Pune Institute of Computer Technology

Subject: DBMS Lab

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Q) Study of SQLite: What is SQLite? Uses of Sqlite. Building and installing SQLite Ans:

What is SQLite?

- SQLite is an in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. It is a database, which is zero-configured, which means like other databases you do not need to configure it in your system.
- Its engine is not a standalone process like other databases, you can link it statically or dynamically as per your requirement with your application. SQLite accesses its storage files directly.
- It is a C-language library that implements a small, fast, self contained, high-reliability, full-featured, SQL database engine. SQLite is the most used database engine in the world. SQLite is built into all mobile phones and most computers and comes bundled inside countless other applications that people use every day. More Information...
- SQLite source code is in the public-domain and is free to everyone to use for any purpose.

Sqlite uses:

- Data transfer format
    - Because an SQLite database is a single compact file in a well-defined cross-platform format, it is often used as a container for transferring content from one system to another. The sender gathers content into an SQLite database file, transfers that one file to the receiver, then the receiver uses SQL to extract the content as needed.

- Application file format
    - SQLite is often used as the on-disk file format for desktop applications such as version control systems, financial analysis tools, media cataloging and editing suites, CAD packages, record keeping programs, and so forth.
- Embedded devices and the internet of things
    - Because an SQLite database requires no administration, it works well in devices that must operate without expert human support. SQLite is a good fit for use in cellphones, set-top boxes, televisions, game consoles, cameras, watches, kitchen appliances, thermostats, automobiles, machine tools, airplanes, remote sensors, drones, medical devices, and robots: the "internet of things".
- Websites
    - SQLite works great as the database engine for most low to medium traffic websites
- Data analysis
    - People who understand SQL can employ the sqlite3 command-line shell (or various third-party SQLite access programs) to analyze large datasets.
- Education and Training
    - Because it is simple to setup and use (installation is trivial: just copy the **sqlite3** or **sqlite3.exe** executable to the target machine and run it) SQLite makes a good database engine for use in teaching SQL. Students can easily create as many databases as they like and can email databases to the instructor for comments or grading.
- High-volume Websites
    - SQLite will normally work fine as the database backend to a website. But if the website is write-intensive or is so busy that it requires multiple servers, then consider using an enterprise-class client/server database engine instead of SQLite.

- Very large datasets
    - An SQLite database is limited in size to 281 terabytes (2^{48} bytes, 256 tibibytes). And even if it could handle larger databases, SQLite stores the entire database in a single disk file and many filesystems limit the maximum size of files to something less than this. So if you are contemplating databases of this magnitude, you would do well to consider using a client/server database engine that spreads its content across multiple disk files, and perhaps across multiple volumes.

