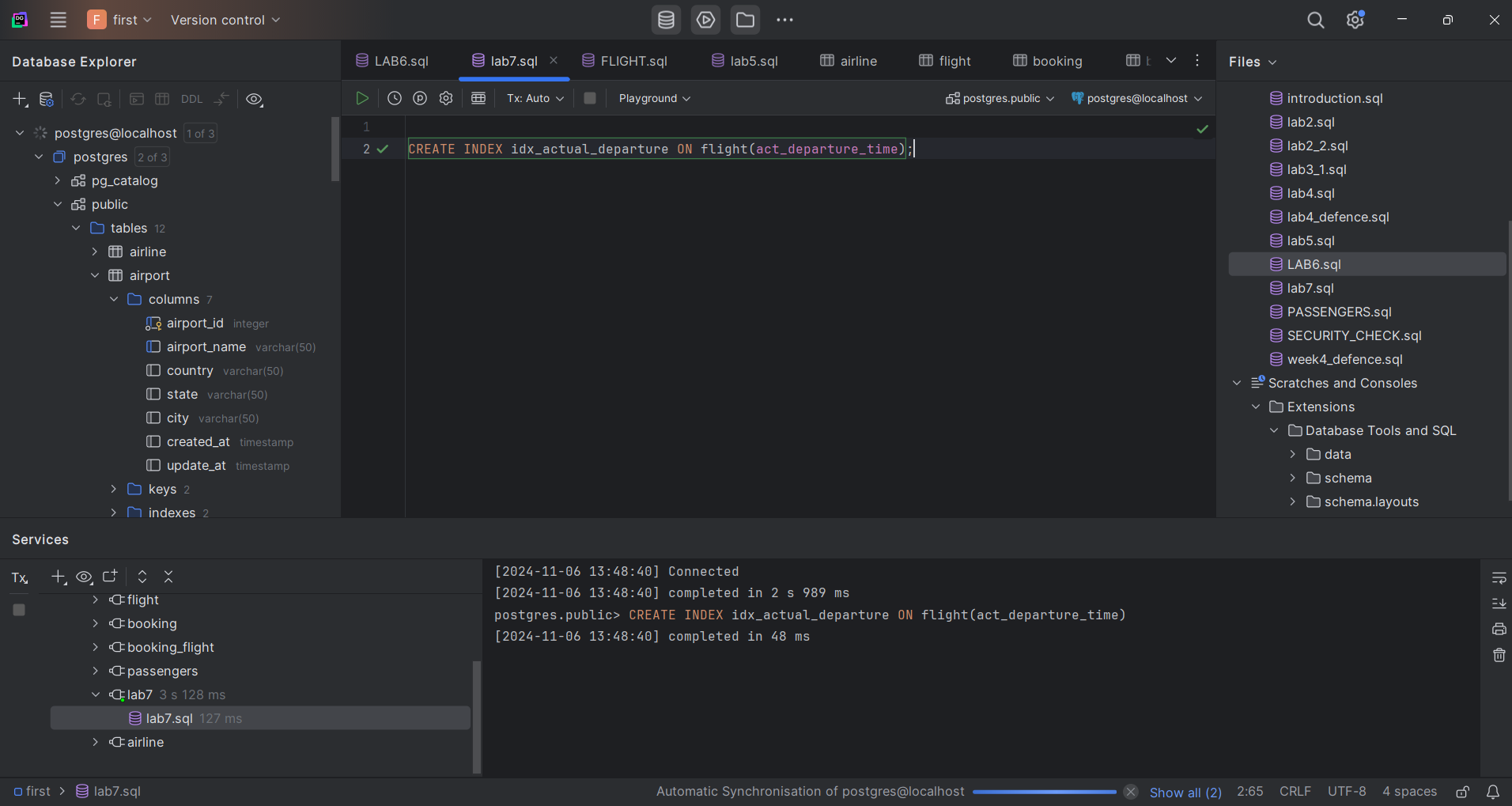
**Laboratory work 7 – Kenges Aizat**

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

