

GROUP MEMBER NAMES

Individual Project

RUNNING THE CODE

Run Main (main.cc)

make main

./main

Run Test (test.cc)

make test.out

./test.out

Run gtest (dbfile_test.cc)

make dbfile_test.out

./dbfile_test.out

Function Description

1. Create
2. Open
3. EnableWriteMode
4. EnableReadMode
5. GetNext
6. GetNext with CNF
7. MoveFirst
8. Add
9. Load
10. Close

TEST.OUT RESULTS

TPCH Data Size = 1GB

Test 1:

Time: 2530.14 ms

Record Count: 582

Table: LineItem

CNF: (l_quantity > 5.00) AND (l_quantity < 100.00) AND
 (l_shipmode = 'AIR') AND (l_discount > 0.04) AND (l_tax
 > 0.07) AND (l_receiptdate > '1996-01-01') AND
 (l_receiptdate < '1996-02-01')

```
ubuntu@primary:~/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./test.out

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:      catalog
tpch files dir:        ./temp/
heap files dir:        ./temp/

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

select table:
  1. nation
  2. region
  3. customer
  4. part
  5. partsupp
  6. orders
  7. lineitem
  8. supplier
  7

Filter with CNF for : lineitem
Enter CNF predicate (when done press ctrl-D):
(l_quantity > 5.00) AND (l_quantity < 100.00) AND (l_shipmode = 'AIR') AND (l_discount > 0.04) AND (l_tax > 0.07) AND (l_receiptdate > '1996-01-01')
AND (l_receiptdate < '1996-02-01')
l_orderkey: [4676], l_partkey: [45569], l_suppkey: [5570], l_linenum: [6], l_quantity: [8], l_extendedprice: [12116.5], l_discount: [0.08], l_tax: [0.08],
l_returnflag: [N], l_linestatus: [O], l_shipdate: [1995-12-05], l_commitdate: [1995-10-18], l_receiptdate: [1996-01-02], l_shipinstruct: [COLLECT COD], l_sh
ipmode: [AIR], l_comment: [cuses boost above]
l_orderkey: [17027], l_partkey: [133385], l_suppkey: [8412], l_linenum: [3], l_quantity: [18], l_extendedprice: [25530.8], l_discount: [0.1], l_tax: [0.08]
, l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-01-08], l_commitdate: [1996-02-19], l_receiptdate: [1996-01-25], l_shipinstruct: [NONE], l_shipmod
e: [AIR], l_comment: [ the ironic,]
l_orderkey: [33639], l_partkey: [9496], l_suppkey: [9497], l_linenum: [1], l_quantity: [42], l_extendedprice: [59030.6], l_discount: [0.08], l_tax: [0.08]
, l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-01-18], l_commitdate: [1996-01-18], l_receiptdate: [1996-01-29], l_shipinstruct: [COLLECT COD], l_s
hipmode: [AIR], l_comment: [st across the regul]

shipmode: [AIR], l_comment: [ounts cajole carefully permanent instruct]
l_orderkey: [5948514], l_partkey: [68442], l_suppkey: [3455], l_linenum: [3], l_quantity: [44], l_extendedprice: [62059.4], l_discount: [0.06], l_tax: [0.
08], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-01-06], l_commitdate: [1995-11-10], l_receiptdate: [1996-01-15], l_shipinstruct: [COLLECT COD],
l_shipmode: [AIR], l_comment: [ly express pinto beans are accounts-- unus]
l_orderkey: [5985219], l_partkey: [45446], l_suppkey: [455], l_linenum: [1], l_quantity: [35], l_extendedprice: [48700.4], l_discount: [0.07], l_tax: [0.0
8], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1995-12-22], l_commitdate: [1996-01-01], l_receiptdate: [1996-01-16], l_shipinstruct: [TAKE BACK RETUR
N], l_shipmode: [AIR], l_comment: [onic foxes]
l_orderkey: [5996004], l_partkey: [181816], l_suppkey: [6853], l_linenum: [7], l_quantity: [44], l_extendedprice: [83503.6], l_discount: [0.1], l_tax: [0.
08], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1995-12-23], l_commitdate: [1995-10-27], l_receiptdate: [1996-01-22], l_shipinstruct: [NONE], l_shipm
ode: [AIR], l_comment: [aggie slyly. close ]
selected 582 recs
Time: 2530.14 ms
ubuntu@primary:~/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

Test 2:

selected Records: 14309 recs

Time: 591.594 ms

Table: Part

CNF: (p_partkey > 1995) AND (p_retailprice > 1900.00) AND (p_size < 35)

