

# Laboratory work 5

1.

We continue to work with the database from the previous laboratory works.

Take a full-page screenshot that covers the code and results of each task.

Tasks:

1. Add a CHECK constraint to passenger table to provide that passengers must be at least 10 years old.
2. Add a CHECK constraint to accept values in booking price not more than 50000tг and less than 0tg.
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.
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.

```
ALTER TABLE passengers
ADD CONSTRAINT chk_age CHECK(EXTRACT(YEAR FROM AGE(date_of_birth))
```

Query returned successfully in 60 msec.

Активация Windows  
Чтобы активировать Windows, перейдите в раздел "Параметры".

2.

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  - and 10% discount for tickets created before 2024-01-01.

```
ALTER TABLE booking
ADD CONSTRAINT chk_booking_price CHECK (
    ticket_price > 0 AND ticket_price <= 50000
);
```

```
ALTER TABLE booking
ADD CONSTRAINT fk_passenger_id FOREIGN KEY (passenger_id) REFERENCES passengers;
```

Query returned successfully in 45 msec.

Активация Windows  
Чтобы активировать Windows, перейдите в раздел "Параметры".

### 3.

The screenshot shows the pgAdmin 4 interface. On the left is a tree view of database objects, and on the right is a query editor and results pane. The 'Tables' node under 'baggage' is expanded, showing columns like baggage\_id, weight\_in\_kg, created\_at, updated\_at, booking\_id, and passenger\_id. A query in the editor adds a CHECK constraint to the 'weight\_in\_kg' column:

```
1 ALTER TABLE baggage
2 ADD CONSTRAINT chk_baggage_weight CHECK (
3     weight_in_kg BETWEEN 1 AND 23
4 );
5
```

The results pane shows the command was successful:

```
ALTER TABLE
Query returned successfully in 47 msec.
```

A status bar at the bottom indicates: Активация Windows. Чтобы активировать Windows, перейдите в раздел "Параметры". Total rows: Query complete 00:00:00.047 CRLF Ln 1, Col 20.

### 4.

The screenshot shows the pgAdmin 4 interface. On the left is a tree view of database objects, and on the right is a query editor and results pane. The 'Columns' node under 'airport' is expanded, showing columns like airport\_id, airport\_name, country, state, city, created\_at, and updated\_at. A query in the editor adds a CHECK constraint to the 'airport\_name' column:

```
1 ALTER TABLE airport
2 ADD CONSTRAINT chk_airport_name CHECK (
3     LENGTH(airport_name) >= 10
4 );
5
```

The results pane shows the command was successful:

```
ALTER TABLE
Query returned successfully in 51 msec.
```

A status bar at the bottom indicates: Активация Windows. Чтобы активировать Windows, перейдите в раздел "Параметры". Total rows: Query complete 00:00:00.051 CRLF Ln 5, Col 1.

## 5.

The screenshot shows the pgAdmin 4 interface with the database 'lab2/postgres@PostgreSQL 17\*' selected. In the left pane, the 'Tables(11)' section is expanded, showing the 'employee' table. In the right pane, a SQL query window displays the following code:

```
17 ADD CONSTRAINT unique_booking_created_time UNIQUE(created_at);
18
19 ALTER TABLE booking_flight
20 ADD CONSTRAINT unique_booking_fl_created_time UNIQUE(created_at);
21
22 ALTER TABLE employee
23 ADD CONSTRAINT unique_employee_id UNIQUE(employer_id);
24
25 ALTER TABLE flights
26 ADD CONSTRAINT unique_flight_id UNIQUE(flight_id);
27
28 ALTER TABLE passengers
29 ADD CONSTRAINT unique_passenger_id UNIQUE(passenger_id);
30
31 ALTER TABLE security_check
32 ADD CONSTRAINT unique_security_chk_created_time UNIQUE(created_at);
```

Below the query window, the status bar indicates 'Total rows: Query complete 00:00:00.048 CRLF Ln 23, Col 50'.

## 6.

The screenshot shows the pgAdmin 4 interface with the database 'lab2/postgres@PostgreSQL 17\*' selected. In the left pane, the 'Tables(11)' section is expanded, showing the 'employee' table. In the right pane, a SQL query window displays the following code:

```
1 ALTER TABLE passengers
2 ADD CONSTRAINT chk_gender_age CHECK (
3     (gender = 'Male' AND EXTRACT(YEAR FROM AGE(date_of_birth)) >= 18)
4     OR (gender = 'Female' AND EXTRACT(YEAR FROM AGE(date_of_birth)) >= 18);
5
6
```

Below the query window, the status bar indicates 'Total rows: Query complete 00:00:00.046 CRLF Ln 1, Col 23'.

7.

The screenshot shows the pgAdmin 4 interface. In the Object Explorer on the left, under the 'Tables' section, the 'passengers' table is selected. The main pane displays a SQL query:

```
1 ALTER TABLE passengers
2 ADD CONSTRAINT chk_country_age CHECK (
3     (country_of_citizenship = 'Kazakhstan' AND EXTRACT(YEAR FROM AGE(date_of_birth)) >= 18)
4 OR (country_of_citizenship = 'France' AND EXTRACT(YEAR FROM AGE(date_of_birth)) >= 17)
5 OR (country_of_citizenship NOT IN ('Kazakhstan', 'France') AND EXTRACT(YEAR FROM AGE(date_of_birth)) >= 19)
6 );
7
```

The status bar at the bottom right indicates 'Query complete 00:00:00.050'.

8.

The screenshot shows the pgAdmin 4 interface. On the left, there is a 'Tasks:' list with the following items:

1. Add a CHECK constraint to passenger table to provide that passengers must be at least 10 years old.
2. Add a CHECK constraint to accept values in booking price not more than 50000tг and less than 0tг.
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.
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.
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  - the constraint applies a 5% discount for tickets created after 2024-01-01,
  - and 10% discount for tickets created before 2024-01-01.

The main pane displays a SQL query:

```
1 ALTER TABLE booking
2 ADD COLUMN ticket_discount INT;
```

The status bar at the bottom right indicates 'Query complete 00:00:00.050'.

pgAdmin 4

File Object Tools View Window Help

Object Explorer

- FTS Parsers
- FTS Templates
- Foreign Tables
- Functions
- Materialized Views
- Operators
- Procedures
- Sequences
- Tables (11)
  - airline
  - airport
  - baggage
  - baggage\_check
  - boarding\_pass
  - booking
  - booking\_flight
  - employee
  - flights
  - passenger

lab2/postgres@PostgreSQL 17\* X

Query History

```
1 ALTER TABLE booking
2 ADD CONSTRAINT chk_ticket_discount CHECK (
3     (created_at > '2024-01-01' AND ticket_discount = ticket_price * 0.95)
4     OR (created_at <= '2024-01-01' AND ticket_discount = ticket_price * 0.90)
5 );
6
```

Data Output Messages Notifications

ALTER TABLE

Query returned successfully in 50 msec.

Активация Windows  
Чтобы активировать Windows, перейдите в раздел  
Параметры

Total rows: Query complete 00:00:00.050

Query returned successfully in 50 msec. CRLF Ln 3, Col 52