STUDENT ID - 202218061

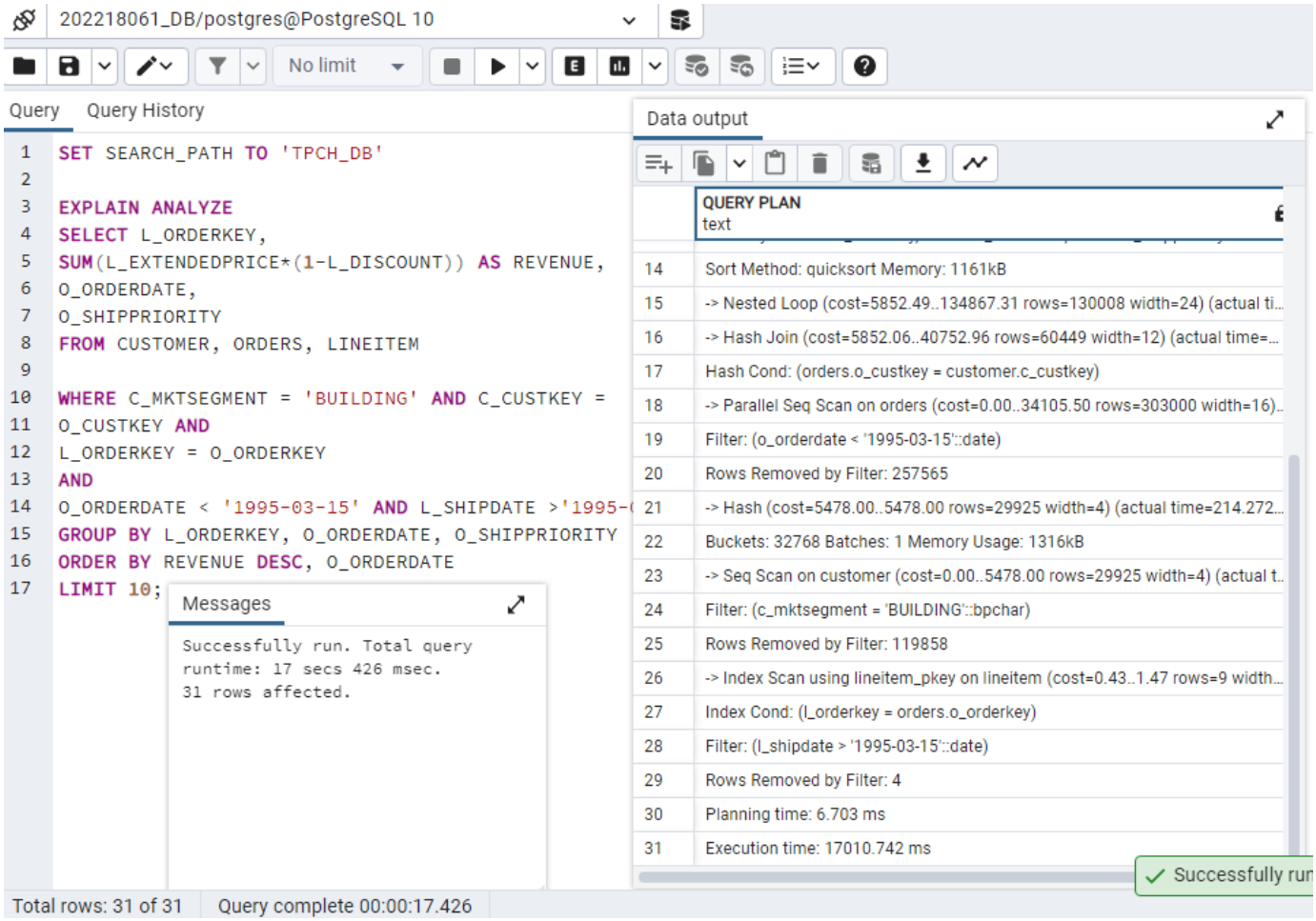
IT667 - Database Management Systems

Lab Assignment 9 - Query Processing and Optimization

1. **QUERY**

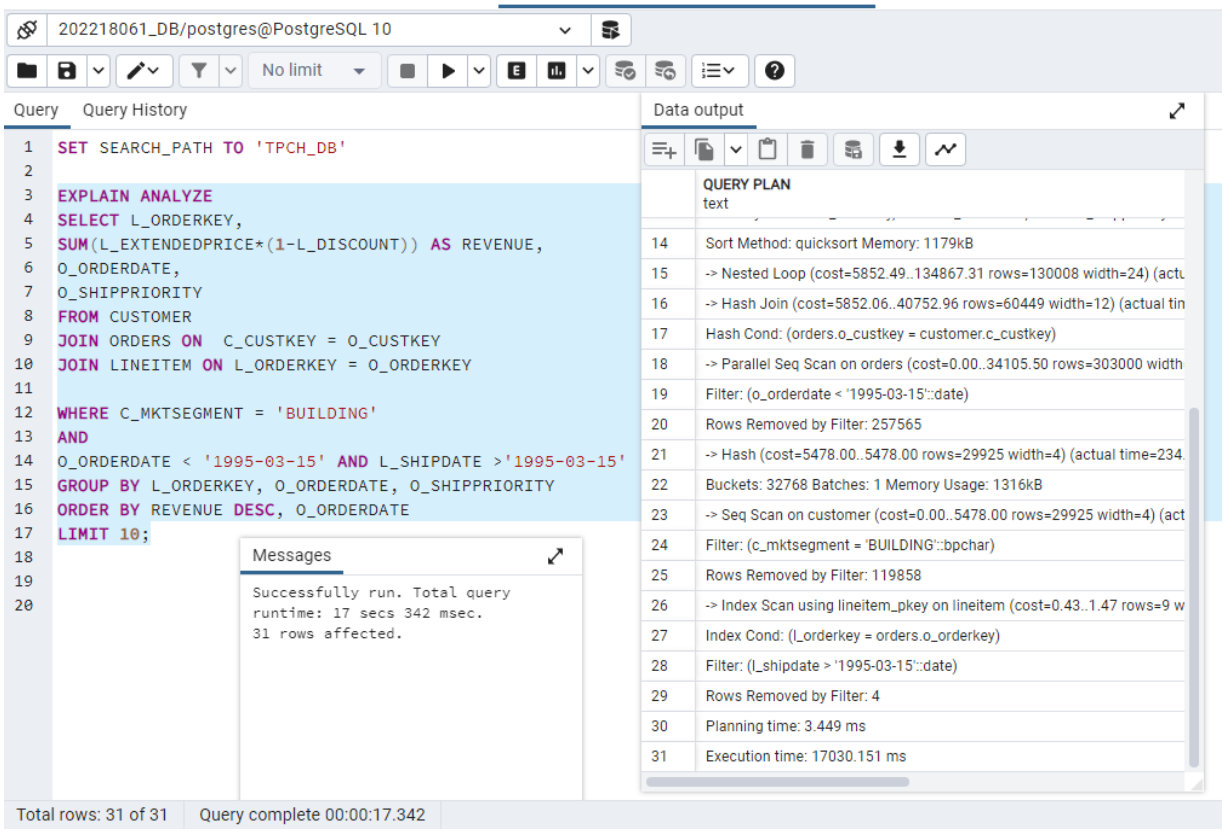
```
EXPLAIN ANALYZE
SELECT L_ORDERKEY,
SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS REVENUE,
O_ORDERDATE,
O_SHIPPRIORITY
FROM CUSTOMER, ORDERS, LINEITEM

WHERE C_MKTSEGMENT = 'BUILDING' AND C_CUSTKEY =
O_CUSTKEY AND
L_ORDERKEY = O_ORDERKEY
AND
O_ORDERDATE < '1995-03-15' AND L_SHIPDATE >'1995-03-15'
GROUP BY L_ORDERKEY, O_ORDERDATE, O_SHIPPRIORITY
ORDER BY REVENUE DESC, O_ORDERDATE
LIMIT 10;
```


202218061_DB/postgres@PostgreSQL 10
No limit
Query
Query History
1 SET SEARCH_PATH TO 'TPCH_DB'
2
3 EXPLAIN ANALYZE
4 SELECT L_ORDERKEY,
5 SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS REVENUE,
6 O_ORDERDATE,
7 O_SHIPPRIORITY
8 FROM CUSTOMER, ORDERS, LINEITEM
9
10 WHERE C_MKTSEGMENT = 'BUILDING' AND C_CUSTKEY =
11 O_CUSTKEY AND
12 L_ORDERKEY = O_ORDERKEY
13 AND
14 O_ORDERDATE < '1995-03-15' AND L_SHIPDATE >'1995-
15 GROUP BY L_ORDERKEY, O_ORDERDATE, O_SHIPPRIORITY
16 ORDER BY REVENUE DESC, O_ORDERDATE
17 LIMIT 10;