```
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./test.out

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:  catalog
tpch files dir:    ./temp/
heap files dir:    ./temp/

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

select table:
  1. nation
  2. region
  3. customer
  4. part
  5. partsupp
  6. orders
  7. lineitem
  8. supplier
  4

Filter with CNF for : part
Enter CNF predicate (when done press ctrl-D):
  (p_partkey > 1995) AND (p_retailprice > 1900.00) AND (p_size < 35)
p_partkey: [2999], p_name: [cyan burnished dim red rosy], p_mfgr: [Manufacturer#3], p_brand: [Brand#35], p_type: [LARGE BRUSHED STEEL], p_size: [30], p_container: [SM CASE], p_retailprice: [1901.99], p_comment: [ages are fluffily a]
p_partkey: [3998], p_name: [dark steel aquamarine cyan moccasin], p_mfgr: [Manufacturer#2], p_brand: [Brand#22], p_type: [LARGE ANODIZED BRASS], p_size: [6], p_container: [JUMBO CAN], p_retailprice: [1981.99], p_comment: [eans. bold ]

p_partkey: [199993], p_name: [bisque tan cyan sky drab], p_mfgr: [Manufacturer#5], p_brand: [Brand#54], p_type: [ECONOMY POLISHED COPPER], p_size: [28], p_container: [LG BAG], p_retailprice: [2092.99], p_comment: [ke caref]
p_partkey: [199994], p_name: [snow cyan maroon blue peru], p_mfgr: [Manufacturer#5], p_brand: [Brand#52], p_type: [LARGE BRUSHED COPPER], p_size: [32], p_container: [MED CAN], p_retailprice: [2093.99], p_comment: [e quickly bold theo]
p_partkey: [199996], p_name: [cream navajo saddle dodger navy], p_mfgr: [Manufacturer#4], p_brand: [Brand#43], p_type: [PROMO PLATED COPPER], p_size: [11], p_container: [MED PACK], p_retailprice: [2095.99], p_comment: [ silent dep]
p_partkey: [199999], p_name: [goldenrod drab brown salmon mint], p_mfgr: [Manufacturer#5], p_brand: [Brand#55], p_type: [PROMO PLATED BRASS], p_size: [24], p_container: [LG CASE], p_retailprice: [2098.99], p_comment: [he quickly ironic]
selected 13503 recs
Time: 525.222 ms
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

Test 3:

Selected Records: 1 recs

Time: 0.127 ms

Table: Nation

CNF: (n_name = 'CHINA') AND (n_nationkey = 18)

```
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./test.out
** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:      catalog
tpch files dir:        ./temp/
heap files dir:        ./temp/

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

select table:
1. nation
2. region
3. customer
4. part
5. partsupp
6. orders
7. lineitem
8. supplier
1

Filter with CNF for : nation
Enter CNF predicate (when done press ctrl-D):
(n_name = 'CHINA') AND (n_nationkey = 18)
n_nationkey: [18], n_name: [CHINA], n_regionkey: [2], n_comment: [c dependencies. furiously express notornis sleep slyly regular accounts. ideas sleep. depos
]
selected 1 recs
Time: 0.127 ms
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

Test 4:

Selected Records: 1 recs

Time: 0.208 ms

Table: Region

CNF: (r_name='AFRICA')

```
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./test.out
** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location:      catalog
tpch files dir:        ./temp/
heap files dir:        ./temp/

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

select table:
  1. nation
  2. region
  3. customer
  4. part
  5. partsupp
  6. orders
  7. lineitem
  8. supplier
  2

Filter with CNF for : region
Enter CNF predicate (when done press ctrl-D):
(r_name='AFRICA')r_regionkey: [0], r_name: [AFRICA], r_comment: [lar deposits. blithely final packages cajole. regular waters are final requests. reg
ular accounts are according to ]
selected 1 recs
Time: 0.208 ms
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

