

2026 Winter RocksDB Study 2nd week

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Contents

1. How to Analyze RocksDB
2. QnA

How to analyze RocksDB

■ Recommended Approaches

- ✓ 1) Read and write researches
 - Documents, Lectures, Papers (Top-tier conference)
 - Conference: EuroSys, OSDI, FAST, ATC, VLDB, SIGMOD ...
- ✓ 2) Remarks and Code
 - VS code, Terminal ...
- ✓ 3) Code Tracing
 - GDB, Utrace
- ✓ 4) Draw figures
 - Structure, Class, Code flow with Draw.io and PPT
- ✓ 5) Write a markdown document
 - Using github
- ✓ 6) Draw a evaluation figures
 - Python, Excel
- ✓ 7) Prepare 15-minute presentation

Key-Value Store 분석

(RocksDB 중점)

목차

1. Overview	5
1.1 Introduction	5
1.2 High-level Architecture	5
1.3 Features	5
2. RocksDB 디렉토리 구조 (주요 파일만 표시)	9
2.1 CACHE	9
2.2 DB	9
2.3 ENV	10
2.4 FILE	10
2.5 MEMTABLE	10
2.6 TABLE	10
2.7 UTIL	11
3. RocksDB basic operation	11
3.1 Opening a database	11
3.2 Status (error control)	11
3.3 Closing a database	11
3.4 Reads	11
3.5 Writes	11
3.6 Concurrency	12
3.7 Column family - DB 를 논리적으로 분리하는 방법	12
3.8 Iterator	12
3.9 Prefix Seek	13

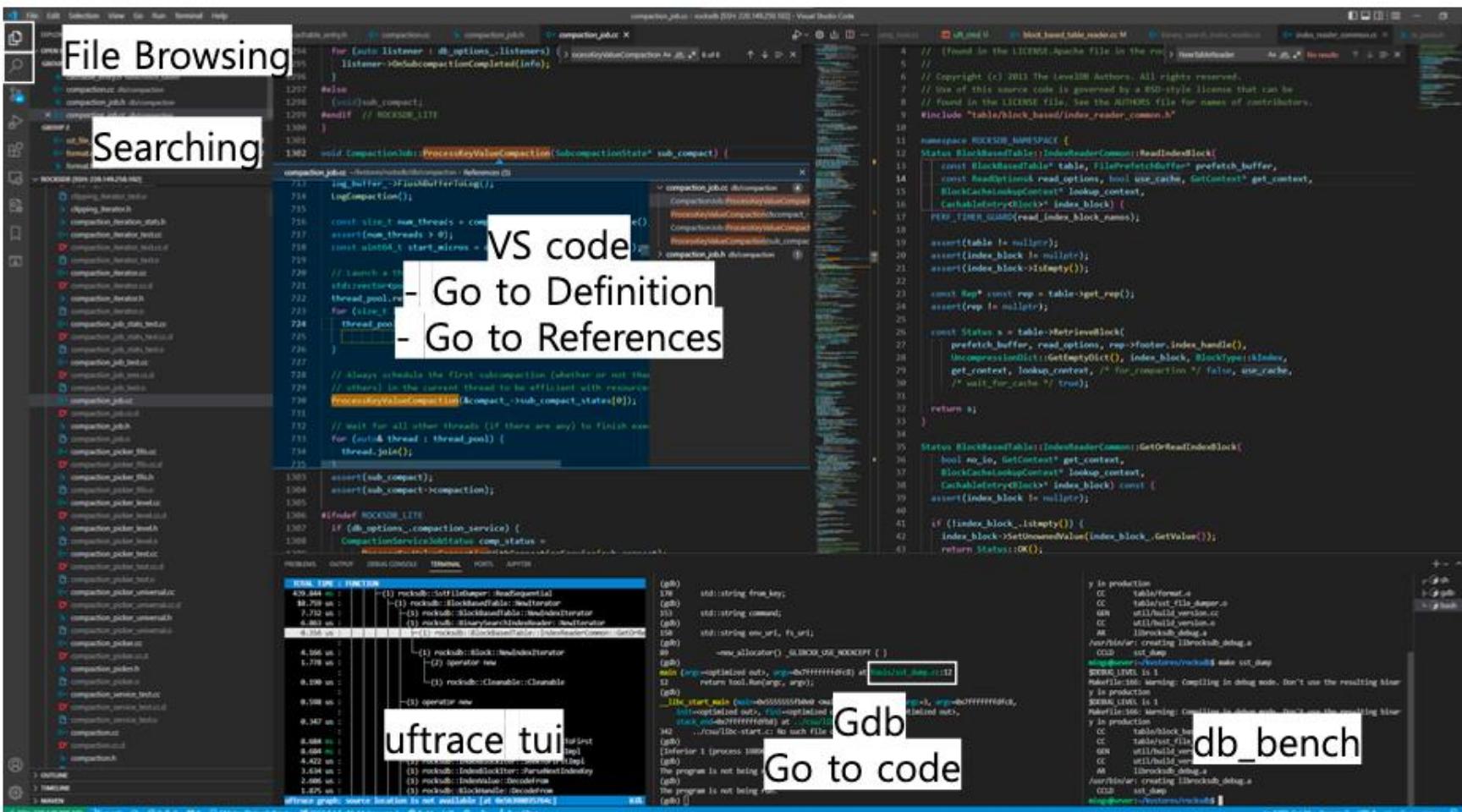
Dankook Univ. Embedded Lab.

