

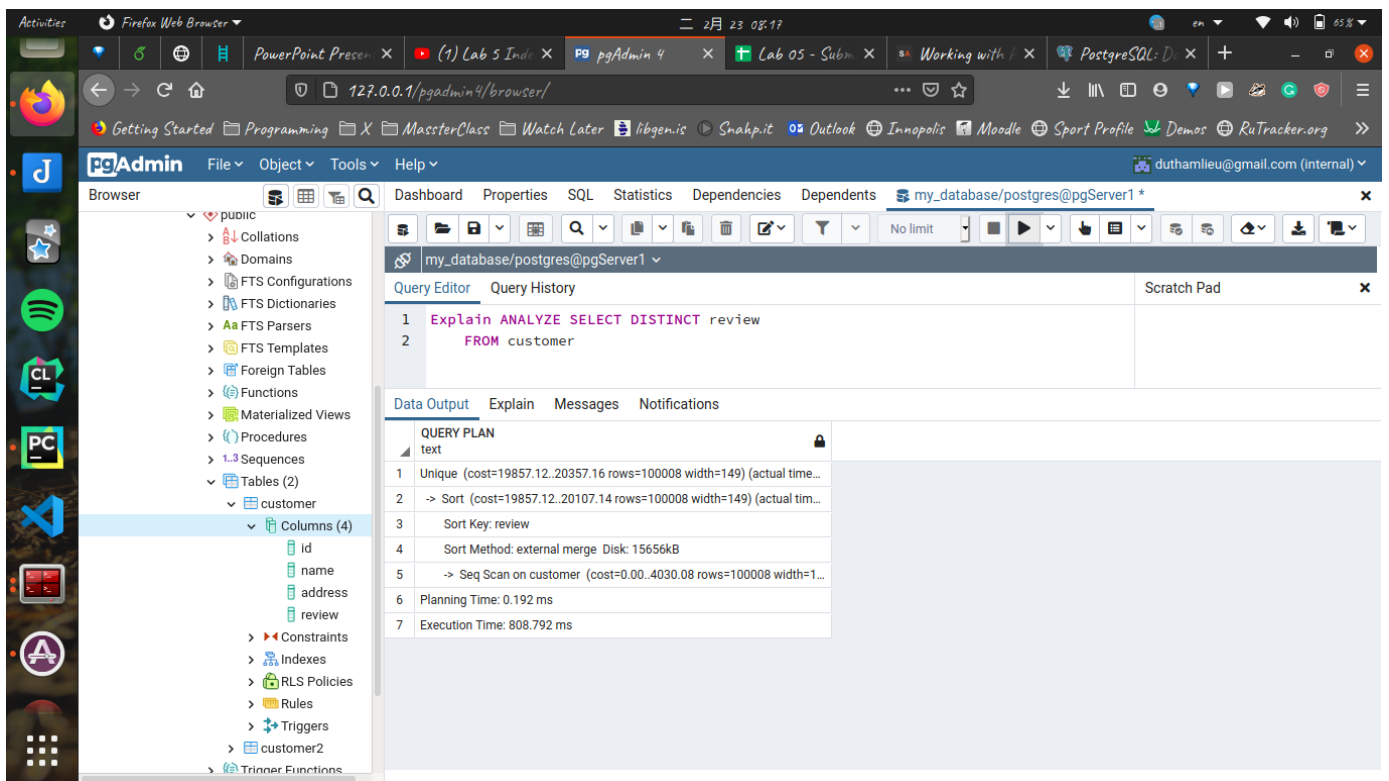
# DS-lab-5-report

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## Without indexes (query 1)



The screenshot shows the pgAdmin 4 web interface in a Firefox browser. The left sidebar displays the database structure, with the 'customer' table selected under the 'public' schema. The main pane shows the 'Query Editor' with the following SQL query:

```
1 Explain ANALYZE SELECT DISTINCT review
2 FROM customer
```

