Polina Minina, Group B19-02

1. **Create data base** using python script createDataBase.py:

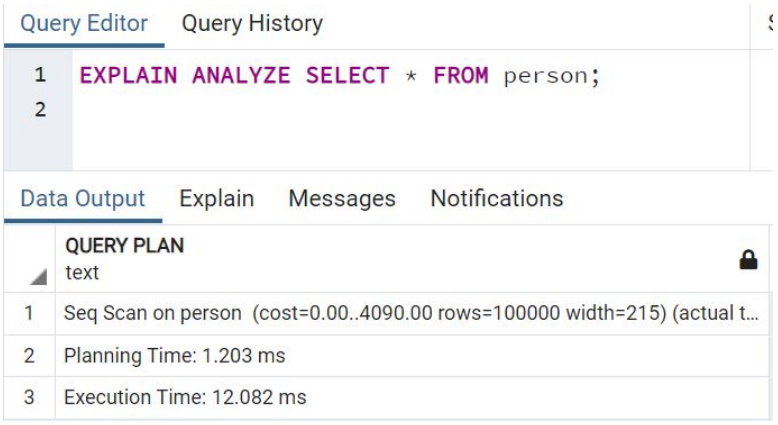
```
from faker import Faker
import psycopg2

con = psycopg2.connect(database="persons",
                       user="postgres", password="8951",
                       host="localhost", port="5432")
print("Database persons is opened")
cur = con.cursor()
cur.execute('''CREATE TABLE PERSON (ID INT NOT NULL,
                                    Name TEXT NOT NULL,
                                    Address TEXT NOT NULL,
                                    age INT NOT NULL,
                                    review TEXT);''')
print("Table PERSON was created successfully")
fake = Faker()
for i in range(100000):
    print("#"+str(i))
    cur.execute("INSERT INTO PERSON (ID,Name,Address, age, review) VALUES ('" +
                str(i) + "','" + fake.name() + "','" +
                fake.address() + "','" + str(fake.random_int(1, 120)) +
                "','" + fake.text() + "')")
    con.commit()
print("Finished")
```

2. Execute the queries and see the results:

a. **Query:** EXPLAIN ANALYZE SELECT * FROM person;

Result: Seq Scan on person (cost=0.00..**4090.00**, ...)



Query Editor | Query History

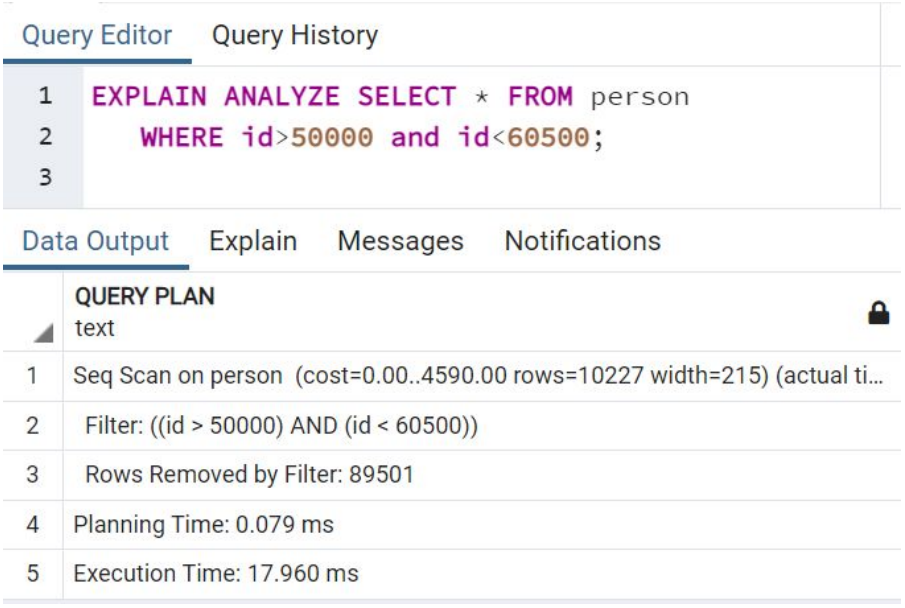
```
1  EXPLAIN ANALYZE SELECT * FROM person;
2
```

Data Output | Explain | Messages | Notifications

	QUERY PLAN text
1	Seq Scan on person (cost=0.00..4090.00 rows=100000 width=215) (actual t...
2	Planning Time: 1.203 ms
3	Execution Time: 12.082 ms

b. **Query:** EXPLAIN ANALYZE SELECT * FROM person
WHERE id>50000 and id<60500;

Result: Seq Scan on person (cost=0.00..**4590.00**, ...)



