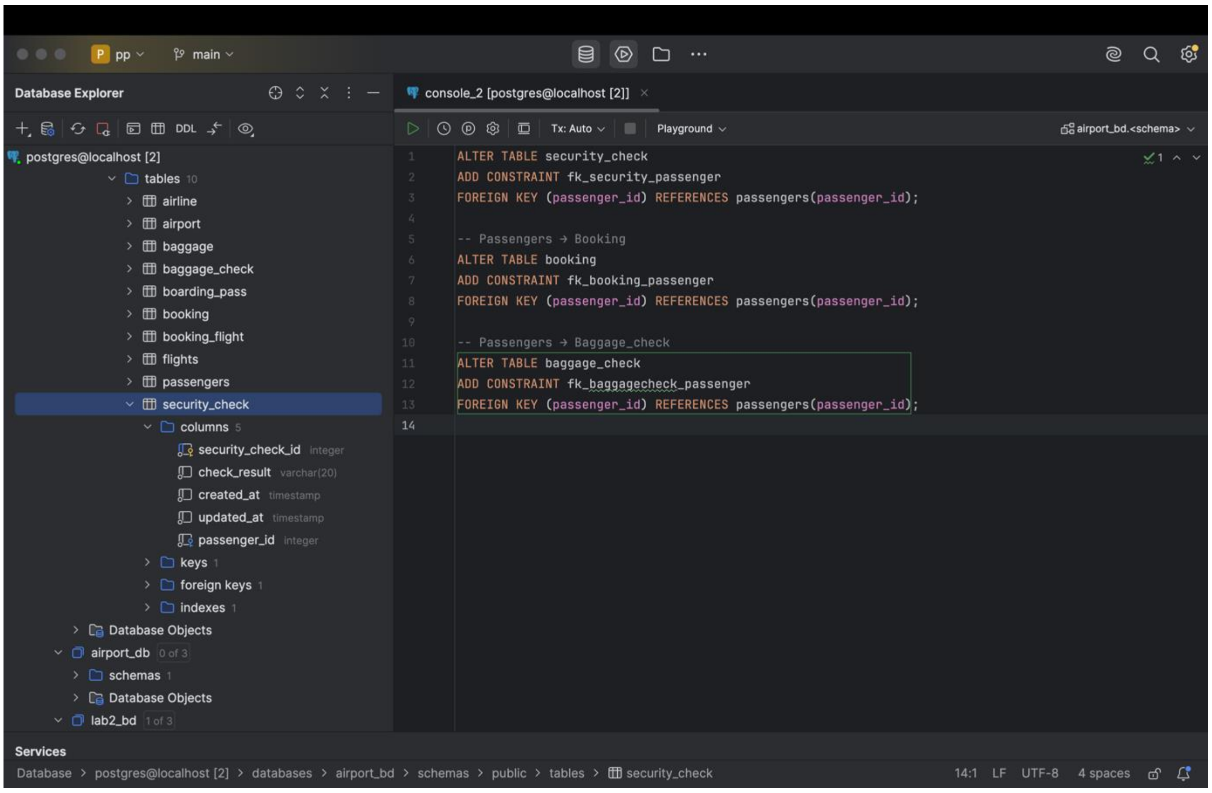
8. Drop the column info(varchar(50)) from the airline table.



```sql
ALTER TABLE airline DROP COLUMN info;
```

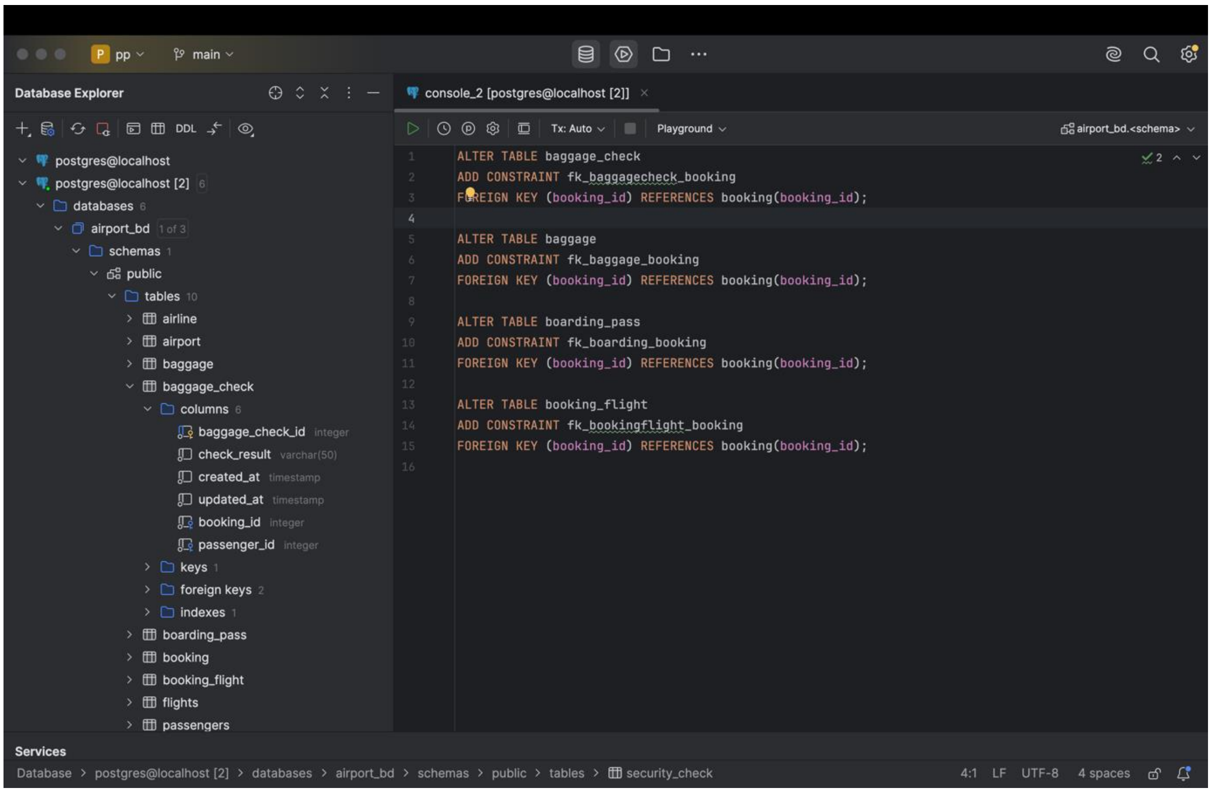
```
[2025-09-24 06:35:40] completed in 2 ms
[2025-09-24 06:38:23] airport_bd.public> ALTER TABLE airline_info RENAME TO airline
[2025-09-24 06:38:23] completed in 4 ms
[2025-09-24 06:39:40] airport_bd.public> ALTER TABLE booking RENAME COLUMN price TO ticket_price
[2025-09-24 06:39:40] completed in 3 ms
[2025-09-24 06:41:14] airport_bd.public> ALTER TABLE flights ALTER COLUMN departing_gate TYPE TEXT
[2025-09-24 06:41:14] completed in 6 ms
[2025-09-24 06:42:53] airport_bd.public> ALTER TABLE airline DROP COLUMN info
[2025-09-24 06:42:53] completed in 5 ms
```