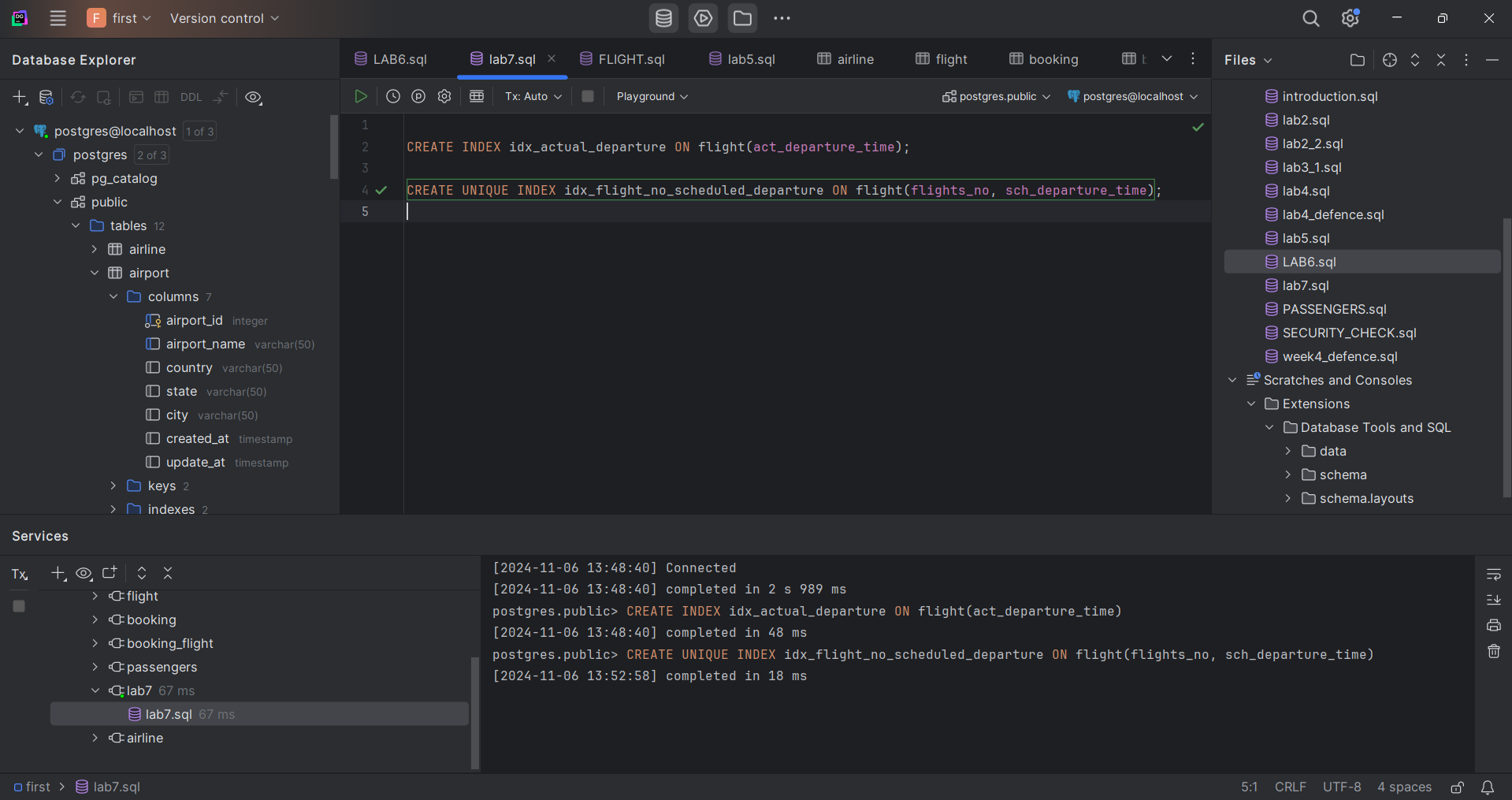
**Take a full-page screenshot that covers the code and results of each task.**

