

Project 2-part 2 report

a) Group member names

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b) Include instructions on how to compile and run your code

Compile and run instructions:

```
make clean
make
make test.out
```

For running queries:

Run

```
./test.out
```

And select options accordingly

For running gTest:

```
make gtest.out
./gtest.out
```

Select from options accordingly

c) Include a brief explanation of each method you wrote and how it works.

In order for proper functionality of both heap and sorted files in DBFile.h, separate classes HeapFile and SortedFile respectively and both of them are included as header files where needed. The functionalities described in DBFile.cc directs the program to the respective functionalities in HeapFile or SortedFile depending on the file type and they carry out the features of that functions accordingly. Thus, this report explains the generic functions in DBFile.cc in order to avoid redundancy by explaining same functions in other files (HeapFile.cc and SortedFile.cc

Functions in DBFile.cc:

- `int DBFile::Open (char *f_path):` Opens a metadata instance, checks whether file type is heap or sorted and opens the object of that file respectively.
- `int DBFile::Create (char *f_path, fType f_type, void *startup):` Checks the file type as heap or sorted and creates instance accordingly

Functions of SortedFile.cc:

- `void* SortedFile::instantiate_BigQ(void* arg):` Creates instance of BigQ to be used in the file
- `OrderMaker *SortedFile::checkIfMatches(CNF &cnf, OrderMaker &sortOrder):` Checks if CNF matched and constructs OrderMaker accordingly

- Record* SortedFile::GetMatchPage(Record &literal): Returns matched record as per the argument entered

d) Screenshots of output

(i)

```
(base) Shibanis-MBP:a2-2test shibanimahapatra$ ./test.out

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

select test option:
  1. create sorted dbfile
  2. scan a dbfile
  3. run some query
  1

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

specify runlength:
  8

specify sort ordering (when done press ctrl-D):
  (c_phone)
^D
output to dbfile : customer.bin
input from file : customer.tbl

select option for : customer.bin
  1. add a few (1 to 1k recs)
  2. add a lot (1k to 1e+06 recs)
  3. run some query
  2
  *****
  added 150001 recs..so far 150001
create finished.. 150001 recs inserted

(base) Shibanis-MBP:a2-2test shibanimahapatra$
```