9. Make a relationship between following tables:
- Passengers with Secuitiry_check, Booking, Baggage_check by passenger_id;



```sql
ALTER TABLE security_check
ADD CONSTRAINT fk_security_passenger
FOREIGN KEY (passenger_id) REFERENCES passengers(passenger_id);

-- Passengers → Booking
ALTER TABLE booking
ADD CONSTRAINT fk_booking_passenger
FOREIGN KEY (passenger_id) REFERENCES passengers(passenger_id);

-- Passengers → Baggage_check
ALTER TABLE baggage_check
ADD CONSTRAINT fk_baggagecheck_passenger
FOREIGN KEY (passenger_id) REFERENCES passengers(passenger_id);
```

- Booking with Baggage_check, Baggage, Boarding_pass, Booking_flight by booking_id;


Database Explorer

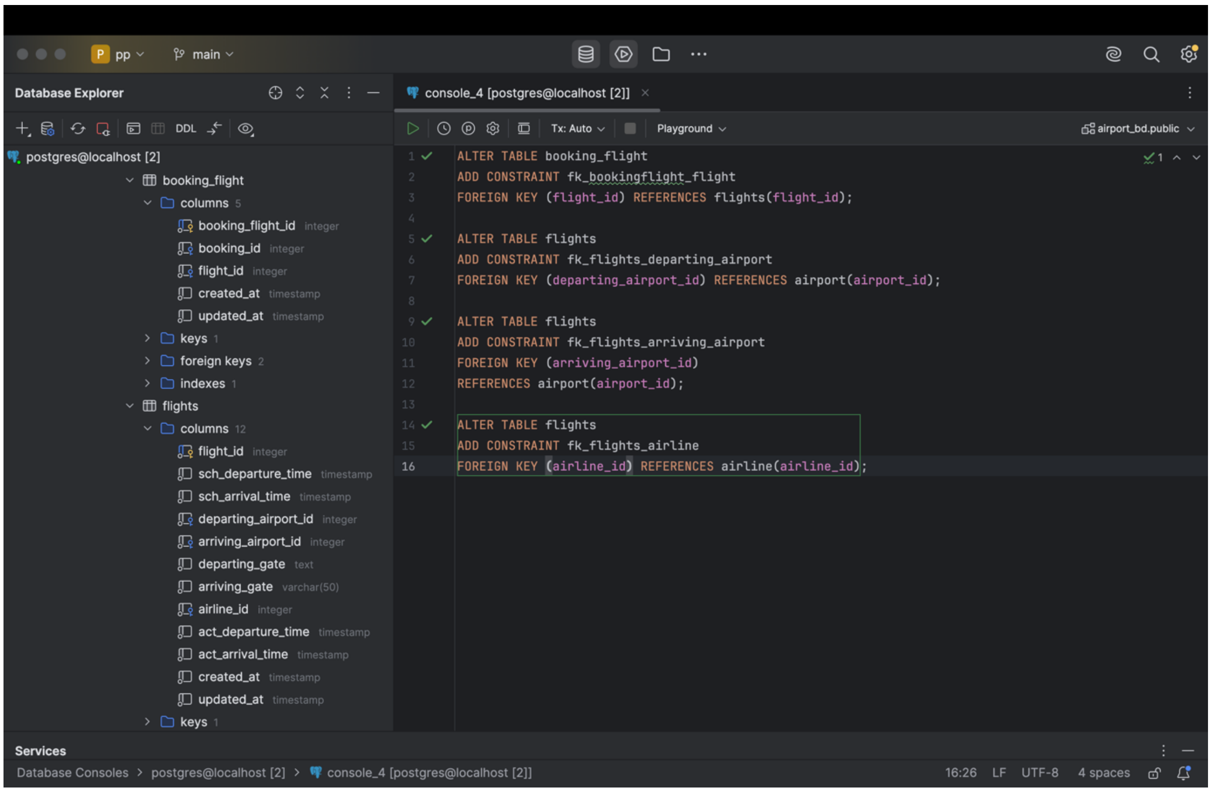
```
postgres@localhost
postgres@localhost [2] 6
  databases 6
    airport_bd 1 of 3
      schemas 1
        public
          tables 10
            airline
            airport
            baggage
            baggage_check
              columns 6
                baggage_check_id integer
                check_result varchar(50)
                created_at timestamp
                updated_at timestamp
                booking_id integer
                passenger_id integer
              keys 1
              foreign keys 2
              indexes 1
            boarding_pass
            booking
            booking_flight
            flights
            passengers
```

console_2 [postgres@localhost [2]]

```sql
ALTER TABLE baggage_check
ADD CONSTRAINT fk_baggagecheck_booking
FOREIGN KEY (booking_id) REFERENCES booking(booking_id);

ALTER TABLE baggage
ADD CONSTRAINT fk_baggage_booking
FOREIGN KEY (booking_id) REFERENCES booking(booking_id);

ALTER TABLE boarding_pass
ADD CONSTRAINT fk_boarding_booking
FOREIGN KEY (booking_id) REFERENCES booking(booking_id);

ALTER TABLE booking_flight
ADD CONSTRAINT fk_bookingflight_booking
FOREIGN KEY (booking_id) REFERENCES booking(booking_id);
```

Database > postgres@localhost [2] > databases > airport_bd > schemas > public > tables > security_check   4:1 LF UTF-8 4 spaces

- Flights with Booking_flight by flight_id;
- Airport with Flights by departing_airport_id;
- Airport with Flights by arriving_airport_id;
- Airline with Flights by airline_id;


Database Explorer

```
postgres@localhost [2]
    booking_flight
      columns 5
        booking_flight_id integer
        booking_id integer
        flight_id integer
        created_at timestamp
        updated_at timestamp
      keys 1
      foreign keys 2
      indexes 1
    flights
      columns 12
        flight_id integer
        sch_departure_time timestamp
        sch_arrival_time timestamp
        departing_airport_id integer
        arriving_airport_id integer
        departing_gate text
        arriving_gate varchar(50)
        airline_id integer
        act_departure_time timestamp
        act_arrival_time timestamp
        created_at timestamp
        updated_at timestamp
      keys 1
```