Shin Hojin



Analyze Tool Example (by min-guk)

■ VS code



Analyze Tool Example (by min-guk)

■ GDB

✓ Run

- \$ gdb <program>
- \$ gdb --args <program> <arg1> <arg2> ...

✓ Process

- > r > run
- > c > continue
- > n > next
- > s > step
- > fin > finish

```
mingu@server:~/leveldb_release/build$ gdb --args ./db_bench --benchmarks="fillrandom"
GNU gdb (Ubuntu 9.2-0ubuntu1~20.04.1) 9.2
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./db_bench...
(gdb) b db_impl.cc:894
Breakpoint 1 at 0x12213: file /home/mingu/leveldb_release/db/db_impl.cc, line 894.
(gdb) i b
Num Type Disp Enb Address What
1 breakpoint keep y 0x000000000012213 in leveldb::DBImpl::DoCompactionWork(leveldb::DBImpl::CompactionState*)
at /home/mingu/leveldb_release/db/db_impl.cc:894
(gdb) l
1013     input->Next();
(gdb) s
leveldb::(anonymous namespace)::MergingIterator:::Next(this=
    0x555555590fee <leveldb::(anonymous namespace)::TwoLevelIterator::value() const+96>
    at /home/mingu/leveldb_release/table/merger.cc:55
55     void Next() override {
(gdb) n
56         assert(Valid());
(gdb)
63         if (direction_ != kForward) {
(gdb)
77             current_->Next();
(gdb)
78             FindSmallest();
(gdb) s
leveldb::(anonymous namespace)::MergingIterator:::FindSmallest(
    this=0x555555590f8c <leveldb::(anonymous namespace)::TwoLevelIterator::key() const+96>
    at /home/mingu/leveldb_release/table/merger.cc:148
148     void MergingIterator:::FindSmallest() {
(gdb) l
```

Open file in Editor (Ctrl + Click)

Analyze Tool Example (by min-guk)

■ Uftrace

✓ Record

- Run a program and saves the trace data

✓ Replay

- Show program execution in the trace data

✓ Graph/Tui

- Show function call graph in the trace data

✓ Filter

#	DURATION	TID	FUNCTION
[5471]	0.030 us	[5471]	leveldb::DBImpl::Write() {
[5471]	0.164 us	[5471]	leveldb::DBImpl::Writer::Writer()
[5471]	0.296 us	[5471]	leveldb::Status::Status()
[5471]	0.508 us	[5471]	leveldb::port::CondVar::CondVar()
[5471]	0.640 us	[5471]	std::condition_variable::condition_variable()
[5471]	0.733 us	[5471]	} /* leveldb::port::CondVar::CondVar */
[5471]	0.800 us	[5471]	/* leveldb::DBImpl::Writer::Writer */
[5471]	0.867 us	[5471]	leveldb::MutexLock::MutexLock()
[5471]	0.934 us	[5471]	leveldb::port::Mutex::Lock()
[5471]	1.000 us	[5471]	std::mutex::lock()
[5471]	1.067 us	[5471]	__gthread_mutex_lock()
[5471]	1.134 us	[5471]	__gthread_active_p()
[5471]	1.167 us	[5471]	pthead_mutex_lock();
[5471]	1.233 us	[5471]	} /* __gthread_mutex_lock */
[5471]	1.300 us	[5471]	/* std::mutex::lock */
[5471]	1.367 us	[5471]	} /* leveldb::port::Mutex::Lock */
[5471]	1.434 us	[5471]	/* leveldb::MutexLock::MutexLock */
[5471]	1.500 us	[5471]	std::deque::push_back()
[5471]	1.567 us	[5471]	std::move()
[5471]	1.634 us	[5471]	std::deque::emplace_back()
[5471]	1.700 us	[5471]	std::forward();
[5471]	1.767 us	[5471]	std::allocator_traits::construct()
[5471]	1.834 us	[5471]	std::forward();
[5471]	1.900 us	[5471]	
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**Thank You
Q & A ?**

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