Messages
Successfully run. Total query runtime: 17 secs 426 msec.
31 rows affected.
Data output
QUERY PLAN
text
14 Sort Method: quicksort Memory: 1161kB
15 -> Nested Loop (cost=5852.49..134867.31 rows=130008 width=24) (actual ti...
16 -> Hash Join (cost=5852.06..40752.96 rows=60449 width=12) (actual time=...
17 Hash Cond: (orders.o_custkey = customer.c_custkey)
18 -> Parallel Seq Scan on orders (cost=0.00..34105.50 rows=303000 width=16)...
19 Filter: (o_orderdate < '1995-03-15'::date)
20 Rows Removed by Filter: 257565
21 -> Hash (cost=5478.00..5478.00 rows=29925 width=4) (actual time=214.272...
22 Buckets: 32768 Batches: 1 Memory Usage: 1316kB
23 -> Seq Scan on customer (cost=0.00..5478.00 rows=29925 width=4) (actual t...
24 Filter: (c_mktsegment = 'BUILDING'::bpchar)
25 Rows Removed by Filter: 119858
26 -> Index Scan using lineitem_pkey on lineitem (cost=0.43..1.47 rows=9 width...
27 Index Cond: (l_orderkey = orders.o_orderkey)
28 Filter: (l_shipdate > '1995-03-15'::date)
29 Rows Removed by Filter: 4
30 Planning time: 6.703 ms
31 Execution time: 17010.742 ms
Successfully run
Total rows: 31 of 31
Query complete 00:00:17.426