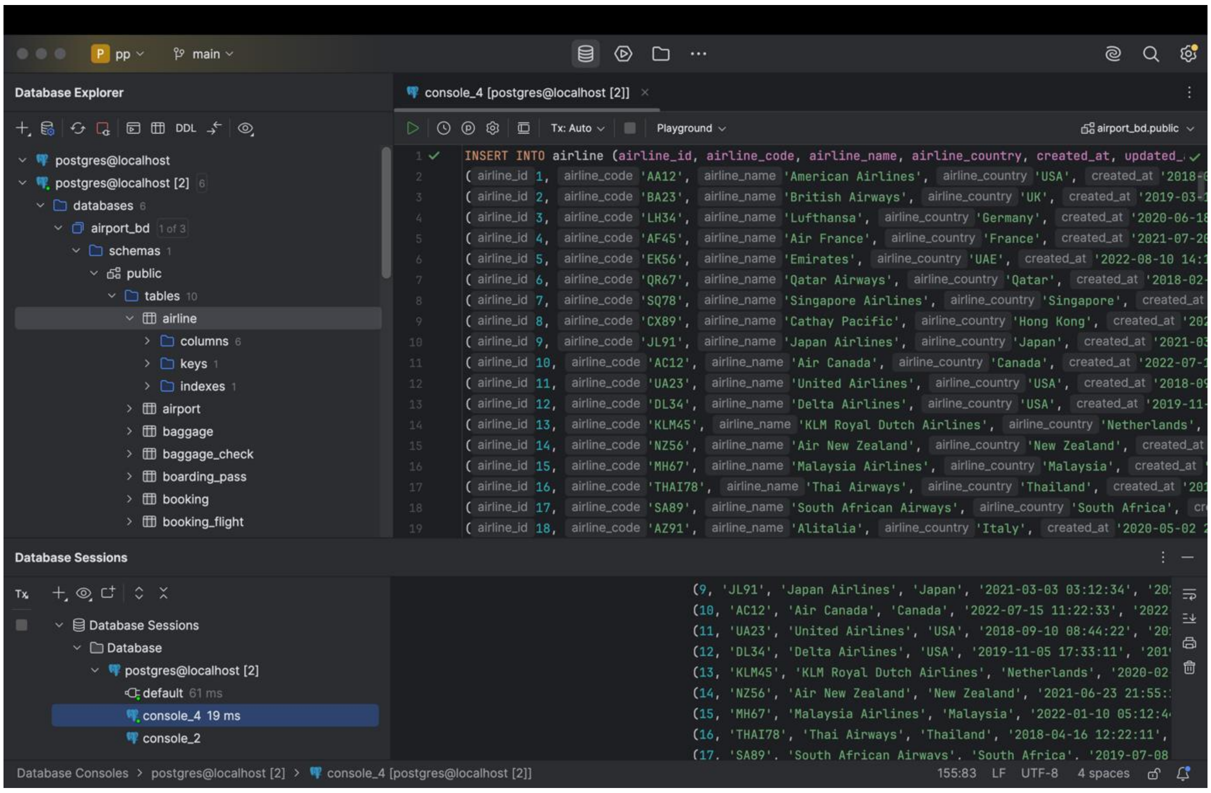
console_4 [postgres@localhost [2]]

```sql
ALTER TABLE booking_flight
ADD CONSTRAINT fk_bookingflight_flight
FOREIGN KEY (flight_id) REFERENCES flights(flight_id);

ALTER TABLE flights
ADD CONSTRAINT fk_flights_departing_airport
FOREIGN KEY (departing_airport_id) REFERENCES airport(airport_id);

ALTER TABLE flights
ADD CONSTRAINT fk_flights_arriving_airport
FOREIGN KEY (arriving_airport_id)
REFERENCES airport(airport_id);

ALTER TABLE flights
ADD CONSTRAINT fk_flights_airline
FOREIGN KEY (airline_id) REFERENCES airline(airline_id);
```

Database Consoles > postgres@localhost [2] > console_4 [postgres@localhost [2]]   16:26 LF UTF-8 4 spaces