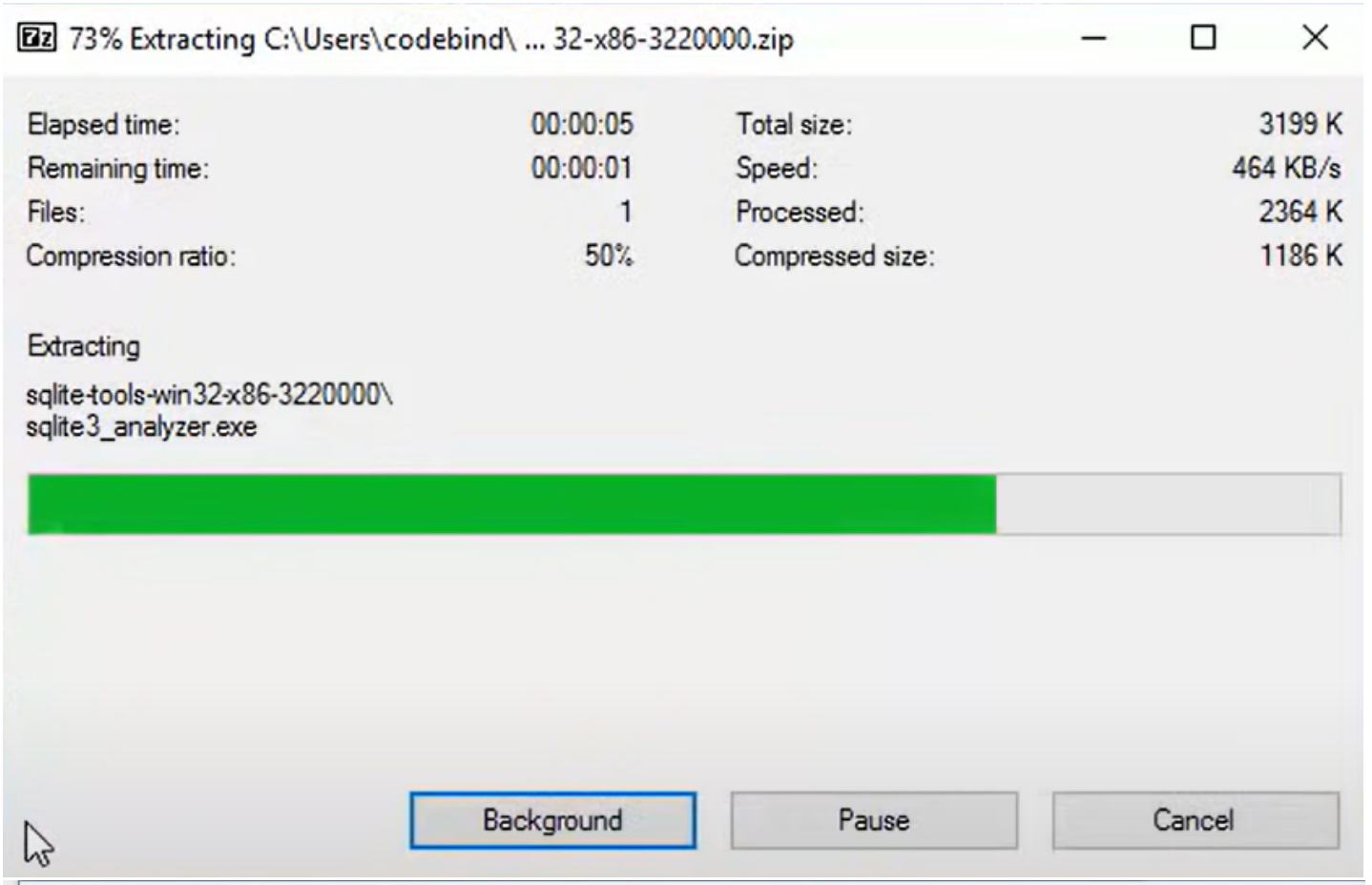
- High Concurrency

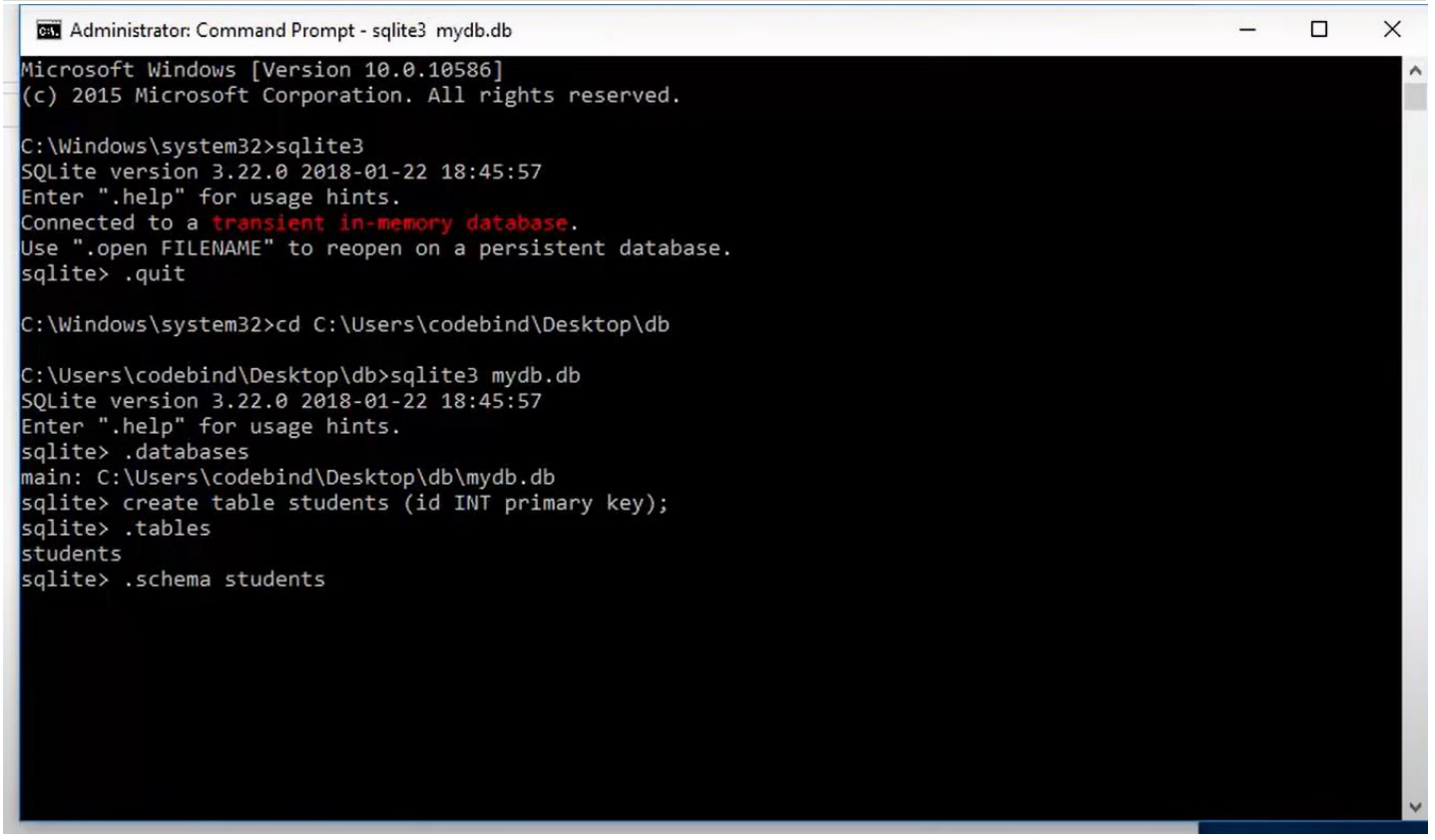
    - SQLite supports an unlimited number of simultaneous readers, but it will only allow one writer at any instant in time. For many situations, this is not a problem. Writers queue up. Each application does its database work quickly and moves on, and no lock lasts for more than a few dozen milliseconds. But there are some applications that require more concurrency, and those applications may need to seek a different solution.

Building and installing SQLite on Windows:

- **Step 1** − Go to SQLite download page, and download precompiled binaries from Windows section.
- **Step 2** − Download sqlite-shell-win32-*.zip and sqlite-dll-win32-*.zip zipped files.
- **Step 3** − Create a folder C:\>sqlite and unzip above two zipped files in this folder, which will give you sqlite3.def, sqlite3.dll and sqlite3.exe files.
- **Step 4** − Add C:\>sqlite in your PATH environment variable and finally go to the command prompt and issue sqlite3 command, which should display the following result.

```