Query Editor | Query History

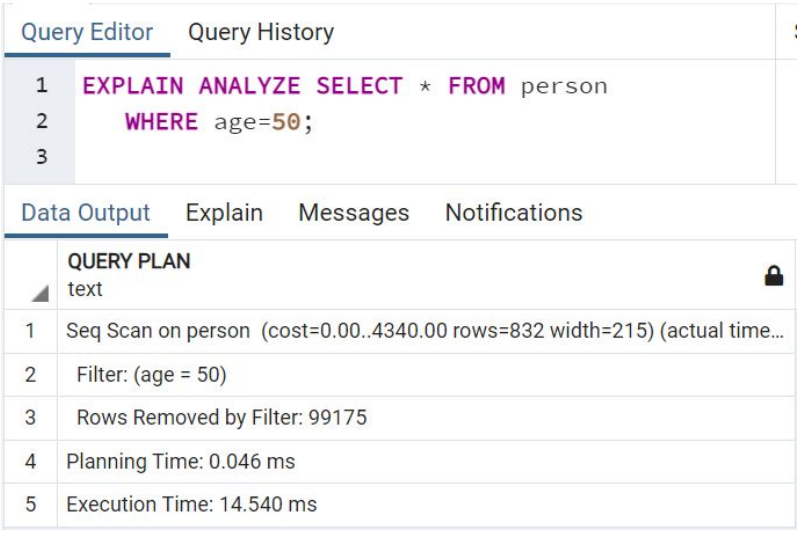
```
1  EXPLAIN ANALYZE SELECT * FROM person
2     WHERE id>50000 and id<60500;
3
```

Data Output | Explain | Messages | Notifications

	QUERY PLAN text
1	Seq Scan on person (cost=0.00..4590.00 rows=10227 width=215) (actual ti...
2	Filter: ((id > 50000) AND (id < 60500))
3	Rows Removed by Filter: 89501
4	Planning Time: 0.079 ms
5	Execution Time: 17.960 ms

c. **Query:** EXPLAIN ANALYZE SELECT * FROM person
WHERE age=50;

Result: Seq Scan on person (cost=0.00..**4340.00**, ...)

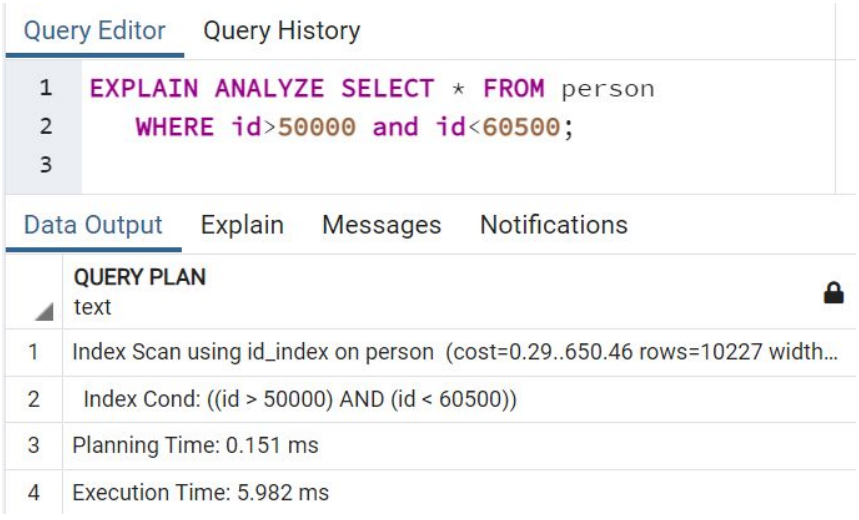


3. **Create single-column b-tree indexes on the table using id and see the result:**

Query: CREATE INDEX id_index
ON public.person USING btree(age);

Query: EXPLAIN ANALYZE SELECT * FROM person
WHERE id>50000 and id<60500;

Result: Index Scan using id_index on person (cost=0.29..**650.46**, ...)



4. **Create single-column hash indexes on the table using age and see the result:**

Query: CREATE INDEX age_index
ON public.person USING hash(age);

Query: EXPLAIN ANALYZE SELECT * FROM person
WHERE age=50;

Result: Bitmap Heap Scan on person (cost=34.45..**1907.63**, ...)

Query Editor | Query History

```
1  EXPLAIN ANALYZE SELECT * FROM person
2  WHERE age=50;
3
```

Data Output | Explain | Messages | Notifications

	QUERY PLAN text
1	Bitmap Heap Scan on person (cost=34.45..1907.63 rows=832 width=215)...
2	Recheck Cond: (age = 50)
3	Heap Blocks: exact=726
4	-> Bitmap Index Scan on age_index (cost=0.00..34.24 rows=832 width=...
5	Index Cond: (age = 50)
6	Planning Time: 3.897 ms
7	Execution Time: 0.952 ms