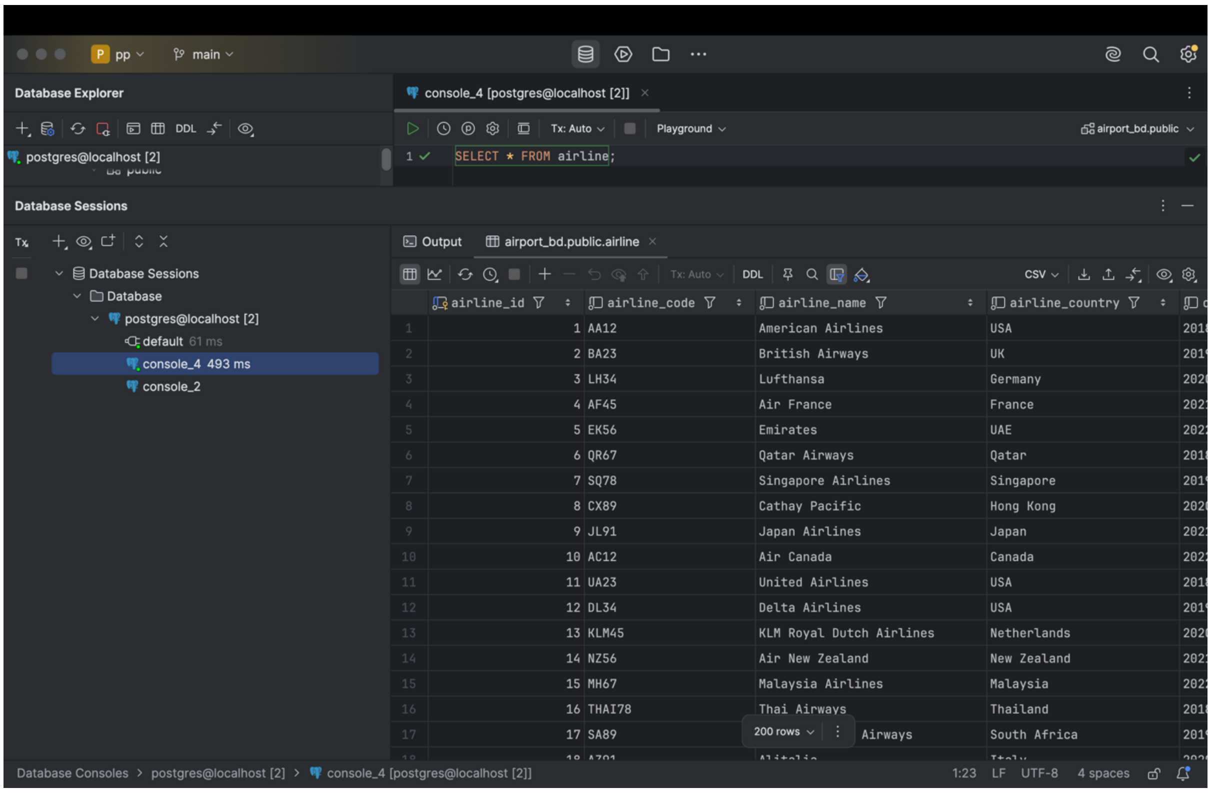
DML

1. Generate and insert 200 random rows in your airport database.



```
INSERT INTO airline (airline_id, airline_code, airline_name, airline_country, created_at, updated_
(1, 'AA12', 'American Airlines', 'USA', '2018-
(2, 'BA23', 'British Airways', 'UK', '2019-03-
(3, 'LH34', 'Lufthansa', 'Germany', '2020-06-1
(4, 'AF45', 'Air France', 'France', '2021-07-2
(5, 'EK56', 'Emirates', 'UAE', '2022-08-10 14:
(6, 'QR67', 'Qatar Airways', 'Qatar', '2018-02-
(7, 'SQ78', 'Singapore Airlines', 'Singapore',
(8, 'CX89', 'Cathay Pacific', 'Hong Kong', '20
(9, 'JL91', 'Japan Airlines', 'Japan', '2021-0
(10, 'AC12', 'Air Canada', 'Canada', '2022-07-1
(11, 'UA23', 'United Airlines', 'USA', '2018-0
(12, 'DL34', 'Delta Airlines', 'USA', '2019-11-
(13, 'KLM45', 'KLM Royal Dutch Airlines', 'Netherlands',
(14, 'NZ56', 'Air New Zealand', 'New Zealand',
(15, 'MH67', 'Malaysia Airlines', 'Malaysia',
(16, 'THAI78', 'Thai Airways', 'Thailand', '20
(17, 'SA89', 'South African Airways', 'South Africa',
(18, 'AZ91', 'Alitalia', 'Italy', '2020-05-02
```

```
(9, 'JL91', 'Japan Airlines', 'Japan', '2021-03-03 03:12:34', '20
(10, 'AC12', 'Air Canada', 'Canada', '2022-07-15 11:22:33', '2022
(11, 'UA23', 'United Airlines', 'USA', '2018-09-10 08:44:22', '20
(12, 'DL34', 'Delta Airlines', 'USA', '2019-11-05 17:33:11', '201
(13, 'KLM45', 'KLM Royal Dutch Airlines', 'Netherlands', '2020-02
(14, 'NZ56', 'Air New Zealand', 'New Zealand', '2021-06-23 21:55:
(15, 'MH67', 'Malaysia Airlines', 'Malaysia', '2022-01-10 05:12:4
(16, 'THAI78', 'Thai Airways', 'Thailand', '2018-04-16 12:22:11',
(17, 'SA89', 'South African Airways', 'South Africa', '2019-07-08
```

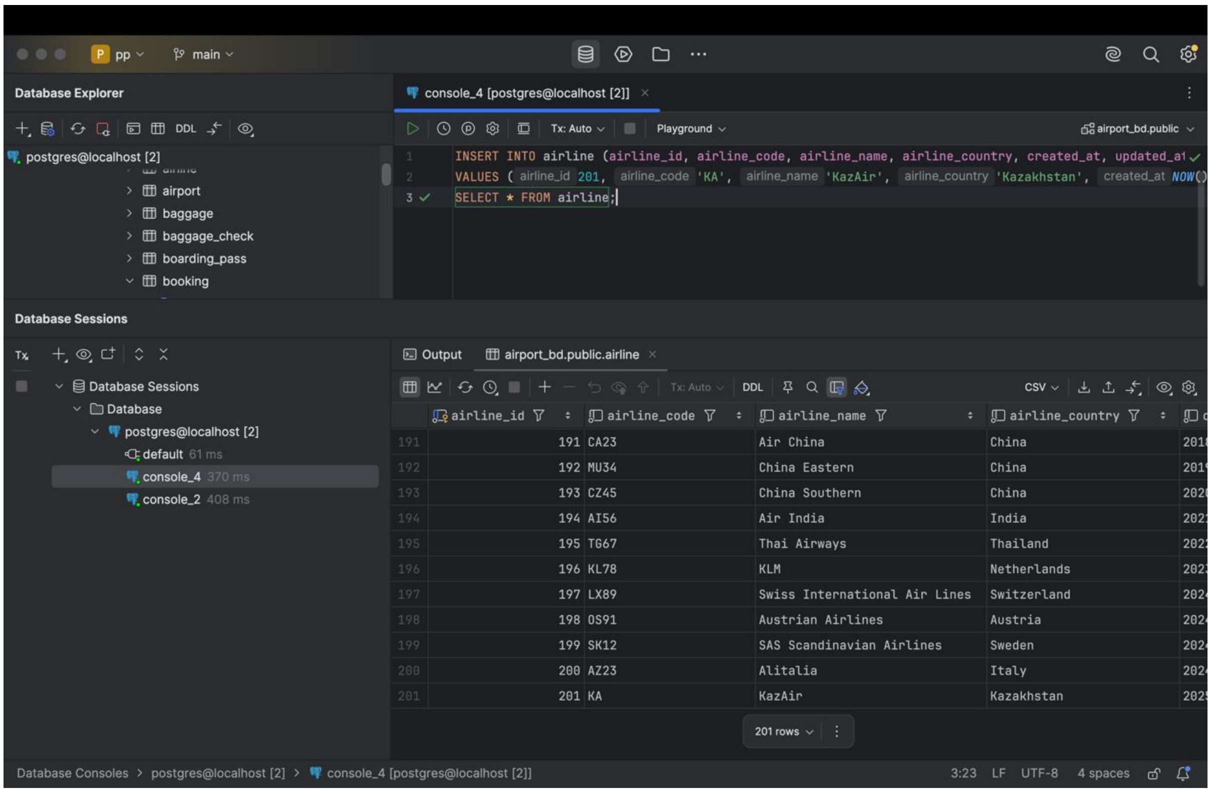


```
SELECT * FROM airline;
```

	airline_id	airline_code	airline_name	airline_country	
1	1	AA12	American Airlines	USA	201
2	2	BA23	British Airways	UK	201
3	3	LH34	Lufthansa	Germany	202
4	4	AF45	Air France	France	202
5	5	EK56	Emirates	UAE	202
6	6	QR67	Qatar Airways	Qatar	201
7	7	SQ78	Singapore Airlines	Singapore	201
8	8	CX89	Cathay Pacific	Hong Kong	202
9	9	JL91	Japan Airlines	Japan	202
10	10	AC12	Air Canada	Canada	202
11	11	UA23	United Airlines	USA	201
12	12	DL34	Delta Airlines	USA	201
13	13	KLM45	KLM Royal Dutch Airlines	Netherlands	202
14	14	NZ56	Air New Zealand	New Zealand	202
15	15	MH67	Malaysia Airlines	Malaysia	202
16	16	THAI78	Thai Airways	Thailand	201
17	17	SA89	Airways	South Africa	201

