Project work on the module "SQL and Data Retrieval"

Congratulations, you are in the finals of the SQL course! It remains quite a bit: to consolidate all the classes and knowledge gained in the final work.

To do the job you need:

1. Follow the link and read the description of the database: https://edu.postgrespro.ru/bookings.pdf
2. Connect to the **avia** database using one of the following options:
   - cloud connection, same settings as dvd-rental, only name bases **demo,** scheme **bookings**
   - import sql query from sql file presented on page 2 of description bases
   - restore database from *.backup file via link avia
3. Prepare the work in accordance with "Appendix No. 1" in *.pdf or *.doc format
4. Create queries that allow you to answer questions from "Appendix No. 2", solutions must be attached in *.sql format in one file.
5. Submit work for review

Application No. 1

Final work

1. Used in the work - if the _____ connection type. database was deployed from *.sql or *.backup file, you must attach a screenshot of a successful import or restore
2. Screenshot of the ER diagram from DBeaver according to your connection. 3. A brief description of the database - what tables and views it consists of. 4. Detailed analysis of the database - description of tables, logic, relationships and business areas (partially can be taken from the description of the database, designed as a database analysis). Business tasks that can be solved using a database. 5. List of SQL queries from application No. 2 with a description of the logic of their execution.

Flight, flight = flight_id

Points for clearance:

1. 0 - cloud base, 10 - local base 2. 5

3.10
4.20
5.15

Total: maximum 60 points.
You must score **at least 30 points to qualify.**

No.	Question	The solution must use
1	Which cities have more than one airport?	
2	Which airports have flights operated by the aircraft with the longest flight distance?	- Subquery
3	Display 10 flights with the longest flight delay	- LIMIT statement
4	Were there any bookings for which boarding passes were not received?	- Valid JOIN type
5	Find the number of empty seats for each flight, their % ratio to the total number of seats on the plane. Add a column with a cumulative total - the total accumulation of the number of passengers taken out from each airport for each day. Those. this column should reflect the cumulative amount - how many people have already departed from this airport on this or earlier flights during the day.	- Window function - Subqueries or/and cte
6	Find the percentage of flights by types of aircraft from the total number.	- Subquery or window - ROUND statement
7	Were there cities that can be reached Is business class cheaper than economy class on a flight?	- CTE
8	Between which cities there are no direct flights?	- Cartesian product in the FROM clause - Self created views (if cloud connection, then no view) - EXCEPT statement
9	Calculate the distance between airports connected by direct flights, compare with the allowable maximum distance of flights in aircraft serving these flights	- RADIANS operator or using sind/cosd - CASE

* - In the cloud base, the coordinates are in the airports_data.coordinates column - you work like with an array. In the local database, the coordinates are in the airports.longitude and airports.latitude columns. The shortest distance between two points A and B on the earth's surface (assuming it to be a sphere) is determined by the relationship: d = arccos {sin(latitude_a) sin(latitude_b) + cos(latitude_a) cos(latitude_b) cos(longitude_a - longitude_b)}, where latitude_a and latitude_b are the latitudes, longitude_a, longitude_b are the longitudes of the given points, d is the distance between the points measured in radians by the arc length of the great circle of the globe. The distance between points, measured in kilometers, is determined by the formula: L = d·R, where R = 6371 km is the average radius of the globe.

Points for requests:

1. 10 2. 15 3. 15
4. 15 5. 35 6. 25
7. 25 8. 25 9. 35

Total: maximum 200 points.

You must score **at least 130 points to qualify.**