(ii)

```
s; packages according to the quickly special deposits wake fur]
.custkey: [1472], c_name: [Customer#000001472], c_address: [Eayx9GaqJEarGyIeR5 ffrRLl], c_nationkey: [5], c_phone: [15-464-411-8342], c_acctbal: [2168.61], c_mktsegment: [MACHINERY], c_comment: [ haggle against the carefully bold theo
dolites, quietly regular ideas haggle, pending pinto beans engage sl]
.custkey: [1473], c_name: [Customer#000001473], c_address: [UPXNKG3dy4VtyGJUGHG], c_nationkey: [0], c_phone: [10-891-555-7734], c_acctbal: [2796.93], c_mktsegment: [MACHINERY], c_comment: [uriously, quickly pending multipliers maintain
slyly silent excuses, regular requests capsule quit]
.custkey: [1474], c_name: [Customer#000001474], c_address: [X883CadMRDjvAnEmgIfw], c_nationkey: [16], c_phone: [26-609-226-4269], c_acctbal: [2961.79], c_mktsegment: [HOUSEHOLD], c_comment: [kages above the requests sleep furiously pac
kages-- deposits detect fluffily, pending th]
.custkey: [1475], c_name: [Customer#000001475], c_address: [4tUf4SaTFVZtH7j], c_nationkey: [0], c_phone: [10-932-794-2009], c_acctbal: [1820.28], c_mktsegment: [BUILDING], c_comment: [uctions sleep blithely bold packages, pending, sile
nt deposits offer the fluffily final pinto beans or]
.custkey: [1476], c_name: [Customer#000001476], c_address: [nsPnedRl3dWK,], c_nationkey: [16], c_phone: [26-621-638-1459], c_acctbal: [409.72], c_mktsegment: [BUILDING], c_comment: [across the fluffily final requests, regular forges hag
gle furiously r]
.custkey: [1477], c_name: [Customer#000001477], c_address: [nUT6xGEr7tngpJaPgffEXY], c_nationkey: [6], c_phone: [16-407-756-8079], c_acctbal: [9103.33], c_mktsegment: [MACHINERY], c_comment: [ites nag blithely alongside of the ironic ac
counts, accounts use, carefully silent deposits]
.custkey: [1478], c_name: [Customer#000001478], c_address: [x7HdvJ0DpR3MqZSvq2CmfQ1hFj4], c_nationkey: [7], c_phone: [17-420-484-5993], c_acctbal: [9701.54], c_mktsegment: [AUTOMOBILE], c_comment: [ng the furiously bold foxes, even no
tornis above the unusual ]
.custkey: [1479], c_name: [Customer#000001479], c_address: [XDDMMAMVSHQPKpGpTUE0G 1vXk43m54c,A,KF8], c_nationkey: [16], c_phone: [26-203-849-3685], c_acctbal: [9793.29], c_mktsegment: [BUILDING], c_comment: [arefully final ideas, unusua
l accounts sleep, final packages wake, fluffily bold dependencies hang slyly, bl]
.custkey: [1480], c_name: [Customer#000001480], c_address: [HrjH6S2XfSzfIrjQgECkrp3SgDha,Z], c_nationkey: [7], c_phone: [17-573-775-8790], c_acctbal: [876.02], c_mktsegment: [HOUSEHOLD], c_comment: [uriously pending courts are, deposit
s serve quickly blithely final excuses, slyly req]
.custkey: [1481], c_name: [Customer#000001481], c_address: [Vp7Un1Vy7MNvJvP 5cglr28sc6tcaJ3B3F8nZ0M], c_nationkey: [12], c_phone: [22-674-694-9039], c_acctbal: [3204.67], c_mktsegment: [AUTOMOBILE], c_comment: [lithely, idly ruthless pa
ckages wake above the bold, quick pinto beans, regular ex]
.custkey: [1482], c_name: [Customer#000001482], c_address: [kTcr5JgkJFeLKIRcmtnCvOfRf6hG9chP7], c_nationkey: [19], c_phone: [29-452-962-5934], c_acctbal: [2930.53], c_mktsegment: [FURNITURE], c_comment: [are, slyly regular deposits mol
d carefully above the blithely regular ideas, carefully r]
.custkey: [1483], c_name: [Customer#000001483], c_address: [ZjYiC b6OnY3], c_nationkey: [7], c_phone: [17-202-113-4814], c_acctbal: [4489.7], c_mktsegment: [BUILDING], c_comment: [nts sleep around the carefully express theodolites, req
uests nag ]
.custkey: [1484], c_name: [Customer#000001484], c_address: [WcDint654aJStrNWSgAAIt], c_nationkey: [18], c_phone: [28-987-505-1842], c_acctbal: [4883.17], c_mktsegment: [FURNITURE], c_comment: [s against the furiously special packag]
.custkey: [1485], c_name: [Customer#000001485], c_address: [oR6sZs1Mq7bPLxtHfHqJ], c_nationkey: [24], c_phone: [34-329-123-7678], c_acctbal: [9412.02], c_mktsegment: [BUILDING], c_comment: [pliers, ironic requests boost slyly careful
ly express ideas, blithely ironic foxes d]
.custkey: [1486], c_name: [Customer#000001486], c_address: [7A2MhrHtsA], c_nationkey: [24], c_phone: [34-559-605-2237], c_acctbal: [5859.97], c_mktsegment: [BUILDING], c_comment: [lithely ironic dependencies haggle quickly b]
.custkey: [1487], c_name: [Customer#000001487], c_address: [AJXU12qFVKfympmTEblmjsz8gPKQ2], c_nationkey: [17], c_phone: [27-197-562-5547], c_acctbal: [3589.16], c_mktsegment: [FURNITURE], c_comment: [y final instructions, regular, regu
lar packages boost alongside of the b]
.custkey: [1488], c_name: [Customer#000001488], c_address: [Def2uJI8ta2wqrnD], c_nationkey: [4], c_phone: [14-892-461-5341], c_acctbal: [7929.51], c_mktsegment: [HOUSEHOLD], c_comment: [sits boost quickly fluffily even pinto beans, sly
ly e]
.custkey: [1489], c_name: [Customer#000001489], c_address: [jAMbLIUSIFoHODCGCwdkU], c_nationkey: [9], c_phone: [19-906-669-4354], c_acctbal: [4389.66], c_mktsegment: [MACHINERY], c_comment: [ckages play carefully? permanently regular
pinto beans]
.custkey: [1490], c_name: [Customer#000001490], c_address: [v8JkY7eCyMP], c_nationkey: [20], c_phone: [30-326-598-2437], c_acctbal: [8997.6], c_mktsegment: [MACHINERY], c_comment: [ bold orbits boost slyly according to the carefully iro
nic accounts, slyly special packages without the ]
.custkey: [1491], c_name: [Customer#000001491], c_address: [GjZJP4Fv5]qDc], c_nationkey: [4], c_phone: [14-931-281-5631], c_acctbal: [3739.82], c_mktsegment: [HOUSEHOLD], c_comment: [efully silent tithes, even deposits according to the
unusual, even platelets haggle furiously a]
.custkey: [1492], c_name: [Customer#000001492], c_address: [ZQNu42y8UjJ], c_nationkey: [1], c_phone: [11-527-949-4092], c_acctbal: [-875.17], c_mktsegment: [HOUSEHOLD], c_comment: [ blithely even accounts, furiously final instructions
across the decays cajo]
.custkey: [1493], c_name: [Customer#000001493], c_address: [TBw 8Ug9GASfMde5b], c_nationkey: [24], c_phone: [34-947-154-7032], c_acctbal: [7014.12], c_mktsegment: [MACHINERY], c_comment: [carefully quiet requests lose slyly, quickly fin
al pinto beans haggle bl]
.custkey: [1494], c_name: [Customer#000001494], c_address: [4V71P ku3jrqBQq], c_nationkey: [11], c_phone: [21-248-166-9549], c_acctbal: [8292.21], c_mktsegment: [MACHINERY], c_comment: [arefully furiously special ideas, pending deposit
s above the blithely regular excuses wake slyly car]
.custkey: [1495], c_name: [Customer#000001495], c_address: [78wSHOVY5oabp, jgeCNS4Kay1ygm4RtIH], c_nationkey: [10], c_phone: [20-416-910-7075], c_acctbal: [6227.55], c_mktsegment: [FURNITURE], c_comment: [osely blithe, ironic foxes, re
gular dependencies use blithely about ]
.custkey: [1496], c_name: [Customer#000001496], c_address: [Z0yMoutVWpJy], c_nationkey: [3], c_phone: [13-802-978-9538], c_acctbal: [-496.49], c_mktsegment: [AUTOMOBILE], c_comment: [counts make slyly above the instruct]
.custkey: [1497], c_name: [Customer#000001497], c_address: [ DB8ZU3gYd57H4grcDr,02], c_nationkey: [14], c_phone: [24-506-574-8552], c_acctbal: [2449.57], c_mktsegment: [AUTOMOBILE], c_comment: [gular packages boost foxes, blithely bold
escapades wake slyly special pack]
.custkey: [1498], c_name: [Customer#000001498], c_address: [x XTotSofI7oIsRG2ngll3ncvYJ0m8SufsfQ7N,z], c_nationkey: [19], c_phone: [29-676-227-6356], c_acctbal: [5810.56], c_mktsegment: [AUTOMOBILE], c_comment: [ackages are slyly unusual
req]
.custkey: [1499], c_name: [Customer#000001499], c_address: [4,6jMDEqfrnXxwh87ps0M9Tc8J1aJNv4bt], c_nationkey: [3], c_phone: [13-273-527-9609], c_acctbal: [9128.69], c_mktsegment: [AUTOMOBILE], c_comment: [ole blithely permanent instruct
ions, carefully even packages]
.custkey: [1500], c_name: [Customer#000001500], c_address: [4zaol4MUTNFINPbm43], c_nationkey: [5], c_phone: [15-200-872-4790], c_acctbal: [6910.79], c_mktsegment: [MACHINERY], c_comment: [s boost blithely above the fluffily ironic dol
phins ironic accounts]
scanned 1500 recs
```

