# Outputs

# Gtest Output (continuation screenshots)

```
┌[naman⊕0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 ✗]-
└> ./gtest.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
 catalog location:       db/catalog
 tpch files dir:         tpch-dbgen/
 heap files dir:         out/


[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/supplier.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (1 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (1 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (2 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/partsupp.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (62 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (62 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (63 ms total)█
[src] 0:test  1:Makefile  2:tpch  3:git- 4:try  5:[tmux]*
```

Screenshot 1

```
[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (63 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/part.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (9 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (9 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (9 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/nation.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (31 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (32 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (32 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/lineitem.tbl█
[src] 0:test  1:Makefile  2:tpch  3:git- 4:try  5:[tmux]*
```

Screenshot 2

# Gtest Output (continuation screenshots)

```
tpch file will be loaded from tpch-dbgen/lineitem.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (1693 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (1693 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (1693 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/region.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (72 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (1 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (74 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (74 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/orders.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (66 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (66 ms total)
[src] 0:test  1:Makefile  2:tpch  3:git- 4:try  5:[tmux]*
```

Screenshot 3

```
[----------] 3 tests from DBFILETEST (74 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (74 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/orders.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (66 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (66 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (66 ms total)
[  PASSED  ] 3 tests.
[==========] Running 3 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 3 tests from DBFILETEST
[ RUN      ] DBFILETEST.DBCreate
 tpch file will be loaded from tpch-dbgen/customer.tbl
EOF!
[       OK ] DBFILETEST.DBCreate (13 ms)
[ RUN      ] DBFILETEST.DBOpen
[       OK ] DBFILETEST.DBOpen (0 ms)
[ RUN      ] DBFILETEST.DBClose
[       OK ] DBFILETEST.DBClose (0 ms)
[----------] 3 tests from DBFILETEST (13 ms total)

[----------] Global test environment tear-down
[==========] 3 tests from 1 test case ran. (13 ms total)
[  PASSED  ] 3 tests.
Calling cleanup!
[naman⊕0xb1ad3]-(~/git/database-from-scratch/src)-[git://pr
└>
[src] 0:test  1:Makefile  2:tpch  3:git- 4:try  5:[tmux]*
```

Screenshot 4

Query 1: (region)
(r_name = 'EUROPE')

```
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> ./test.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:        db/catalog
tpch files dir:          tpch-dbgen/
heap files dir:          out/


select test:
         1. load file
         2. scan
         3. scan & filter
         3

select table:
         1. supplier
         2. partsupp
         3. part
         4. nation
         5. lineitem
         6. region
         7. orders
         8. customer
         6
 Filter with CNF for : region
 Enter CNF predicate (when done press ctrl-D):
         (r_name = 'EUROPE')
r_regionkey: [3], r_name: [EUROPE], r_comment: [ly final courts cajole furiously final excuse]
 selected 1 recs
Time taken: 0.036 milliseconds!
Calling cleanup!
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> 
```

[exec] 0:exec* 1:readme- 2:ss                                                    CPU:1.2%

Query 2: (region)
(r_name < 'MIDDLE EAST') AND (r_regionkey > 1)

```
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> ./test.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:       db/catalog
tpch files dir:         tpch-dbgen/
heap files dir:         out/


select test:
        1. load file
        2. scan
        3. scan & filter
        3

select table:
        1. supplier
        2. partsupp
        3. part
        4. nation
        5. lineitem
        6. region
        7. orders
        8. customer
        6
 Filter with CNF for : region
 Enter CNF predicate (when done press ctrl-D):
        (r_name < 'MIDDLE EAST') AND (r_regionkey > 1)
r_regionkey: [2], r_name: [ASIA], r_comment: [ges. thinly even pinto beans ca]
r_regionkey: [3], r_name: [EUROPE], r_comment: [ly final courts cajole furiously final excuse]
 selected 2 recs
Time taken: 0.044 milliseconds!
Calling cleanup!
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> 
```

