

# Laboratory work 5

Tasks:

1. Add a CHECK constraint to passenger table to provide that passengers must be at least 10 years old.

The screenshot shows the DBeaver IDE interface. On the left, the 'Database Explorer' pane displays the 'airline' database schema, including tables like 'passengers'. The central 'console' pane shows the following SQL commands being executed:

```
1 ALTER TABLE passengers
2 ADD CONSTRAINT check_age_min_10
3 CHECK (DATE_PART('year', AGE(CURRENT_DATE, date_of_birth)) >= 10);
4
```

The 'Services' pane at the bottom displays the execution log, showing that the constraint was added successfully. It also includes error messages in Russian indicating that the constraint already existed and was being dropped and recreated.

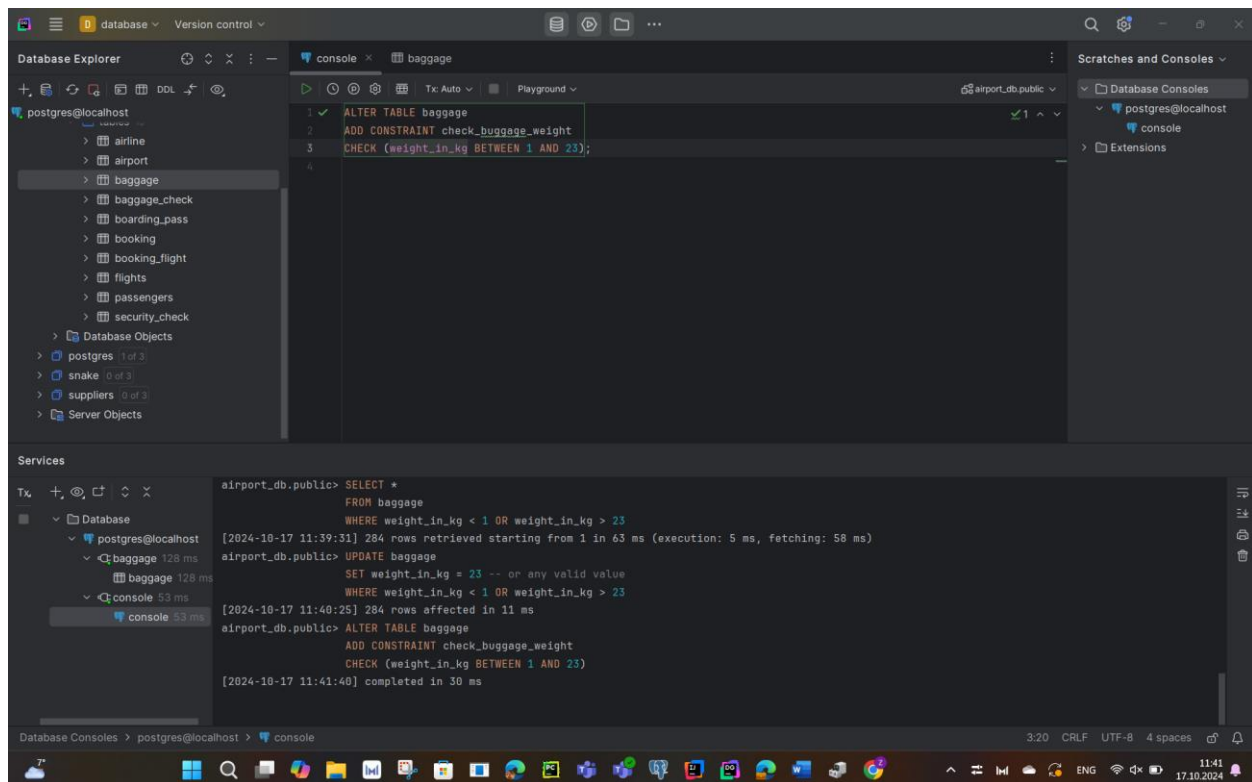
2. Add a CHECK constraint to accept values in booking price not more than 50000tg and less than 0tg.