(base) Shibani-MBP:a2-2test shibaninohapatras

(iii)

(base) Shibani-MBP:a2-2test shibaninohapatras ./test.out

**** IMPORTANT: MAKE SURE THE INFORMATION BELOW IS CORRECT ****

catalog location: catalog
tpch files dir:
heap files dir:

select test option:

1. create sorted dbfile
2. scan a dbfile
3. run some query
- 3

select table:

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

enter CNF predicate (when done press ctrl-D):

(c_phone > '34-999-195-7029') AND (c_mktsegment = 'FURNITURE')

st. quickly ironic requests could have to be according to the final accounts, final]

custkey: [62707], c_name: [Customer#000002707], c_address: [b8bt5TtIXh], c_nationkey: [24], c_phone: [34-999-473-9448], c_acctbal: [7429.32], c_mktsegment: [FURNITURE], c_comment: [zzle slyly after the slyly ironic pinto beans, bold, fi
na]

custkey: [41774], c_name: [Customer#000001774], c_address: [DhffJFXv8-tLQeIFh555icD0w4G3esKeya9M7dz], c_nationkey: [24], c_phone: [34-999-535-1203], c_acctbal: [7118.29], c_mktsegment: [FURNITURE], c_comment: [c requests sleep, quickly
silent requests wake fluffily, furiously close packages nag furiously across the caref]

custkey: [194308], c_name: [Customer#000094308], c_address: [5de3PLeIngeY8v6Kc9y8,N0DT5uK4], c_nationkey: [24], c_phone: [34-999-618-6653], c_acctbal: [8636.13], c_mktsegment: [FURNITURE], c_comment: [g, even deposits, carefully unusu]

query over customer.bin returned 4 recs

(base) Shibani-MBP:a2-2test shibaninohapatras

e) Screen shots of GTest results that match results generated by your code.

```
tpch-gtest-gtest-run
(base) Shibanis-MBP:a2-2test shibaninohapatra$ ./gtest.out

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

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

[-----] Running 1 test from 1 test suite.
[-----] Global test environment set-up.
[-----] 1 test from SortedFile
[ RUN      ] SortedFile.SortCheck

specify runlength:
8

specify sort ordering (when done press ctrl-D):
(CatNone)
[ OK      ] SortedFile.SortCheck (13953 ms)
[-----] 1 test from SortedFile (13953 ms total)

[-----] Global test environment tear-down
[-----] 1 test from 1 test suite ran. (13953 ms total)
[ PASSED  ] 1 test.
(base) Shibanis-MBP:a2-2test shibaninohapatra$
```