Query 3: (nation)
(n_regionkey =3) AND (n_nationkey > 10) AND (n_name > 'JAPAN')

```
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> ./test.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:       db/catalog
tpch files dir:         tpch-dbgen/
heap files dir:         out/


select test:
        1. load file
        2. scan
        3. scan & filter
        3

select table:
        1. supplier
        2. partsupp
        3. part
        4. nation
        5. lineitem
        6. region
        7. orders
        8. customer
        4
 Filter with CNF for : nation
 Enter CNF predicate (when done press ctrl-D):
        (n_regionkey = 3) AND (n_nationkey > 10) AND (n_name > 'JAPAN')
n_nationkey: [19], n_name: [ROMANIA], n_regionkey: [3], n_comment: [ular asymptotes are about the furious multipliers. express dependencies nag abo
ve the ironically ironic account]
n_nationkey: [22], n_name: [RUSSIA], n_regionkey: [3], n_comment: [ requests against the platelets use never according to the quickly regular pint]
n_nationkey: [23], n_name: [UNITED KINGDOM], n_regionkey: [3], n_comment: [eans boost carefully special requests. accounts are. carefull]
 selected 3 recs
Time taken: 0.088 milliseconds!
Calling cleanup!
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
>

[exec] 0:exec* 1:readme- 2:ss                                                                                              CPU:1.3%
```

Query 11: (lineitem)
(l_shipdate > '1994-01-01') AND (l_shipdate < '1994-01-07') AND (l_discount > 0.05) AND (l_discount < 0.06) AND (l_quantity = 4.0)

```
┌[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 ✗]-                                          [63/48287]
└> ./test.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:      db/catalog
tpch files dir:        tpch-dbgen/
heap files dir:        out/


select test:
        1. load file
        2. scan
        3. scan & filter
        3

select table:
        1. supplier
        2. partsupp
        3. part
        4. nation
        5. lineitem
        6. region
        7. orders
        8. customer
        5
Filter with CNF for : lineitem
Enter CNF predicate (when done press ctrl-D):
        (l_shipdate > '1994-01-01') AND (l_shipdate < '1994-01-07') AND (l_discount > 0.05) AND (l_discount < 0.06) AND (l_quantity = 4.0)
selected 0 recs
Time taken: 102.542 milliseconds!
Calling cleanup!
┌[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 ✗]-
└>
```