**Tasks**:

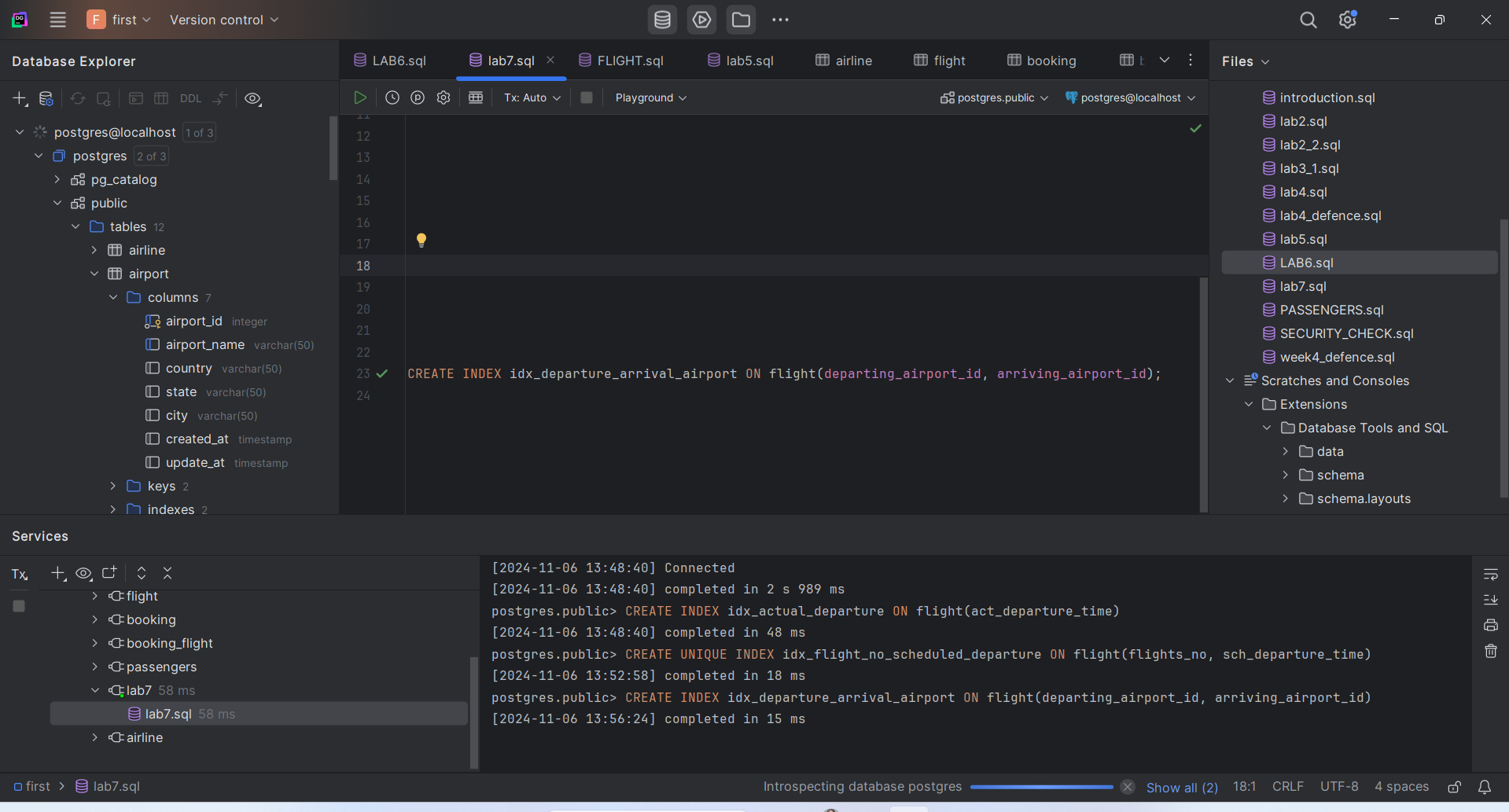
1. Create an index on the actual\_departure column in the flights table.