The screenshot shows the DBeaver IDE interface. The 'Database Explorer' pane shows the 'airline' database schema. The central 'console' pane shows the following SQL commands being executed:

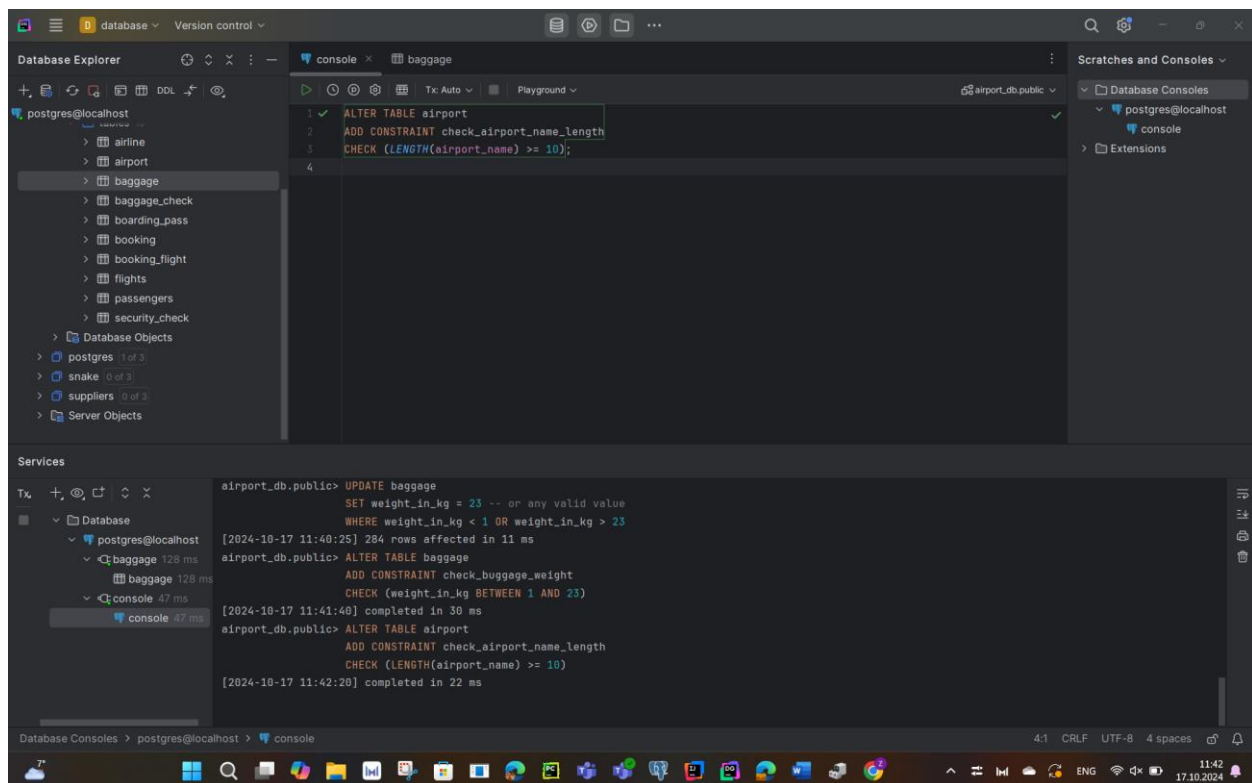
```
1 ALTER TABLE booking
2 ADD CONSTRAINT check_booking_price
3 CHECK (price >= 0 AND price <= 50000);
4
```

The 'Services' pane at the bottom displays the execution log, showing that the constraint was added successfully. It also includes error messages in Russian indicating that the constraint already existed and was being dropped and recreated.

3. Add a CHECK constraint to accept the luggage weight between 1 and 23 kg.



4. Add a CHECK constraint to ensure that all values in airport\_name must have at least 10 characters.



5. Add UNIQUE constraint to some columns in each table in database.

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE passengers
2 ADD CONSTRAINT unique_passport_number
3 UNIQUE (passport_number);
4
```

Services

Output

```
airport_db.public.security_check
ADD CONSTRAINT check_ticket_discount
CHECK (
  (created_at >= '2024-01-01' AND ticket_discount = 0.05 * price) OR
  (created_at < '2024-01-01' AND ticket_discount = 0.10 * price)
)
[2024-10-17 12:13:06] completed in 8 ms
airport_db.public> ALTER TABLE passengers
ADD CONSTRAINT unique_passport_number
UNIQUE (passport_number)
[2024-10-17 12:13:47] [42P07] ОШИБКА: отношение "unique_passport_number" уже существует
```

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE airline
2 ADD CONSTRAINT unique_airline_code
3 UNIQUE (airline_code);
4
```

