Assignment No: Group A(01)

Aim: Study of MySQL Open source software. Discuss the characteristics like efficiency, scalability, Performance and transactional properties.

Objectives: To Study MySQL Open source software and compare different characteristics.

Theory:

MySQL is a relational database management system (RDBMS) based on the SQL (Structured Query Language) queries. It is one of the most popular languages for accessing and managing the records in the table. MySQL is open-source and free software under the GNU license. Oracle Company supports it.

Following are the most important features of MySQL:

Relational Database Management System (RDBMS)

MySQL is a relational database management system. This database language is based on the SQL queries to access and manage the records of the table.

Easy to use

MySQL is easy to use. We have to get only the basic knowledge of SQL. We can build and interact with MySQL by using only a few simple SQL statements.

It is secure

MySQL consists of a solid data security layer that protects sensitive data from intruders. Also, passwords are encrypted in MySQL.

Client/ Server Architecture

MySQL follows the working of a client/server architecture. There is a database server (MySQL) and arbitrarily many clients (application programs), which communicate with the server; that is, they can query data, save changes, etc.

Free to download

MySQL is free to use so that we can download it from MySQL official website without any cost.

It is scalable

MySQL supports multi-threading that makes it easily scalable. It can handle almost any amount of

data, up to as much as 50 million rows or more. The default file size limit is about 4 GB. However, we can increase this number to a theoretical limit of 8 TB of data.

Speed

MySQL is considered one of the very fast database languages, backed by a large number of the benchmark test.

High Flexibility

MySQL supports a large number of embedded applications, which makes MySQL very flexible.

Compatible on many operating systems

MySQL is compatible to run on many operating systems, like Novell NetWare, Windows* Linux*, many varieties of UNIX* (such as Sun* Solaris*, AIX, and DEC* UNIX), OS/2, FreeBSD*, and others. MySQL also provides a facility that the clients can run on the same computer as the server or on another computer (communication via a local network or the Internet).

Allows roll-back

MySQL allows transactions to be rolled back, commit, and crash recovery.

Memory efficiency

Its efficiency is high because it has a very low memory leakage problem.

High Performance

MySQL is faster, more reliable, and cheaper because of its unique storage engine architecture. It provides very high-performance results in comparison to other databases without losing an essential functionality of the software. It has fast loading utilities because of the different cache memory.

High Productivity

MySQL uses Triggers, Stored procedures, and views that allow the developer to give higher productivity.

Platform Independent

It can download, install, and execute on most of the available operating systems.

Partitioning

This feature improves the performance and provides fast management of the large database.

GUI Support

MySQL provides a unified visual database graphical user interface tool named "**MySQL**

Workbench" to work with database architects, developers, and Database Administrators. <u>MySQL Workbench</u> provides SQL development, data modeling, data migration, and comprehensive administration tools for server configuration, user administration, backup, and many more. MySQL has a fully GUI supports from MySQL Server version 5.6 and higher.
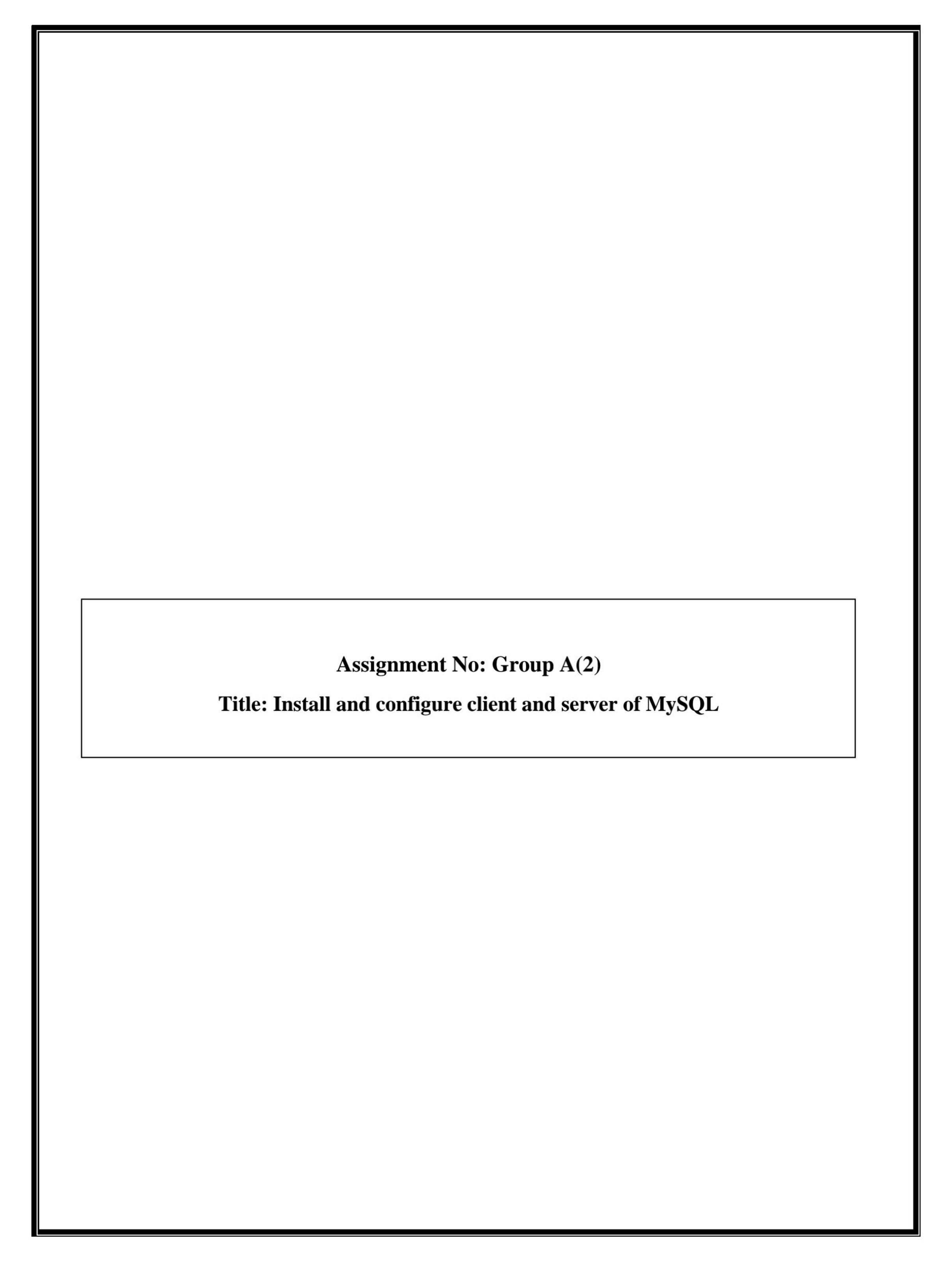
Dual Password Support