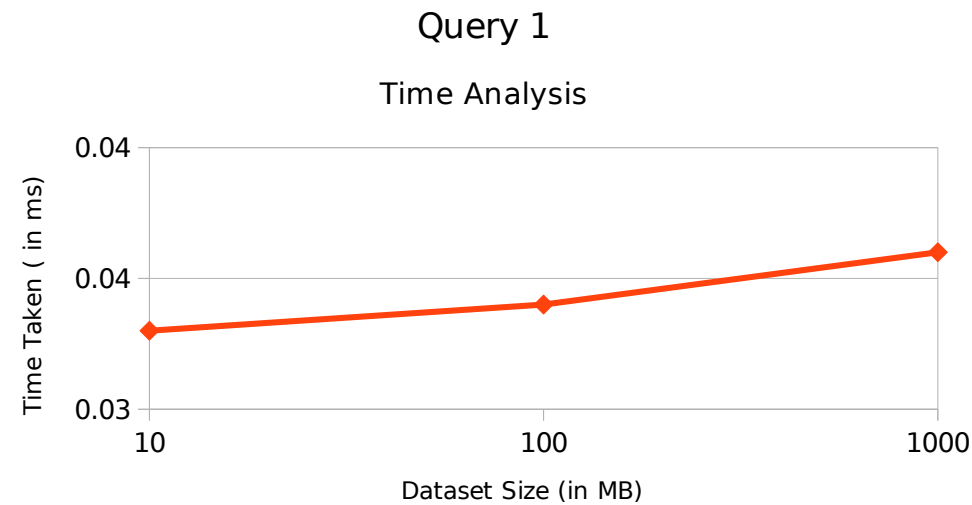Query 12: (lineitem)
(l_orderkey > 100) AND (l_orderkey < 1000) AND (l_partkey > 100) AND (l_partkey < 5000)
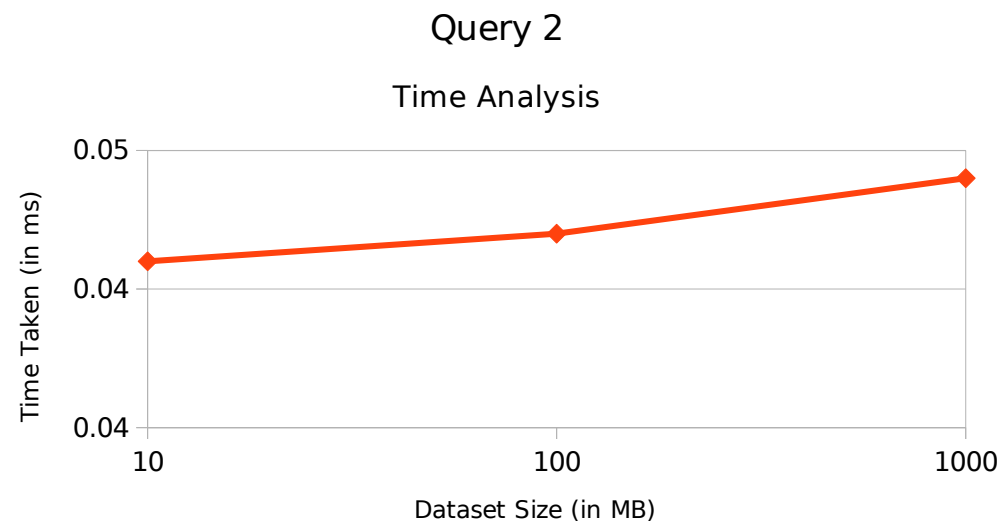AND (l_shipmode = 'AIR') AND (l_linestatus = 'F') AND (l_tax < 0.07)

```
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
> ./test.bin

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:       db/catalog
tpch files dir:         tpch-dbgen/
heap files dir:         out/


select test:
        1. load file
        2. scan
        3. scan & filter
        3

select table:
        1. supplier
        2. partsupp
        3. part
        4. nation
        5. lineitem
        6. region
        7. orders
        8. customer
        5
 Filter with CNF for : lineitem
 Enter CNF predicate (when done press ctrl-D):
        (l_orderkey > 100) AND (l_orderkey < 1000) AND (l_partkey > 100) AND (l_partkey < 5000) AND (l_shipmode = 'AIR') AND (l_linestatus = 'F') A
ND (l_tax < 0.07)
l_orderkey: [130], l_partkey: [1739], l_suppkey: [4240], l_linenumber: [2], l_quantity: [48], l_extendedprice: [78755], l_discount: [0.03], l_tax:
[0.02], l_returnflag: [R], l_linestatus: [F], l_shipdate: [1992-07-01], l_commitdate: [1992-07-12], l_receiptdate: [1992-07-24], l_shipinstruct: [N
ONE], l_shipmode: [AIR], l_comment: [lithely alongside of the regu]