Test 5:

selected 30 recs

Time: 1985.5 ms

Table: LineItem

CNF: (l_orderkey > 27) AND (l_orderkey < 40)

```
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./test.out

** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT **
catalog location: catalog
tpch files dir: ./temp/
heap files dir: ./temp/

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

select table:
  1. nation
  2. region
  3. customer
  4. part
  5. partsupp
  6. orders
  7. lineitem
  8. supplier
  7

Filter with CNF for : lineitem
Enter CNF predicate (when done press ctrl-D):
(l_orderkey > 27) AND (l_orderkey < 40) l_orderkey: [32], l_partkey: [82704], l_supkey: [7721], l_linenumber: [1], l_quantity: [28], l_extendedprice: [47227.6], l_discount: [0.05], l_tax: [0.08], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1995-10-23], l_commitdate: [1995-08-27], l_receiptdate: [1995-10-26], l_shipinstruct: [TAKE BACK RETURN], l_shipmode: [TRUCK], l_comment: [sleep quickly. req]
l_orderkey: [32], l_partkey: [197921], l_supkey: [441], l_linenumber: [2], l_quantity: [32], l_extendedprice: [64605.4], l_discount: [0.02], l_tax: [0], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1995-08-14], l_commitdate: [1995-10-07], l_receiptdate: [1995-08-27], l_shipinstruct: [COLLECT COD], l_shipmode: [AIR], l_comment: [lithely regular deposits. fluffily ]

l_orderkey: [39], l_partkey: [20590], l_supkey: [3093], l_linenumber: [4], l_quantity: [32], l_extendedprice: [48338.9], l_discount: [0.07], l_tax: [0.05], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-10-02], l_commitdate: [1996-12-19], l_receiptdate: [1996-10-14], l_shipinstruct: [COLLECT COD], l_shipmode: [MAIL], l_comment: [heodolites sleep silently pending foxes. ac]
l_orderkey: [39], l_partkey: [54519], l_supkey: [9530], l_linenumber: [5], l_quantity: [43], l_extendedprice: [63360.9], l_discount: [0.01], l_tax: [0.01], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-10-17], l_commitdate: [1996-11-14], l_receiptdate: [1996-10-26], l_shipinstruct: [COLLECT COD], l_shipmode: [MAIL], l_comment: [yly regular il]
l_orderkey: [39], l_partkey: [94368], l_supkey: [6878], l_linenumber: [6], l_quantity: [40], l_extendedprice: [54494.4], l_discount: [0.06], l_tax: [0.05], l_returnflag: [N], l_linestatus: [O], l_shipdate: [1996-12-08], l_commitdate: [1996-10-22], l_receiptdate: [1997-01-01], l_shipinstruct: [COLLECT COD], l_shipmode: [AIR], l_comment: [quickly ironic fox]

selected 30 recs
Time: 1985.5 ms
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

GTEST RESULTS:

Operations like Open, Create and Close are tested out on the DBFILE and the test results are listed out. It is carried out using GTEST framework. It results out either success or fail. Assert statement in the test cases is performed with the above-mentioned IO operations and gives either 1 or 0 based on the given table and respective filetypes.

```
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$ ./dbfile_test.out
[=====] Running 3 tests from 3 test suites.
[-----] Global test environment set-up.
[-----] 1 test from CreateTest
[ RUN      ] CreateTest.ReturnValueTest
[ OK       ] CreateTest.ReturnValueTest (6 ms)
[-----] 1 test from CreateTest (6 ms total)

[-----] 1 test from OpenTest
[ RUN      ] OpenTest.ReturnValueTest
[ OK       ] OpenTest.ReturnValueTest (3 ms)
[-----] 1 test from OpenTest (3 ms total)

[-----] 1 test from CloseTest
[ RUN      ] CloseTest.ReturnValueTest
[ OK       ] CloseTest.ReturnValueTest (2 ms)
[-----] 1 test from CloseTest (4 ms total)

[-----] Global test environment tear-down
[=====] 3 tests from 3 test suites ran. (15 ms total)
[ PASSED  ] 3 tests.
ubuntu@primary:~/Home/Desktop/UFL/1st Semester/Database Information System/Project/Project-1/src$
```

CONCLUSION:

A simple prototype of Relational Database is implemented to perform basic operations like load data from the file, scan the data and filter the table records.