Services

Output

```
airport_db.public.security_check
UNIQUE (passport_number)
[2024-10-17 12:13:47] [42P07] ОШИБКА: отношение "unique_passport_number" уже существует
airport_db.public> ALTER TABLE airline
ADD CONSTRAINT unique_passport_number
UNIQUE (airline_code)
[2024-10-17 12:14:59] [42P07] ОШИБКА: отношение "unique_passport_number" уже существует
airport_db.public> ALTER TABLE airline
ADD CONSTRAINT unique_airline_code
UNIQUE (airline_code)
[2024-10-17 12:14:59] completed in 12 ms
```

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE airport
2 ADD CONSTRAINT unique_airport_id
3 UNIQUE (airport_id);
4
```

Scratches and Consoles

- Database Consoles
  - postgres@localhost
    - console

Services

Output

```
airport_db.public.security_check
UNIQUE (airline_code)
[2024-10-17 12:14:39] [42P07] ОШИБКА: отношение "unique_passport_number" уже существует
airport_db.public> ALTER TABLE airline
ADD CONSTRAINT unique_airline_code
UNIQUE (airline_code)
[2024-10-17 12:14:59] completed in 12 ms
airport_db.public> ALTER TABLE airport
ADD CONSTRAINT unique_airport_id
UNIQUE (airport_id)
[2024-10-17 12:15:47] completed in 8 ms
```

Database Consoles > postgres@localhost > console

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE baggage
2 ADD CONSTRAINT unique_baggage_id
3 UNIQUE (baggage_id);
4
```

Scratches and Consoles

- Database Consoles
  - postgres@localhost
    - console

Services

Output

```
airport_db.public.security_check
[2024-10-17 12:16:26] Подробности: Ключ (weight_in_kg)=(25.00) дублируется.
airport_db.public> ALTER TABLE baggage
ADD CONSTRAINT unique_booking_id
UNIQUE (booking_id)
[2024-10-17 12:16:55] [23505] ОШИБКА: создать уникальный индекс "unique_booking_id" не удалось
[2024-10-17 12:16:55] Подробности: Ключ (booking_id)=(109) дублируется.
airport_db.public> ALTER TABLE baggage
ADD CONSTRAINT unique_baggage_id
UNIQUE (baggage_id)
[2024-10-17 12:17:21] completed in 8 ms
```

Database Consoles > postgres@localhost > console

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE baggage_check
2 ADD CONSTRAINT unique_baggage_check_id
3 UNIQUE (baggage_check_id);
4
```

Scratches and Consoles

- Database Consoles
  - postgres@localhost
    - console

Services

Output

```
airport_db.public.security_check
[2024-10-17 12:16:55] [23505] ОШИБКА: создать уникальный индекс "unique_booking_id" не удалось
[2024-10-17 12:16:55] Подробности: Ключ (booking_id)=(109) дублируется.
airport_db.public> ALTER TABLE baggage
ADD CONSTRAINT unique_baggage_id
UNIQUE (baggage_id)
[2024-10-17 12:17:21] completed in 8 ms
airport_db.public> ALTER TABLE baggage_check
ADD CONSTRAINT unique_baggage_check_id
UNIQUE (baggage_check_id)
[2024-10-17 12:17:56] completed in 9 ms
```

Database Explorer

- postgres@localhost
  - airport (0 of 3)
    - airport\_db (3)
      - information\_schema
      - pg\_catalog
      - public
        - tables (10)
          - airline
          - airport
          - baggage
          - baggage\_check
          - boarding\_pass
          - booking
          - booking\_flight
          - flights
          - passengers
          - security\_check

console

```
1 ALTER TABLE boarding_pass
2 ADD CONSTRAINT unique_boarding_pass_id
3 UNIQUE (boarding_pass_id);
4
```

Scratches and Consoles

- Database Consoles
  - postgres@localhost
    - console

Services

Output

```
airport_db.public.security_check
UNIQUE (baggage_id)
[2024-10-17 12:17:21] completed in 8 ms
airport_db.public> ALTER TABLE baggage_check
ADD CONSTRAINT unique_baggage_check_id
UNIQUE (baggage_check_id)
[2024-10-17 12:17:56] completed in 9 ms
airport_db.public> ALTER TABLE boarding_pass
ADD CONSTRAINT unique_boarding_pass_id
UNIQUE (boarding_pass_id)
[2024-10-17 12:18:48] completed in 12 ms
```



Database Explorer

- postgres@localhost
  - pg\_catalog
  - public
    - tables 10
      - airline
      - airport
      - baggage
      - baggage\_check
      - boarding\_pass
      - booking
      - booking\_flight
      - flights
      - passengers
      - security\_check
    - Database Objects
  - postgres 1 of 3
  - snake 0 of 3

console

