

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**, ...)

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

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

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 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 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: Index Scan using age_index on person (cost=46.25..**2573.54**, ...)