

COP6726 – Database System Implementation

Project 2 (Milestone One) Report

Team members:

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Steps to execute project code:

1. The project source code is in the folder “a2test”. Its contents include the following:
 - a. Code needed to run test.cc.
 - b. All “.bin” files should be included in the “bin” folder.
 - c. Google test framework has been added in the directory “googletest”. This framework is needed to run gtest unit test cases.
 - d. All the gtest unit test cases have been added in “test” folder. BigQTest.cc contains the unit test cases for methods in BigQ class.
 - e. Makefile to compile test.cc and gtest unit test cases.

2. To run test.cc, from project root execute command “make test.out” and then execute “./test.out” and follow the on-screen instructions.

This test driver gives a menu-based interface to three options that allows you to test the code:

1. sort (sorts the records and dumps to output pipe)
 2. sort + display (sorts, dumps to output pipe and displays)
 3. sort + write (sorts, dumps to output pipe and writes in a “.bigq” file)
3. To run gtest unit test cases, from project root execute command “make gtests” and then execute “./gtests”.

The following are the methods with their description:

Method	Description
int OpenFile(const char *fpath)	Opens/Creates a temporary file to manage records for the class. Returns 1 on success; 0 on failure.
int CloseFile()	Closes file. Returns 1 on success; 0 on failure.
void *SortAndDumpToPipe(void *Big)	Loads each record from input pipe, sorts them and inserts into priority queue. Each record is then loaded onto the output pipe.

The following is the “output1.txt” screenshot:

The following results are obtained by using 1 GB TPCB data generated from tpch-dbggen.

```
n_nationkey: [6], n_name: [FRANCE], n_regionkey: [3], n_comment: [refully final requests. regular, ironi]
n_nationkey: [19], n_name: [ROMANIA], n_regionkey: [3], n_comment: [ular asymptotes are about the furious multipliers. e
n_nationkey: [22], n_name: [RUSSIA], n_regionkey: [3], n_comment: [ requests against the platelets use never according t
n_nationkey: [23], n_name: [UNITED KINGDOM], n_regionkey: [3], n_comment: [eans boost carefully special requests. accoun
n_nationkey: [13], n_name: [JORDAN], n_regionkey: [4], n_comment: [ic deposits are blithely about the carefully regular
n_nationkey: [4], n_name: [EGYPT], n_regionkey: [4], n_comment: [y above the carefully unusual theodolites. final dugout
n_nationkey: [11], n_name: [IRAQ], n_regionkey: [4], n_comment: [nic deposits boost atop the quickly final requests? qui
n_nationkey: [20], n_name: [SAUDI ARABIA], n_regionkey: [4], n_comment: [ts. silent requests haggle. closely express pac
n_nationkey: [10], n_name: [IRAN], n_regionkey: [4], n_comment: [efully alongside of the slyly final dependencies. ]
consumer: removed 25 recs from the pipe
*****
Moved to first Page in Database File
producer: inserted 1500 recs into the pipe
consumer: removed 1500 recs from the pipe
*****
```

```
Moved to first Page in Database File
producer: inserted 1500 recs into the pipe
consumer: removed 1500 recs from the pipe
*****
o_orderkey: [39620], o_custkey: [1279], o_orderstatus: [F], o_totalprice: [406938], o_orderdate: [1994-10-05], o_orderpriority: [2-HIGH],
o_orderkey: [17571], o_custkey: [358], o_orderstatus: [F], o_totalprice: [408346], o_orderdate: [1992-03-16], o_orderpriority: [4-NOT SPE
o_orderkey: [39456], o_custkey: [1016], o_orderstatus: [0], o_totalprice: [409771], o_orderdate: [1998-02-16], o_orderpriority: [2-HIGH],
o_orderkey: [57376], o_custkey: [676], o_orderstatus: [0], o_totalprice: [411255], o_orderdate: [1995-06-20], o_orderpriority: [1-URGENT]
o_orderkey: [6882], o_custkey: [178], o_orderstatus: [0], o_totalprice: [422360], o_orderdate: [1997-04-09], o_orderpriority: [1-URGENT],
o_orderkey: [59106], o_custkey: [953], o_orderstatus: [0], o_totalprice: [430620], o_orderdate: [1996-10-24], o_orderpriority: [4-NOT SPE
o_orderkey: [44707], o_custkey: [1013], o_orderstatus: [0], o_totalprice: [431772], o_orderdate: [1997-08-14], o_orderpriority: [1-URGENT]
o_orderkey: [29158], o_custkey: [667], o_orderstatus: [0], o_totalprice: [439687], o_orderdate: [1995-10-21], o_orderpriority: [2-HIGH],
o_orderkey: [52965], o_custkey: [676], o_orderstatus: [0], o_totalprice: [466001], o_orderdate: [1996-09-22], o_orderpriority: [3-MEDIUM]
consumer: removed 15000 recs from the pipe
*****
n_nationkey: [7], n_name: [GERMANY], n_regionkey: [3], n_comment: [l platelets. regular accounts x-ray: unusual, regular acco]
n_nationkey: [19], n_name: [ROMANIA], n_regionkey: [3], n_comment: [ular asymptotes are about the furious multipliers. express dependenci
n_nationkey: [22], n_name: [RUSSIA], n_regionkey: [3], n_comment: [ requests against the platelets use never according to the quickly reg
n_nationkey: [23], n_name: [UNITED KINGDOM], n_regionkey: [3], n_comment: [eans boost carefully special requests. accounts are. carefull]
n_nationkey: [4], n_name: [EGYPT], n_regionkey: [4], n_comment: [y above the carefully unusual theodolites. final dugouts are quickly acr
n_nationkey: [10], n_name: [IRAN], n_regionkey: [4], n_comment: [efully alongside of the slyly final dependencies. ]
n_nationkey: [11], n_name: [IRAQ], n_regionkey: [4], n_comment: [nic deposits boost atop the quickly final requests? quickly regula]
n_nationkey: [13], n_name: [JORDAN], n_regionkey: [4], n_comment: [ic deposits are blithely about the carefully regular pa]
n_nationkey: [20], n_name: [SAUDI ARABIA], n_regionkey: [4], n_comment: [ts. silent requests haggle. closely express packages sleep across
consumer: removed 25 recs from the pipe
```