```
1 ALTER TABLE booking
2 ADD CONSTRAINT unique_booking_id
3 UNIQUE (booking_id);
4
```

Services

Output

```
airport_db.public.security_check
UNIQUE (baggage_check_id)
[2024-10-17 12:17:56] completed in 9 ms
airport_db.public> ALTER TABLE boarding_pass
ADD CONSTRAINT unique_boarding_pass_id
UNIQUE (boarding_pass_id)
[2024-10-17 12:18:48] completed in 12 ms
airport_db.public> ALTER TABLE booking
ADD CONSTRAINT unique_booking_id
UNIQUE (booking_id)
[2024-10-17 12:19:57] completed in 19 ms
```

Database Consoles > postgres@localhost > console

2:33 CRLF UTF-8 4 spaces

Database Explorer

- postgres@localhost
  - pg\_catalog
  - public
    - tables 10
      - airline
      - airport
      - baggage
      - baggage\_check
      - boarding\_pass
      - booking
      - booking\_flight
      - flights
      - passengers
      - security\_check
    - Database Objects
  - postgres 1 of 3
  - snake 0 of 3

console

```
1 ALTER TABLE booking_flight
2 ADD CONSTRAINT unique_booking_flight_id
3 UNIQUE (booking_flight_id);
4
```

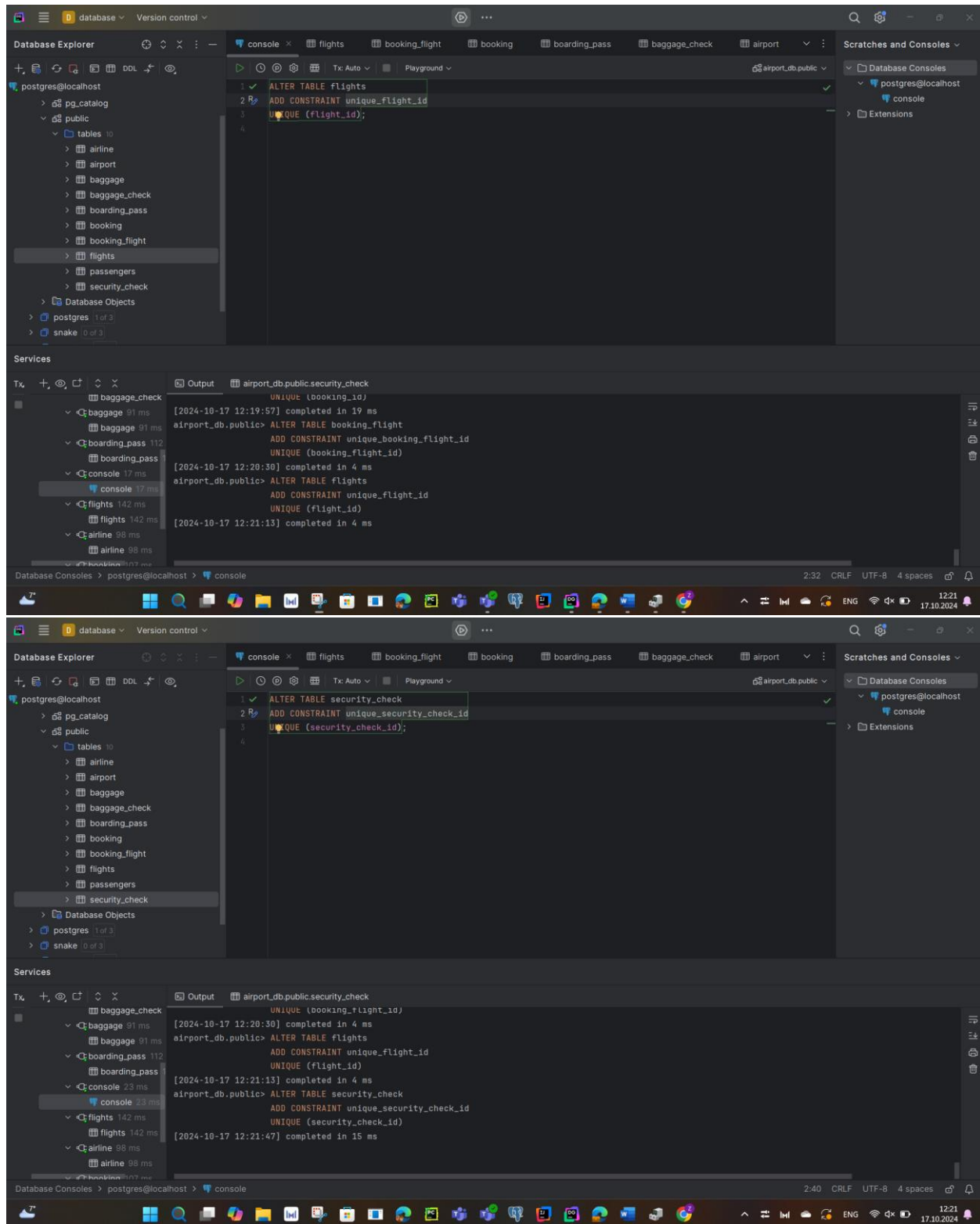
Services

Output

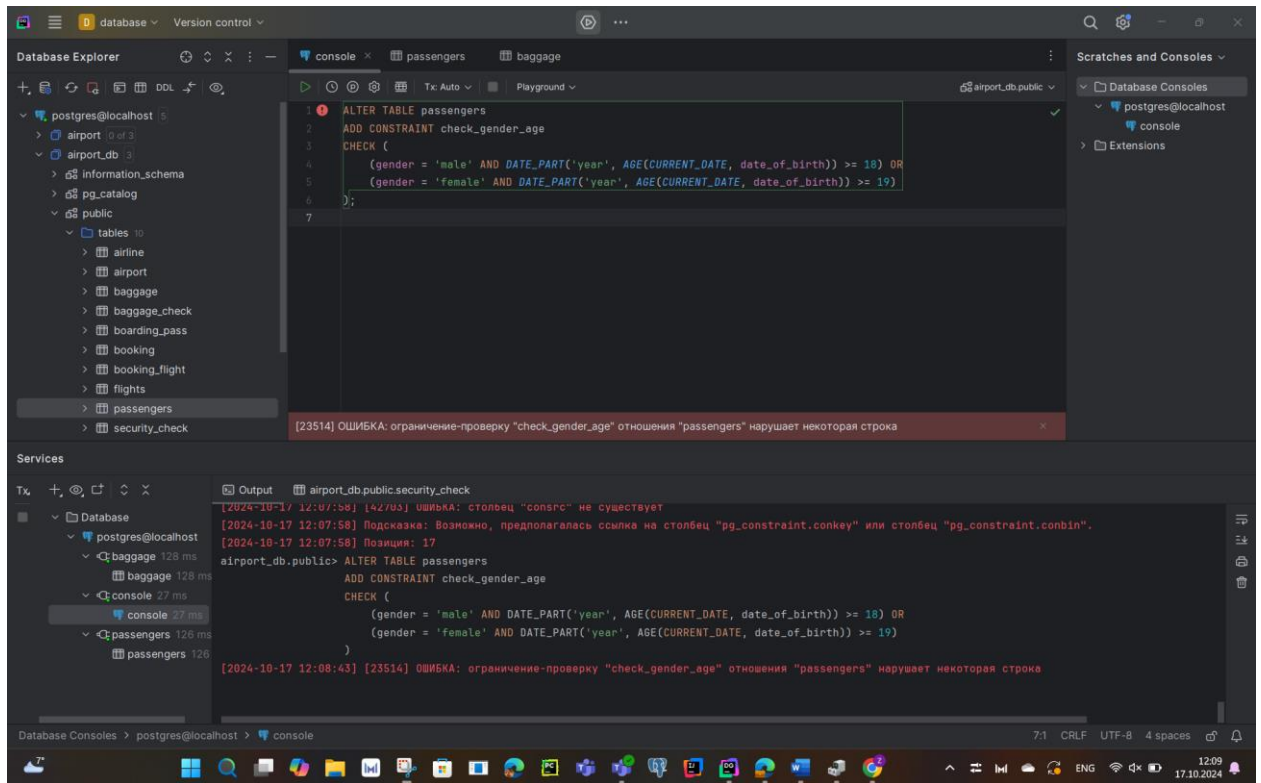
```
airport_db.public.security_check
UNIQUE (boarding_pass_id)
[2024-10-17 12:18:48] completed in 12 ms
airport_db.public> ALTER TABLE booking
ADD CONSTRAINT unique_booking_id
UNIQUE (booking_id)
[2024-10-17 12:19:57] completed in 19 ms
airport_db.public> ALTER TABLE booking_flight
ADD CONSTRAINT unique_booking_flight_id
UNIQUE (booking_flight_id)
[2024-10-17 12:20:30] completed in 4 ms
```