1. Create a unique index to ensure flight\_no and scheduled\_departure combinations are unique.

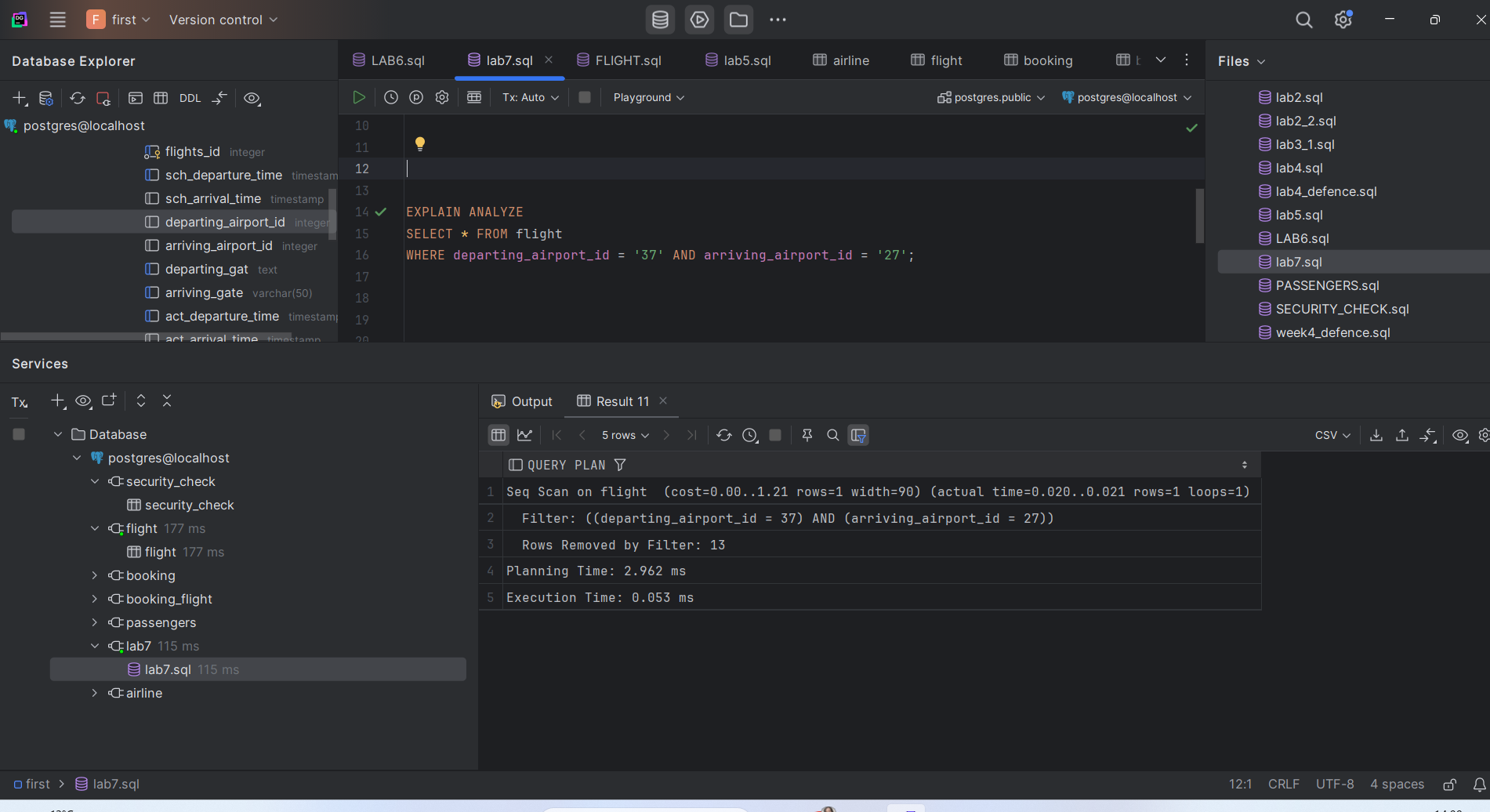


1. Create a composite index on the departure\_airport\_id and arrival\_airport\_id columns.