C:\>sqlite3
SQLite version 3.7.15.2 2013-01-09 11:53:05
Enter ".help" for instructions
Enter SQL statements terminated with a ";"
sqlite>
```


73% Extracting C:\Users\codebind\ ... 32-x86-3220000.zip
Elapsed time: 00:00:05
Remaining time: 00:00:01
Files: 1
Compression ratio: 50%
Total size: 3199 K
Speed: 464 KB/s
Processed: 2364 K
Compressed size: 1186 K
Extracting
sqlite-tools-win32-x86-3220000\
sqlite3_analyzer.exe
Background
Pause
Cancel


Administrator: Command Prompt - sqlite3 mydb.db
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.
C:\Windows\system32>sqlite3
SQLite version 3.22.0 2018-01-22 18:45:57
Enter ".help" for usage hints.
Connected to a transient in-memory database.
Use ".open FILENAME" to reopen on a persistent database.
sqlite> .quit
C:\Windows\system32>cd C:\Users\codebind\Desktop\db
C:\Users\codebind\Desktop\db>sqlite3 mydb.db
SQLite version 3.22.0 2018-01-22 18:45:57
Enter ".help" for usage hints.
sqlite> .databases
main: C:\Users\codebind\Desktop\db\mydb.db
sqlite> create table students (id INT primary key);
sqlite> .tables
students
sqlite> .schema students