Database Consoles > postgres@localhost > console

2:40 CRLF UTF-8 4 spaces

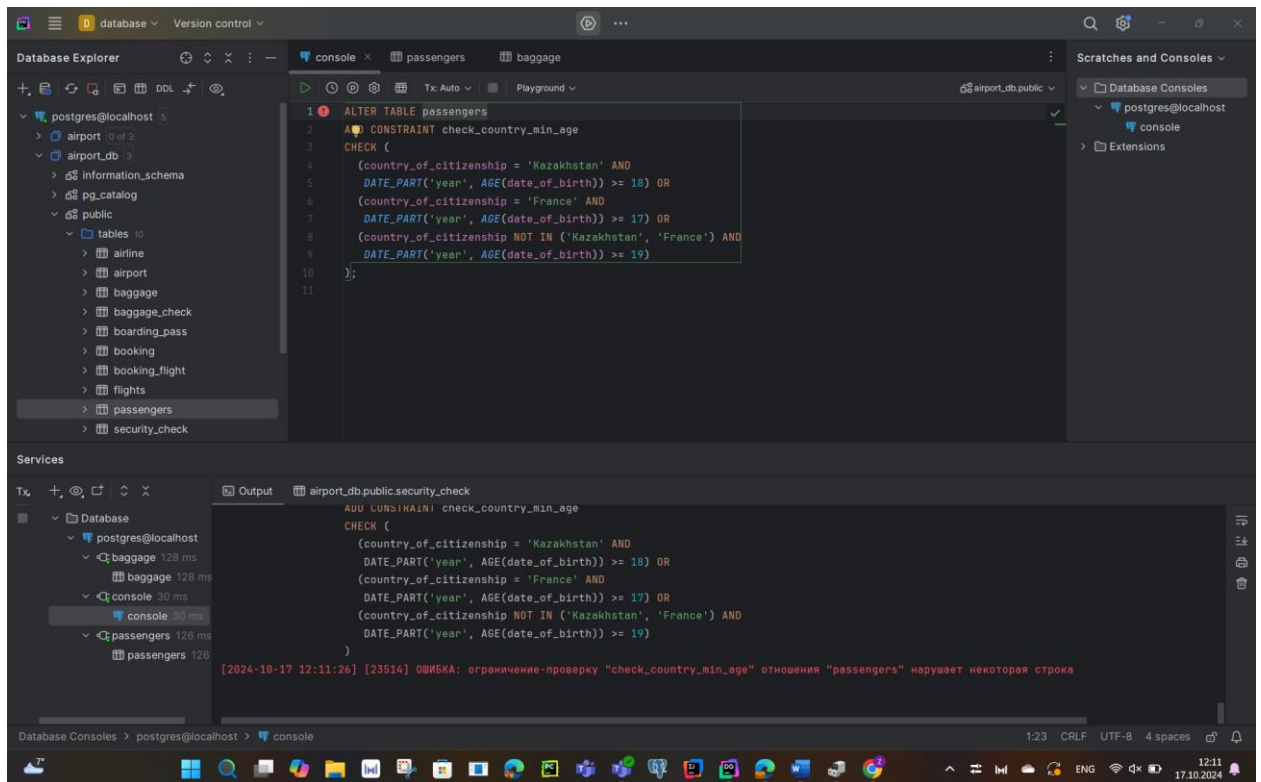


6. Add a CHECK constraint to ensure that male passengers must be at least 18 years old and female passengers must be 19 years old.



7. Add a CHECK constraint to add rule as follow (use column country\_of\_citizenship):

- Passengers from Kazakhstan must be at least 18 years old.
- Passengers from France must be at least 17 years old.
- Passengers from other countries must be at least 19 years old.



8. Add a ticket\_discount column to table booking and a CHECK constraint to apply some discount based on ticket price and created time:



- the constraint applies a 5% discount for tickets created after 2024-01-01, and 10% discount for tickets created before 2024-01-01.