200 rows

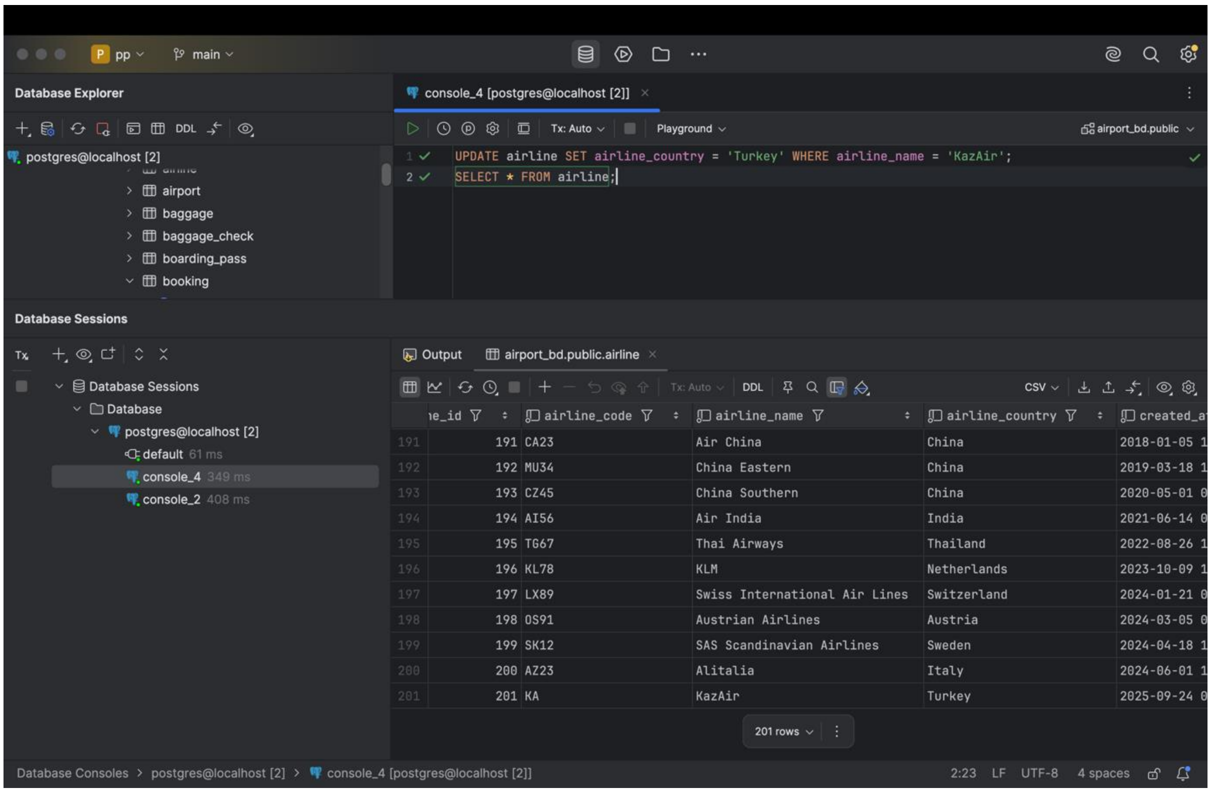
2. Add a new airline named "KazAir" based in "Kazakhstan" to the airline table.



```sql
INSERT INTO airline (airline_id, airline_code, airline_name, airline_country, created_at, updated_at
VALUES ( 201, 'KA', 'KazAir', 'Kazakhstan', NOW()
SELECT * FROM airline;
```

```
airline_id  airline_code  airline_name                   airline_country
191   191  CA23         Air China                      China          2018
192   192  MU34         China Eastern                  China          2019
193   193  CZ45         China Southern                 China          2020
194   194  AI56         Air India                      India          2021
195   195  TG67         Thai Airways                   Thailand       2022
196   196  KL78         KLM                            Netherlands    2023
197   197  LX89         Swiss International Air Lines  Switzerland    2024
198   198  OS91         Austrian Airlines              Austria        2024
199   199  SK12         SAS Scandinavian Airlines      Sweden         2024
200   200  AZ23         Alitalia                       Italy          2024
201   201  KA           KazAir                         Kazakhstan     2025
201 rows
```