MySQL version 8.0 provides support for dual passwords: one is the current password, and another is a secondary password, which allows us to transition to the new password.

Disadvantages/Drawback of MySQL

Following are the few disadvantages of MySQL:

- o MySQL version less than 5.0 doesn't support ROLE, COMMIT, and stored procedure.

- o MySQL does not support a very large database size as efficiently.

- o MySQL doesn't handle transactions very efficiently, and it is prone to data corruption.

- o MySQL is accused that it doesn't have a good developing and debugging tool compared to paid databases.

- o MySQL doesn't support SQL check constraints.

Conclusion: Hence, we have studied MySQL open source software and compared with different characteristics.

Assignment No: Group A(2)

Title: Install and configure client and server of MySQL

Assignment No: Group A(2)

Aim: Install and configure client and server of MySQL.

Objectives: To install and configure client and server of MySQL.

Theory:

The simplest and recommended method is to download MySQL Installer (for Windows) and let it install and configure a specific version of MySQL Server as follows:

1. Download MySQL Installer from https://dev.mysql.com/downloads/installer/ and execute it.
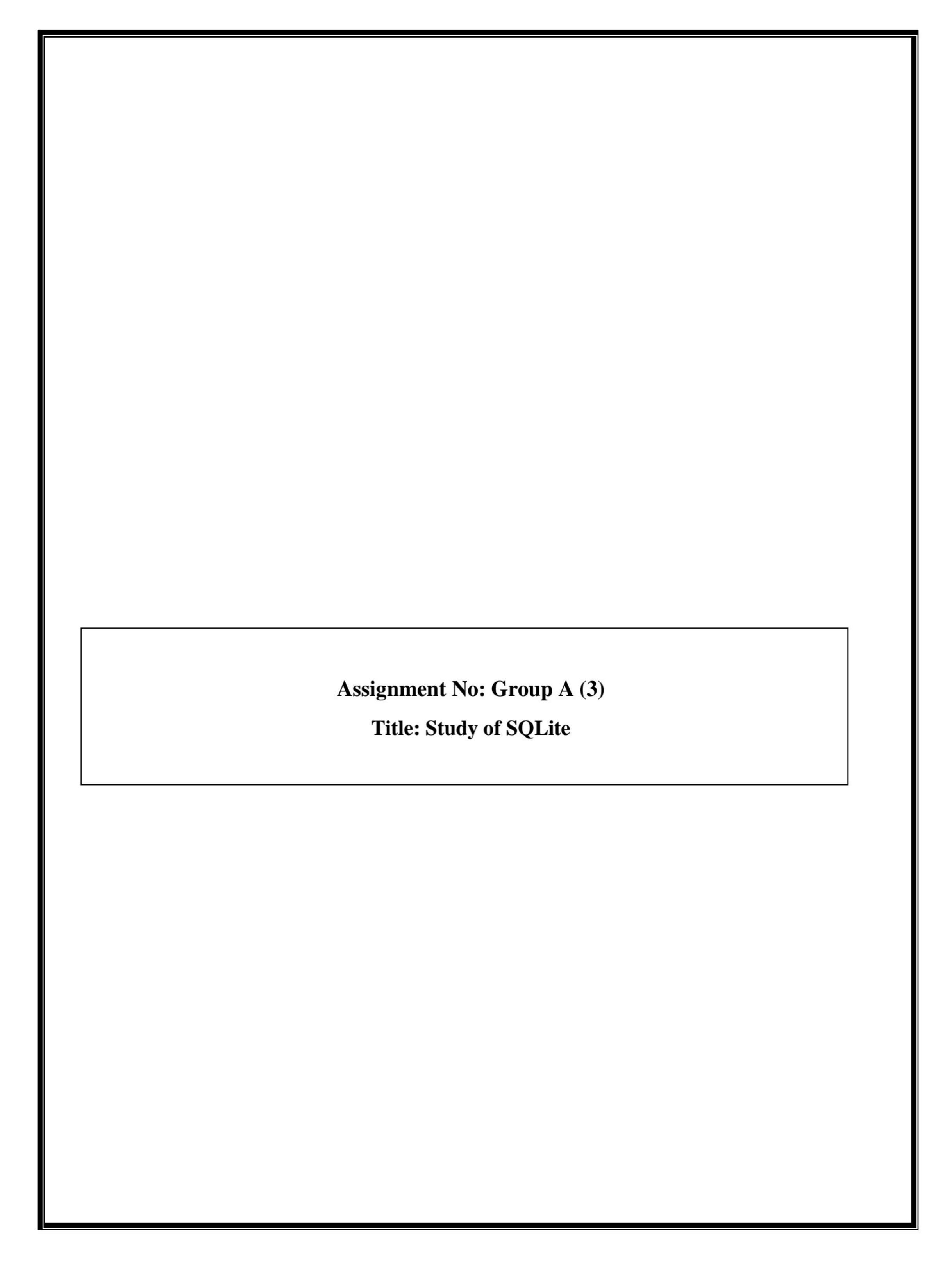
Note

Unlike the standard MySQL Installer, the smaller web-community version does not bundle any MySQL applications, but downloads only the MySQL products you choose to install.

2. Determine the setup type to use for the initial installation of MySQL products.
   For example:

   - Developer Default: Provides a setup type that includes the selected version of MySQL Server and other MySQL tools related to MySQL development, such as MySQL Workbench.

   - Server Only: Provides a setup for the selected version of MySQL Server without other products.

   - Custom: Enables you to select any version of MySQL Server and other MySQL products.

3. Install the server instance (and products) and then begin the server configuration by following the onscreen instructions. For more information about each individual step,

MySQL is now installed. If you configured MySQL as a service, then Windows automatically starts the MySQL server every time you restart the system. Also, this process installs the MySQL Installer application on the local host, which you can use later to upgrade or reconfigure MySQL server.