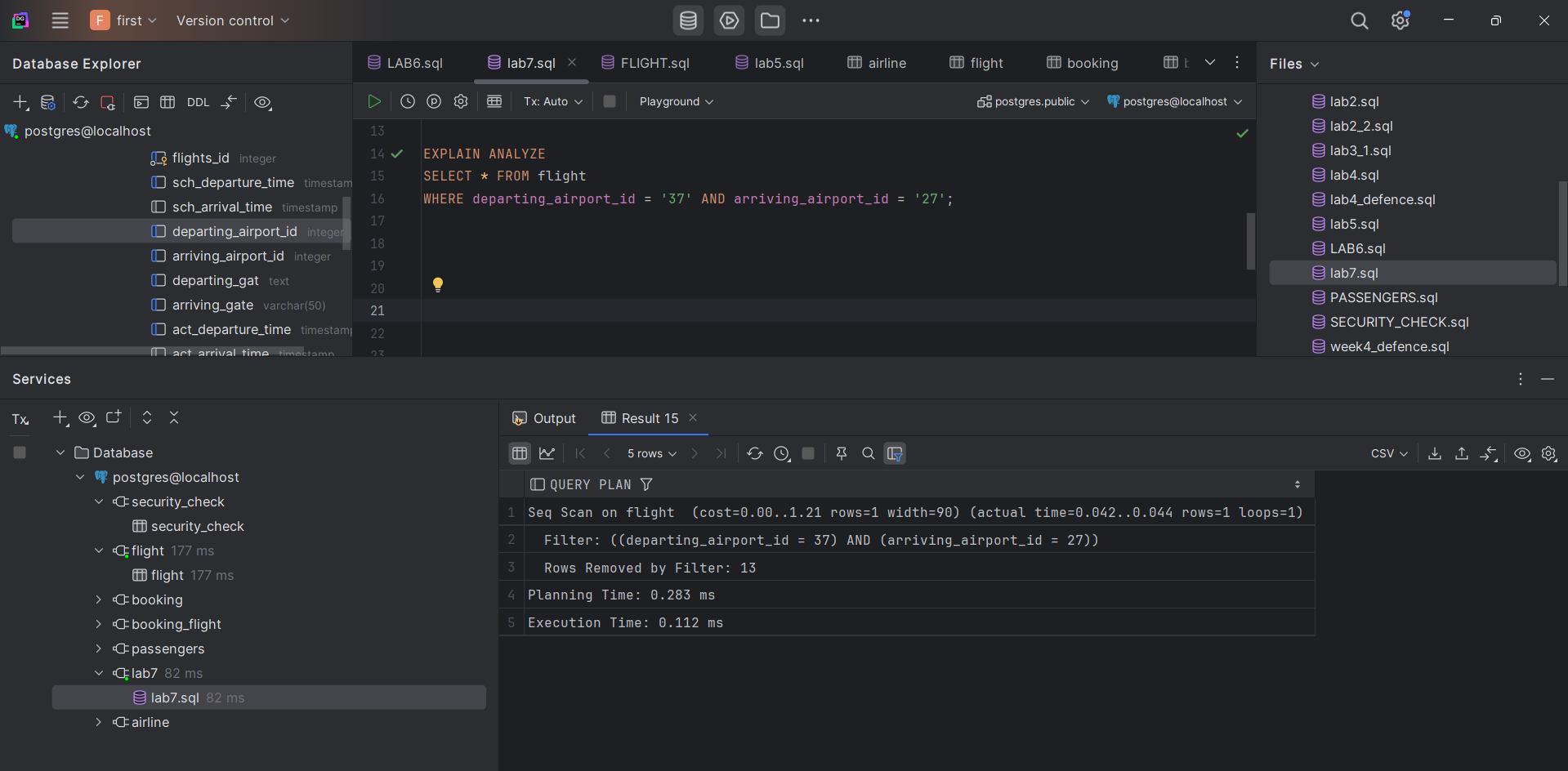


1. Evaluate the difference in query performance with and without indexes. Measure performance differences.

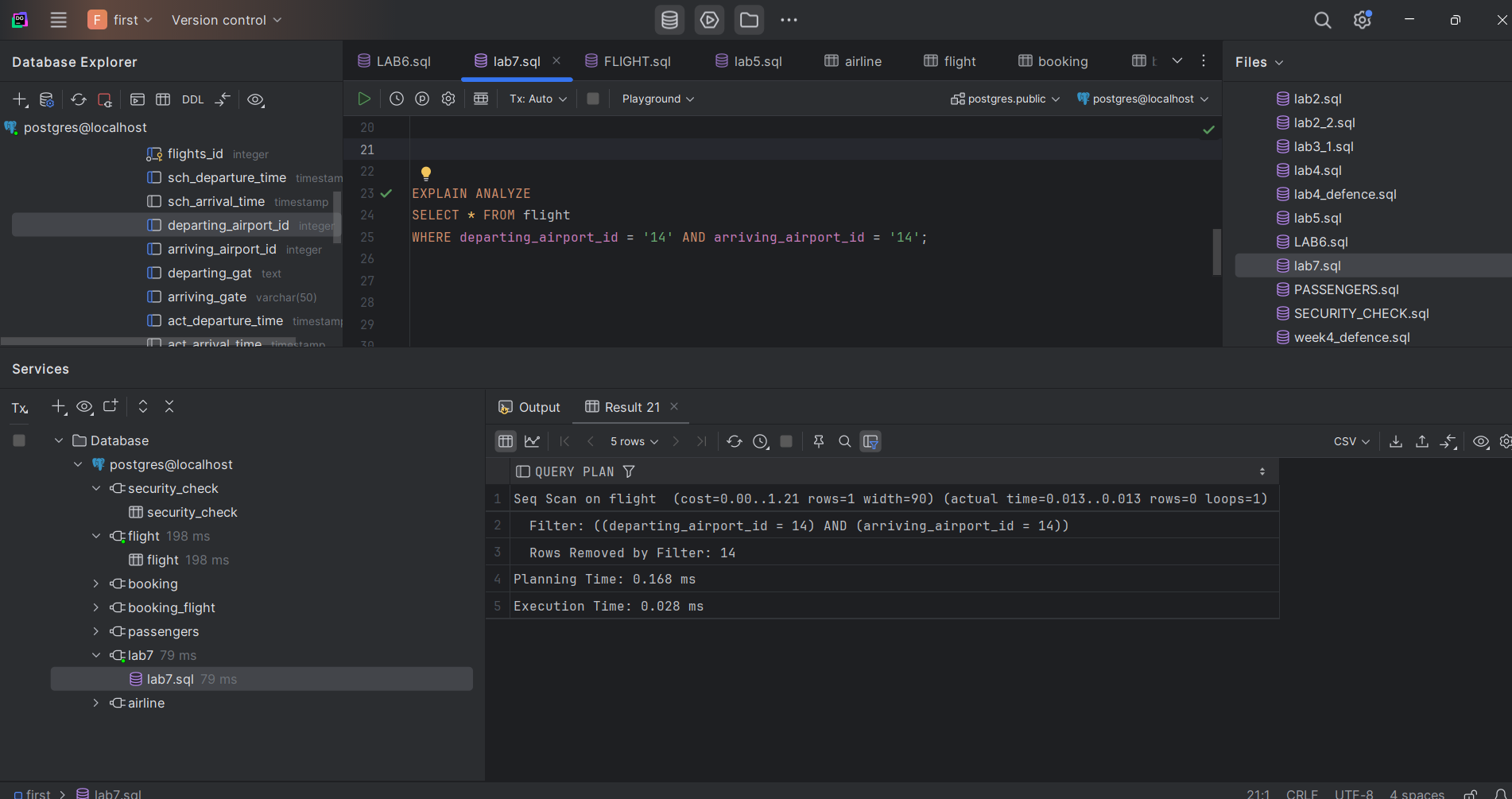
Before:



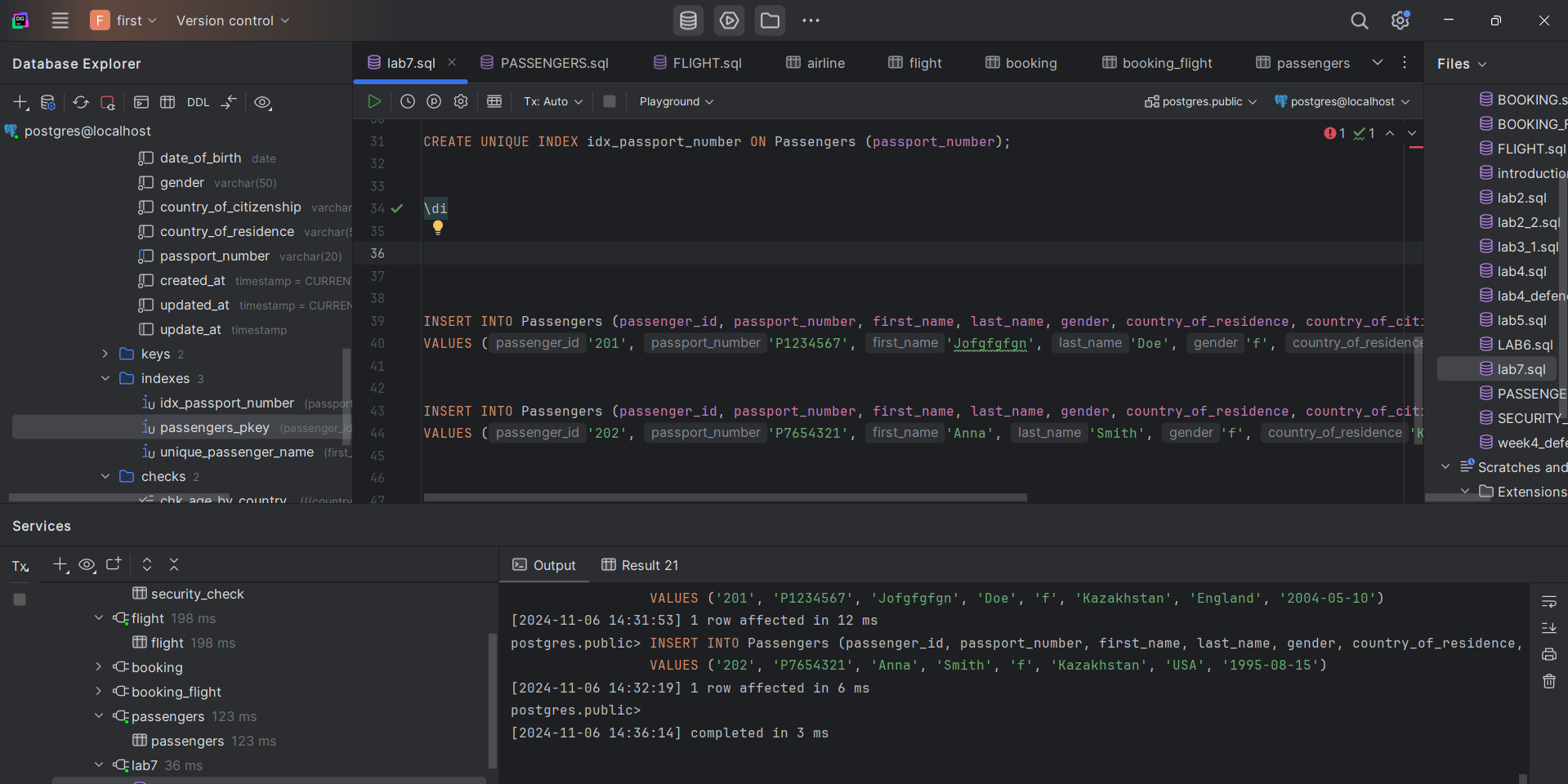
After:



1. Use EXPLAIN ANALYZE to check index usage in a query filtering by departure\_airport and arrival\_airport.



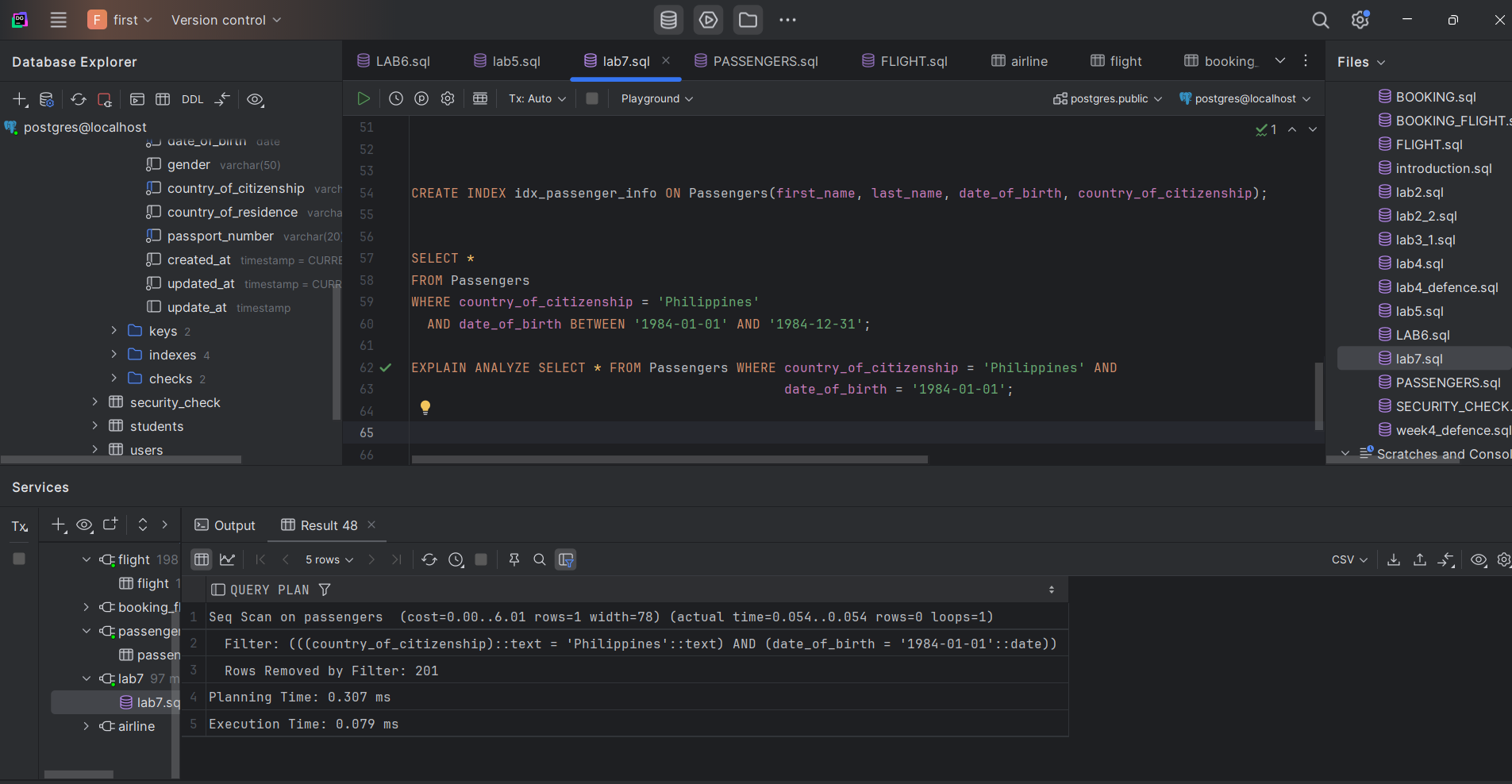
1. Create a unique index for the passport\_number of the Passengers table. Check if the index was created or not. Insert into the table two new passengers.