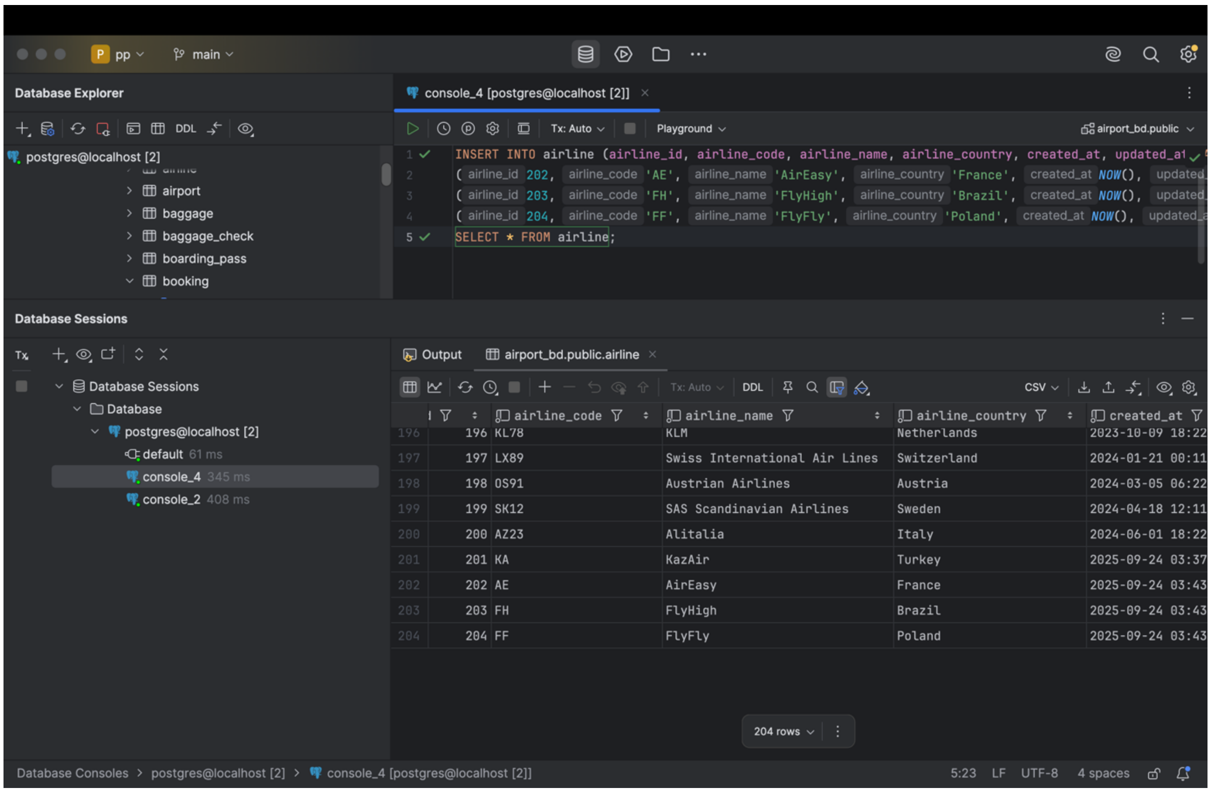
3. Update the airline country "KazAir" to "Turkey".



```sql
UPDATE airline SET airline_country = 'Turkey' WHERE airline_name = 'KazAir';
SELECT * FROM airline;
```

```
      e_id  airline_code  airline_name                   airline_country  created_at
191   191   CA23          Air China                      China            2018-01-05
192   192   MU34          China Eastern                  China            2019-03-18
193   193   CZ45          China Southern                 China            2020-05-01
194   194   AI56          Air India                      India            2021-06-14
195   195   TG67          Thai Airways                   Thailand         2022-08-26
196   196   KL78          KLM                            Netherlands      2023-10-09
197   197   LX89          Swiss International Air Lines  Switzerland      2024-01-21
198   198   OS91          Austrian Airlines              Austria          2024-03-05
199   199   SK12          SAS Scandinavian Airlines      Sweden           2024-04-18
200   200   AZ23          Alitalia                       Italy            2024-06-01
201   201   KA            KazAir                         Turkey           2025-09-24
201 rows
```

4. Add three airlines at once: "AirEasy" in "France", "FlyHigh" in "Brazil" and "FlyFly" in "Poland".

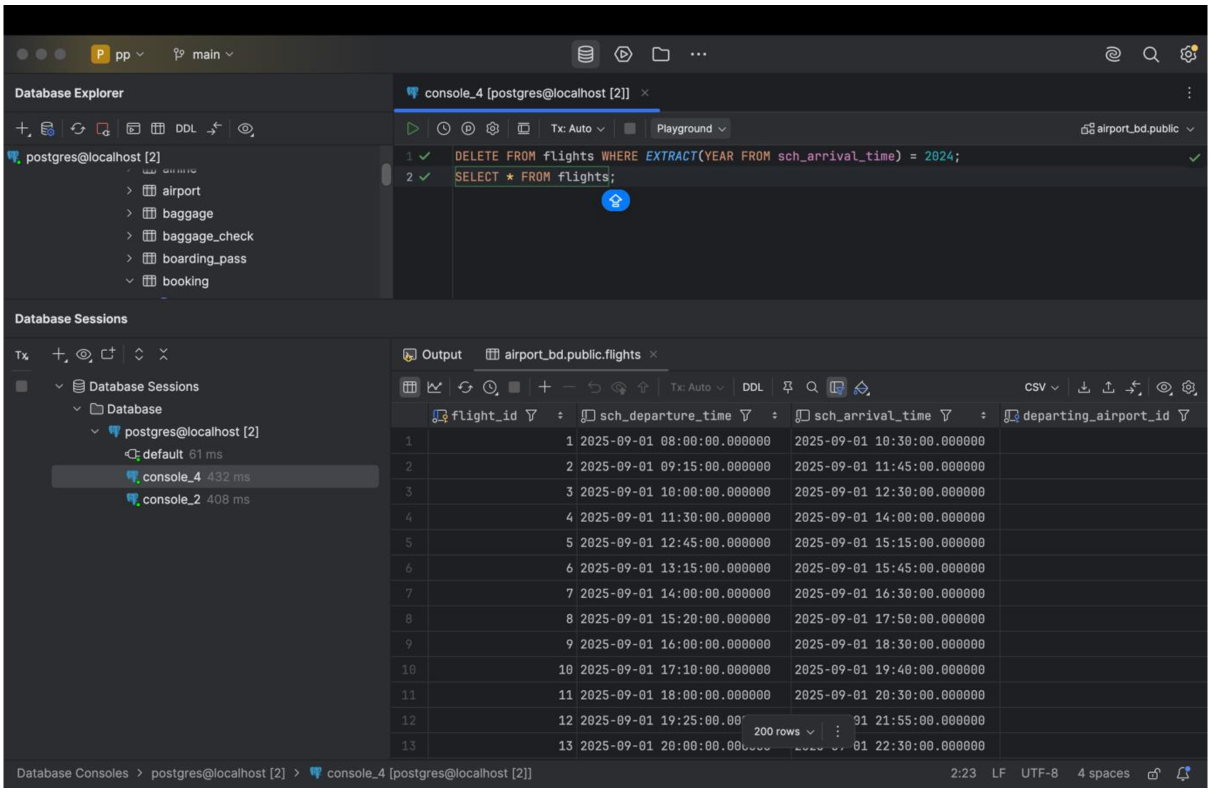


```sql
INSERT INTO airline (airline_id, airline_code, airline_name, airline_country, created_at, updated_at
( airline_id 202, airline_code 'AE', airline_name 'AirEasy', airline_country 'France', created_at NOW(), updated
( airline_id 203, airline_code 'FH', airline_name 'FlyHigh', airline_country 'Brazil', created_at NOW(), updated
( airline_id 204, airline_code 'FF', airline_name 'FlyFly', airline_country 'Poland', created_at NOW(), updated
SELECT * FROM airline;
```

		airline_code	airline_name	airline_country	created_at
196	196	KL78	KLM	Netherlands	2023-10-09 18:22
197	197	LX89	Swiss International Air Lines	Switzerland	2024-01-21 00:11
198	198	OS91	Austrian Airlines	Austria	2024-03-05 06:22
199	199	SK12	SAS Scandinavian Airlines	Sweden	2024-04-18 12:11
200	200	AZ23	Alitalia	Italy	2024-06-01 18:22
201	201	KA	KazAir	Turkey	2025-09-24 03:37
202	202	AE	AirEasy	France	2025-09-24 03:43
203	203	FH	FlyHigh	Brazil	2025-09-24 03:43
204	204	FF	FlyFly	Poland	2025-09-24 03:43