Conclusion: Hence, we have studied MySQL installation.

Assignment No: Group A (3)

Title: Study of SQLite

Assignment No 3: Group A (3)

Aim: Study of SQLite

Objectives: To study SQLite.

Theory:

      SQLite is an open-source, embedded, relational database management system, designed circa 2000. It is a lightweight database, with zero configuration, no requirements of a server or installation. Despite its simplicity, it is laden with popular features of database management systems.

      History of SQLite:

Sr. No.	Year	Invention
1	2000	D. Richard Hipp designed SQLite to fulfill the purpose of „no administration required" for operating a program.
2	2000	In August, SQLite 1.0 was released with the GNU database manager.
3	2011	Hipp announced to add the UNQl interface to the SQLite database to develop UNQLite (Document-oriented database).

Why Use SQLite?

- SQLite is open-source software. The software does not require any license after installation.

- SQLite is server less as it doesn't need a different server process or system to operate.

- SQLite facilitates you to work on multiple databases on the same session simultaneously, thus making it flexible.

- SQLite is a cross-platform DBMS that can run on all platforms, including macOS, Windows, etc.

- SQLite doesn't require any configuration. It needs no setup or administration. When to Use SQLite?

- SQLite is used to develop embedded software for devices like televisions, cell phones, cameras, etc.

- It can manage low to medium-traffic HTTP requests.

- SQLite can change files into smaller size archives with lesser metadata.

- SQLite is used as a temporary dataset to get processed with some data within an application.

- Beginners use SQLite for learning and training purposes, as it requires no installation and configuration.

Installing SQLite on Windows

Now, you will see how to download and install SQLite on Windows in this SQLite tutorial. Follow these steps:

Step1: Go to the official SQLite website and download precompiled binaries from the Windows section.

Step2: Download the file (sqlite-tools-win32-x86-3270200.zip) as shown in the figure below and extract these files in a folder of your choice.

Conclusion: Hence, we have studied SQLite database.