The following are the results of gtest unit test cases:

Result: All the unit test cases passed

The test files are present in “test/BigQTest.cc” file. BigQTest.cc contains the test cases for the methods in BigQ class.

To run gtest unit test cases, from project root execute command “make gtests” and then execute “./gtests”.

Make sure to include “nation.bin” file in the directory, “test/data”.

```
akshay@LAPTOP-ACV240Q1:/mnt/d/Gitlab/dbi/Project 2.1$ ./gtests
Running main() from googletest/googletest/src/gtest_main.cc
[=====] Running 7 tests from 1 test suite.
[-----] Global test environment set-up.
[-----] 7 tests from BigQTest
[ RUN    ] BigQTest.testOpenSuccess
File present at path: tempFile.bin is now opened.
File present at path: tempFile.bin is now opened.
[ OK     ] BigQTest.testOpenSuccess (4 ms)
[ RUN    ] BigQTest.testOpenFailure
File present at path: tempFile.bin is now opened.
ERROR: File does not exist or could not be opened
[ OK     ] BigQTest.testOpenFailure (2 ms)
[ RUN    ] BigQTest.testCloseSuccess
File present at path: tempFile.bin is now opened.
File present at path: tempFile.bin is now opened.
[ OK     ] BigQTest.testCloseSuccess (4 ms)
[ RUN    ] BigQTest.testCloseFailure
File present at path: tempFile.bin is now opened.
ERROR: File does not exist or could not be opened
In BigQ::Close(), ERROR: File does not exist
[ OK     ] BigQTest.testCloseFailure (2 ms)
[ RUN    ] BigQTest.testPipeInsertion
File present at path: test/data/nation.bin is now opened.
Moved to first Page in Database File
[ OK     ] BigQTest.testPipeInsertion (4 ms)
[ RUN    ] BigQTest.testSortAndDump
File present at path: tempFile.bin is now opened.
[ OK     ] BigQTest.testSortAndDump (2 ms)
[ RUN    ] BigQTest.testBinFileNotEmpty
File present at path: test/data/nation.bin is now opened.
Moved to first Page in Database File
[ OK     ] BigQTest.testBinFileNotEmpty (4 ms)
[-----] 7 tests from BigQTest (22 ms total)

[-----] Global test environment tear-down
[=====] 7 tests from 1 test suite ran. (22 ms total)
[ PASSED ] 7 tests.
akshay@LAPTOP-ACV240Q1:/mnt/d/Gitlab/dbi/Project 2.1$
```