204 rows

5. Delete all flights whose arrival in 2024 year.

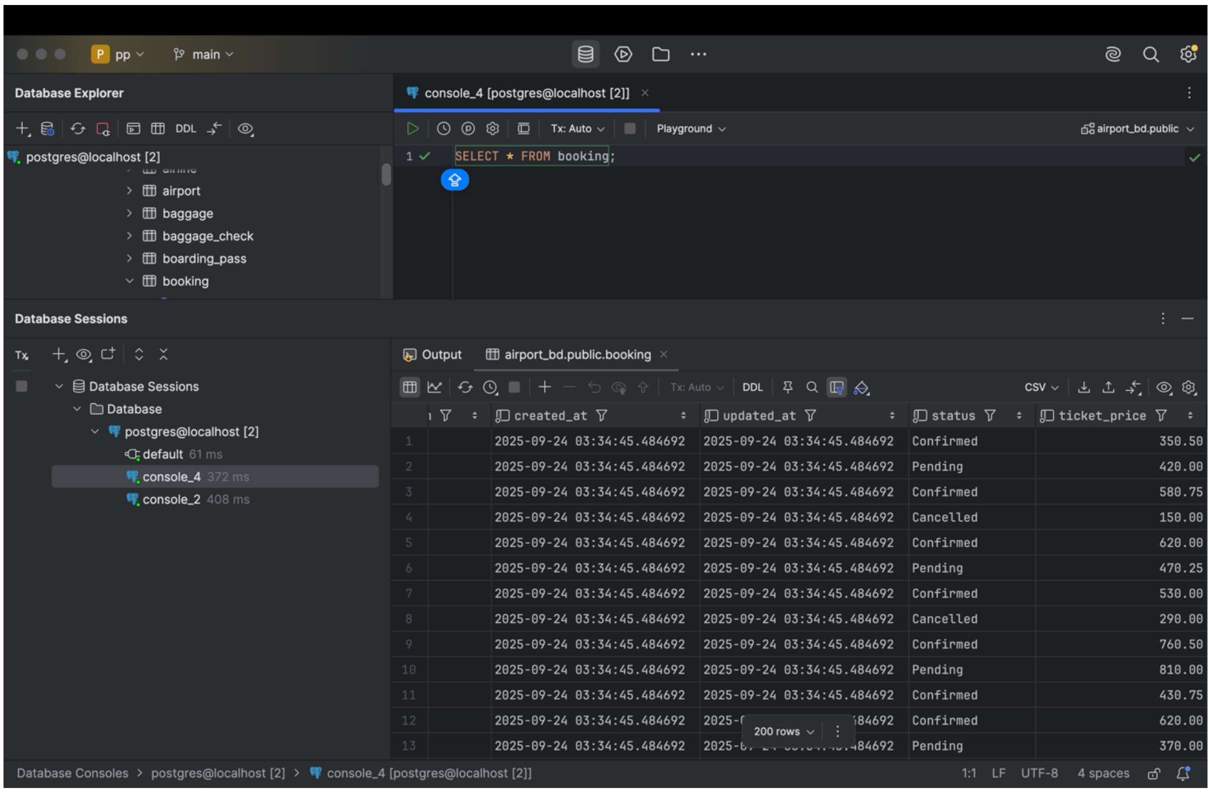


```sql
DELETE FROM flights WHERE EXTRACT(YEAR FROM sch_arrival_time) = 2024;
SELECT * FROM flights;
```

	flight_id	sch_departure_time	sch_arrival_time	departing_airport_id
1	1	2025-09-01 08:00:00.000000	2025-09-01 10:30:00.000000	
2	2	2025-09-01 09:15:00.000000	2025-09-01 11:45:00.000000	
3	3	2025-09-01 10:00:00.000000	2025-09-01 12:30:00.000000	
4	4	2025-09-01 11:30:00.000000	2025-09-01 14:00:00.000000	
5	5	2025-09-01 12:45:00.000000	2025-09-01 15:15:00.000000	
6	6	2025-09-01 13:15:00.000000	2025-09-01 15:45:00.000000	
7	7	2025-09-01 14:00:00.000000	2025-09-01 16:30:00.000000	
8	8	2025-09-01 15:20:00.000000	2025-09-01 17:50:00.000000	
9	9	2025-09-01 16:00:00.000000	2025-09-01 18:30:00.000000	
10	10	2025-09-01 17:10:00.000000	2025-09-01 19:40:00.000000	
11	11	2025-09-01 18:00:00.000000	2025-09-01 20:30:00.000000	
12	12	2025-09-01 19:25:00.00	01 21:55:00.000000	
13	13	2025-09-01 20:00:00.00	01 22:30:00.000000	