l_orderkey: [194], l_partkey: [2594], l_suppkey: [5095], l_linenumber: [1], l_quantity: [17], l_extendedprice: [25442], l_discount: [0.05], l_tax:
[0.04], l_returnflag: [R], l_linestatus: [F], l_shipdate: [1992-05-24], l_commitdate: [1992-05-22], l_receiptdate: [1992-05-30], l_shipinstruct: [C
OLLECT COD], l_shipmode: [AIR], l_comment: [ regular deposi]
 selected 2 recs
Time taken: 51.179 milliseconds!
Calling cleanup!
[naman@0xb1ad3]-(~/git/database-from-scratch/src)-[git://proj1 x]-
>
[exec] 0:exec* 1:readme- 2:ss                                                                                                    CPU:0.5%
```
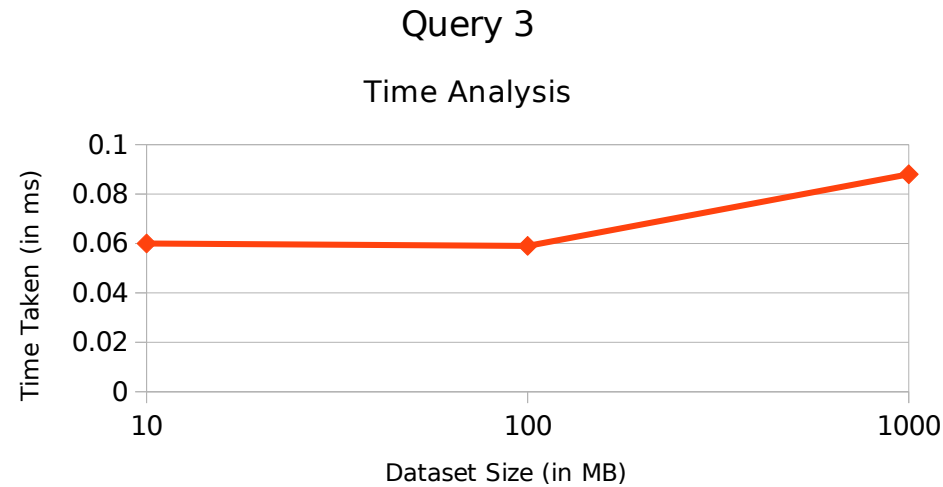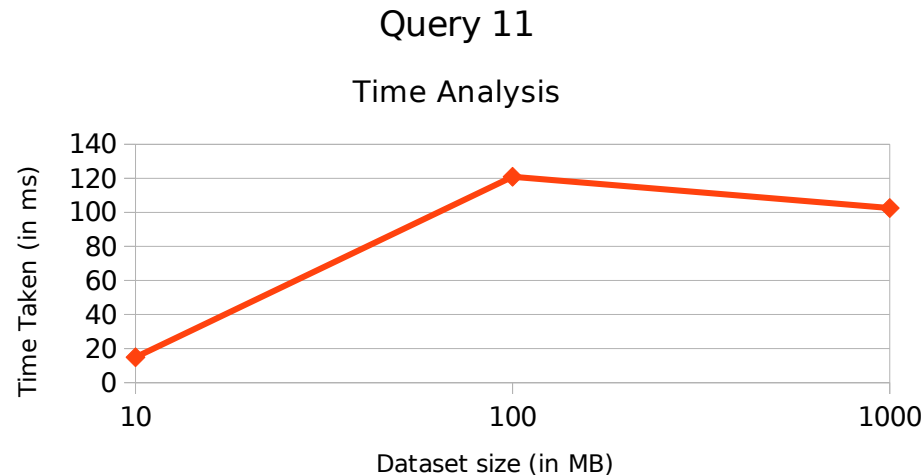
# Analysis

Query 1: (region)
(r_name = 'EUROPE')

## Query 1

### Time Analysis



Query 2: (region)
(r_name < 'MIDDLE EAST') AND (r_regionkey > 1)

## Query 2

### Time Analysis

Query 3: (nation)
(n_regionkey =3) AND (n_nationkey > 10) AND (n_name > 'JAPAN')

## Query 3

### Time Analysis



Query 11: (lineitem)
(l_shipdate > '1994-01-01') AND (l_shipdate < '1994-01-07') AND (l_discount > 0.05) AND
(l_discount < 0.06) AND (l_quantity = 4.0)

## Query 11

### Time Analysis

Query 12: (lineitem)
(l_orderkey > 100) AND (l_orderkey < 1000) AND (l_partkey > 100) AND (l_partkey < 5000)
AND (l_shipmode = 'AIR') AND (l_linestatus = 'F') AND (l_tax < 0.07)

## Query 12

### Time Analysis