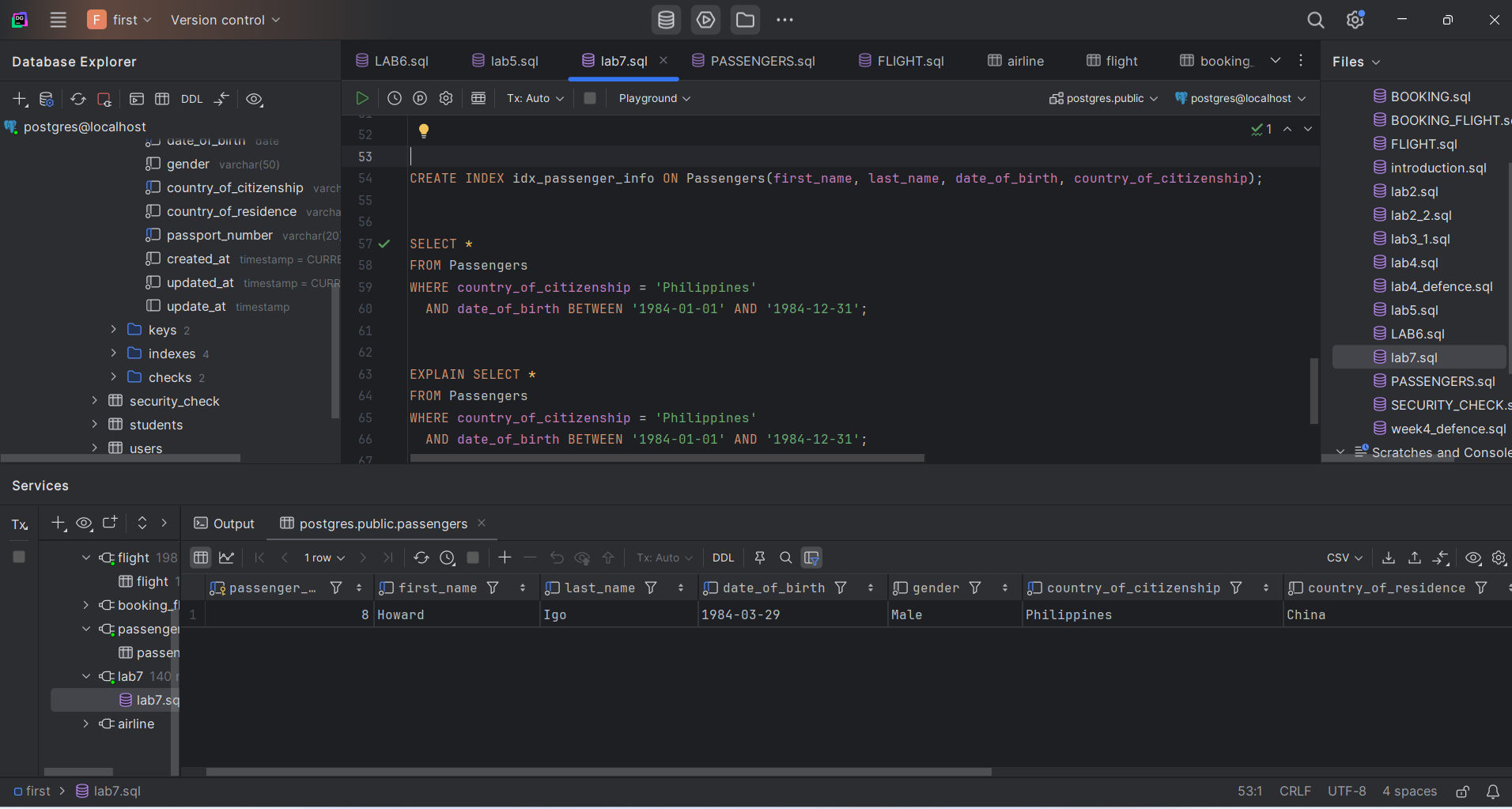


Explain in your own words what is going on in the output?

The CREATE UNIQUE INDEX command ensures that all values in the passport\_number column of the Passengers table are unique. When two new passengers are inserted, the unique index prevents duplicate passport numbers, causing an error. The \di command confirms that the index has been successfully created by listing all indexes in the database.

1. Create an index for the Passengers table. Use for that first name, last name, date of birth and country of citizenship. Then, write a SQL query to find a passenger who was born in Philippines and was born in 1984 and check if the query uses indexes or not. Give the explanation of the results.





The CREATE INDEX command creates an index on the first\_name, last\_name, date\_of\_birth, and country\_of\_citizenship columns in the Passengers table, improving query performance when filtering by these columns. When a query is run to find a passenger born in the Philippines in 1984, the index can be used to speed up the search, depending on the query conditions and data distribution. The EXPLAIN ANALYZE command confirms whether the index is being used by displaying the query execution plan.

1. Write a SQL query to list indexes for table Passengers. After delete the created indexes.