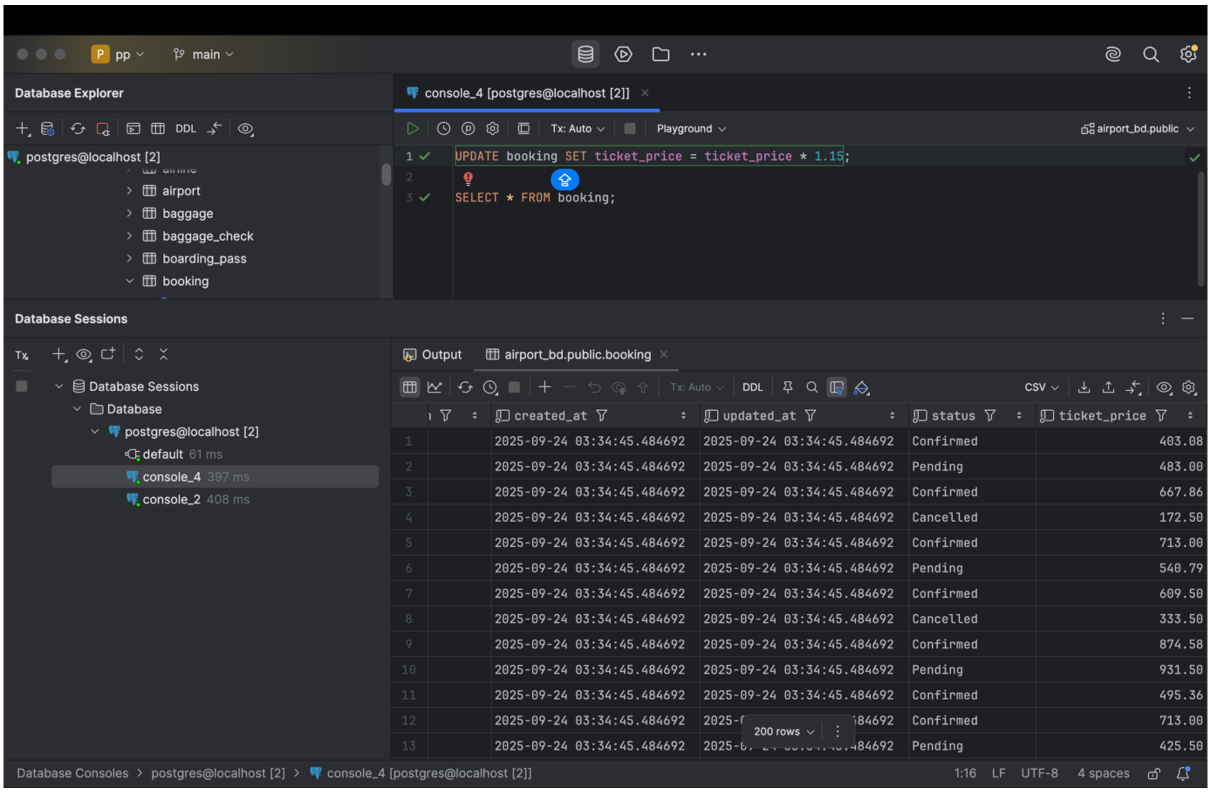
200 rows

6. Increase the price of all tickets in booking table for flights by 15%.



```
SELECT * FROM booking;
```

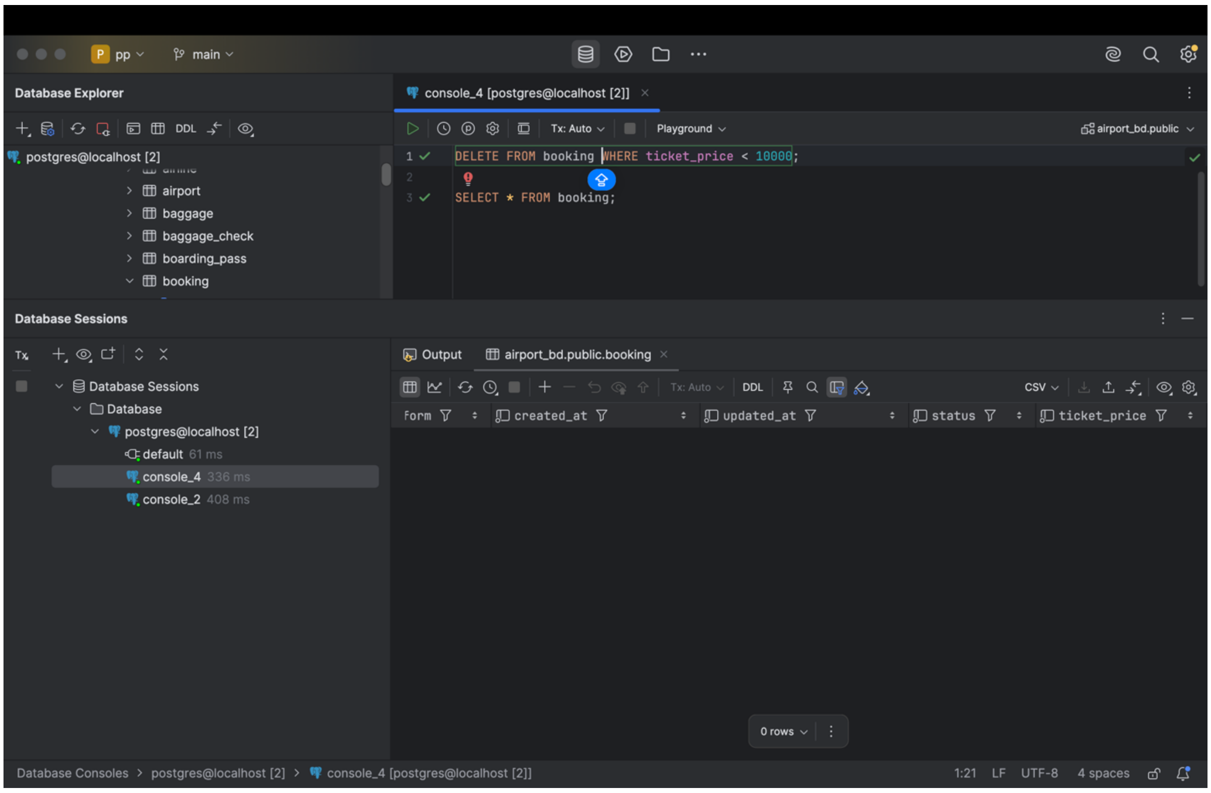
```
     created_at                  updated_at                  status      ticket_price
1    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         350.50
2    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           420.00
3    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         580.75
4    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Cancelled         150.00
5    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         620.00
6    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           470.25
7    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         530.00
8    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Cancelled         290.00
9    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         760.50
10   2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           810.00
11   2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         430.75
12   2025-09-24 03:34:45.484692  2025-[illegible]84692       Confirmed         620.00
13   2025-09-24 03:34:45.484692  2025-[illegible]484692      Pending           370.00
```



```
UPDATE booking SET ticket_price = ticket_price * 1.15;

SELECT * FROM booking;
```

```
     created_at                  updated_at                  status      ticket_price
1    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         403.08
2    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           483.00
3    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         667.86
4    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Cancelled         172.50
5    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         713.00
6    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           540.79
7    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         609.50
8    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Cancelled         333.50
9    2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         874.58
10   2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Pending           931.50
11   2025-09-24 03:34:45.484692  2025-09-24 03:34:45.484692  Confirmed         495.36
12   2025-09-24 03:34:45.484692  2025-[illegible]84692       Confirmed         713.00
13   2025-09-24 03:34:45.484692  2025-[illegible]484692      Pending           425.50
```

7. Delete all tickets where price is less than 10000.



```
DELETE FROM booking WHERE ticket_price < 10000;

SELECT * FROM booking;
```