The 'Data Output' tab is active, displaying the query plan. The plan consists of the following steps:

Step	Operation	Cost	Time	Rows	Width	Actual Time
1	Unique	(cost=19857.12..20357.16)		rows=100008	width=149	(actual time...)
2	-> Sort	(cost=19857.12..20107.14)		rows=100008	width=149	(actual time...)
3	Sort Key: review					
4	Sort Method: external merge		Disk: 15656kB			
5	-> Seq Scan on customer	(cost=0.00..4030.08)		rows=100008	width=1...	
6	Planning Time		0.192 ms			
7	Execution Time		808.792 ms			

## With B-tree indexes (query 1)

Activities Firefox Web Browser 2月 23 08:25

127.0.0.1/pgadmin4/browser/

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pgAdmin File Object Tools Help duthamlieu@gmail.com (internal)

Browser

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  - Functions
  - Materialized Views
  - Procedures
  - Sequences
  - Tables (2)
    - customer
      - Columns (4)
      - Constraints
      - Indexes (1)
      - review\_index
      - RLS Policies
      - Rules
      - Triggers
      - customer2
      - Trigger Functions
      - Types
      - Views

Dashboard Properties SQL Statistics Dependencies Dependents my\_database/postgres@pgServer1 \*

my\_database/postgres@pgServer1

Query Editor Query History Scratch Pad

```
1 Explain ANALYZE SELECT DISTINCT review
2 FROM customer
```

Data Output Explain Messages Notifications

QUERY PLAN
text
1 Unique (cost=19856.32..20356.32 rows=100000 width=149) (actual time=6...
2 -> Sort (cost=19856.32..20106.32 rows=100000 width=149) (actual time=...
3 Sort Key: review
4 Sort Method: external merge Disk: 15656kB
5 -> Seq Scan on customer (cost=0.00..4030.00 rows=100000 width=149...
6 Planning Time: 0.769 ms
7 Execution Time: 813.251 ms

## Without indexes (query 2 different column)

Activities Firefox Web Browser 2月 23 08:30

127.0.0.1/pgadmin4/browser/

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      - Triggers
      - customer2
      - Trigger Functions
      - Types
      - Views

Dashboard Properties SQL Statistics Dependencies Dependents my\_database/postgres@pgServer1 \*

my\_database/postgres@pgServer1

Query Editor Query History Scratch Pad

```
1 Explain ANALYZE SELECT DISTINCT "name"
2 FROM customer
```

Data Output Explain Messages Notifications

QUERY PLAN
text
1 Unique (cost=12334.82..12834.82 rows=85763 width=14) (actual time=...
2 -> Sort (cost=12334.82..12584.82 rows=100000 width=14) (actual ti...
3 Sort Key: name
4 Sort Method: external merge Disk: 2368kB
5 -> Seq Scan on customer (cost=0.00..4030.00 rows=100000 widt...
6 Planning Time: 0.076 ms
7 Execution Time: 546.914 ms

## With hash (query 2 different column)

The screenshot shows the PgAdmin 4 web interface in a Firefox browser. The left sidebar displays the database structure, with the 'customer' table selected under the 'public' schema. The main panel shows the 'Query Editor' with the following SQL query:

```
1 EXPLAIN ANALYZE SELECT DISTINCT "name"
2 FROM customer
```

The 'Data Output' tab is active, displaying the 'QUERY PLAN' for the executed query. The plan consists of the following steps:

Step	Operation	Cost	Rows	Width	Actual Time
1	Unique	12334.82..12834.82	85763	14	(actual ti...
2	-> Sort	12334.82..12584.82	100000	14	(actual ...
3	Sort Key: name				
4	Sort Method: external merge				Disk: 2368kB
5	-> Seq Scan on customer	0.00..4030.00	100000	wl...	
6	Planning Time				0.493 ms
7	Execution Time				669.377 ms

**query with index is faster and uses more memory. The difference is small due to:**

1. simple query
2. small database