Query
performance based on optimisation.
:-

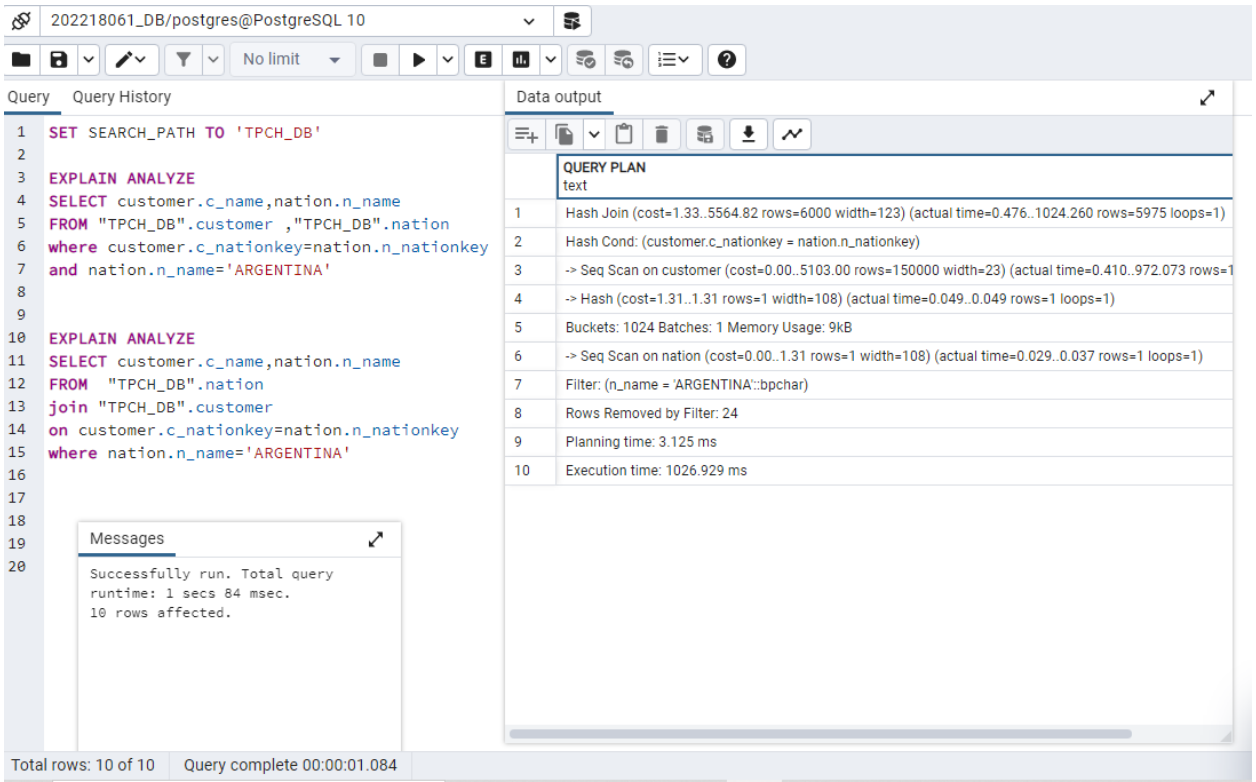
```
EXPLAIN ANALYZE
SELECT L_ORDERKEY,
SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS REVENUE,
O_ORDERDATE,
O_SHIPPRIORITY
FROM CUSTOMER
JOIN ORDERS ON  C_CUSTKEY = O_CUSTKEY
JOIN LINEITEM ON L_ORDERKEY = O_ORDERKEY
WHERE C_MKTSEGMENT = 'BUILDING'
AND
O_ORDERDATE < '1995-03-15' AND L_SHIPDATE >'1995-03-15'
GROUP BY L_ORDERKEY, O_ORDERDATE, O_SHIPPRIORITY
ORDER BY REVENUE DESC, O_ORDERDATE
LIMIT 10;
```



It reduces the planning time after optimization

2. QUERY:-

```
EXPLAIN ANALYZE
SELECT customer.c_name,nation.n_name
FROM "TPCH_DB".customer ,"TPCH_DB".nation
where customer.c_nationkey=nation.n_nationkey
and nation.n_name='ARGENTINA'
```



2.Query
performance based on optimisation.

```
EXPLAIN ANALYZE
SELECT customer.c_name,nation.n_name
FROM  "TPCH_DB".nation
join "TPCH_DB".customer
on customer.c_nationkey=nation.n_nationkey
where nation.n_name='ARGENTINA'
```