

ASSIGNMENT - 01

- * Date of Completion: 10th August - 2020
- * Date of Submission: 14th September - 2020
- * Title: MySQL
- * Problem Statement: Study of Open Source relational database: MySQL
- * Objective: To learn and understand the basic database architecture & the various components of it.
- * S/W & H/W Requirements: MySQL, Windows - 10 (64-bit)
Mouse, Keyboard, Monitor.

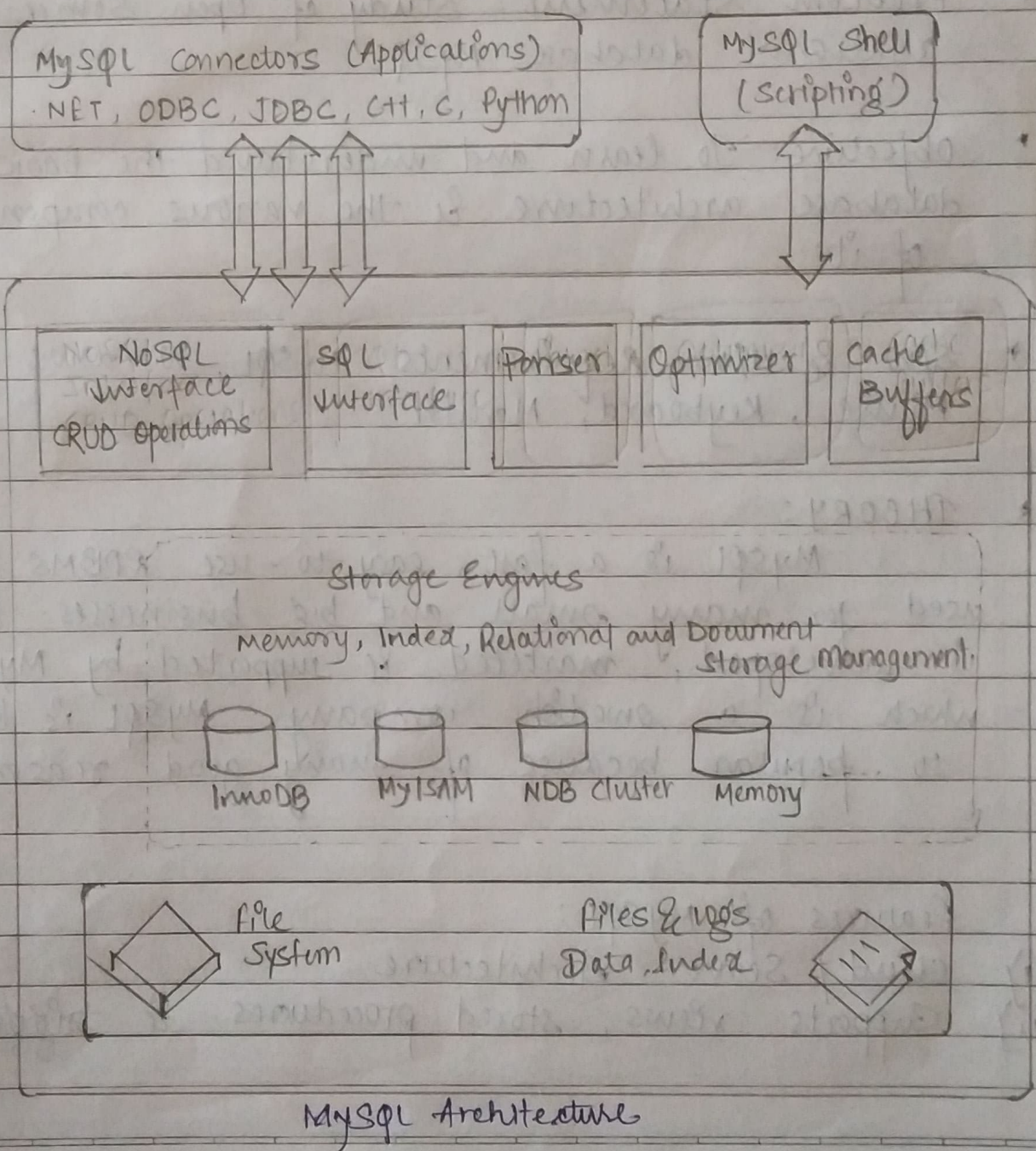
* THEORY:

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed & supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons.

Features of MySQL:

- i) Client / Server Architecture
- ii) Supports views, stored procedures & triggers.

- iii) There are quite number of APIs and libraries for the development of MySQL applications ex. C, C++, Java, PHP, Python, etc
- iv) It is platform independent.
- v) Pluggable storage engine architecture.
- vi) Many connectors for application like NET, ODBC, JDBC, Node.js, etc



* Comparison between MySQL and Oracle:-

Comparison basis	MySQL	Oracle
i) Cost	It is free & open source. It is licensed under the GNU	It is licensed under for commercial purposes. but it provides the express edition for free
ii) Scalability	MySQL database is used for small & big business	Oracle database is used for every large scale deployments.
iii) Data Partitioning	It does not support data partitioning	It supports data partitioning.
iv) Security	It requires a username, password, & host to access a database	It requires a username, password, and profile validation to access the database.
v) System type	It only works with the static system	It can work with both static & dynamic system.

creating user

Syntax: create user 'newuser'@'localhost' identified by 'user_password'

Granting privileges in MySQL:

- Specific privileges:

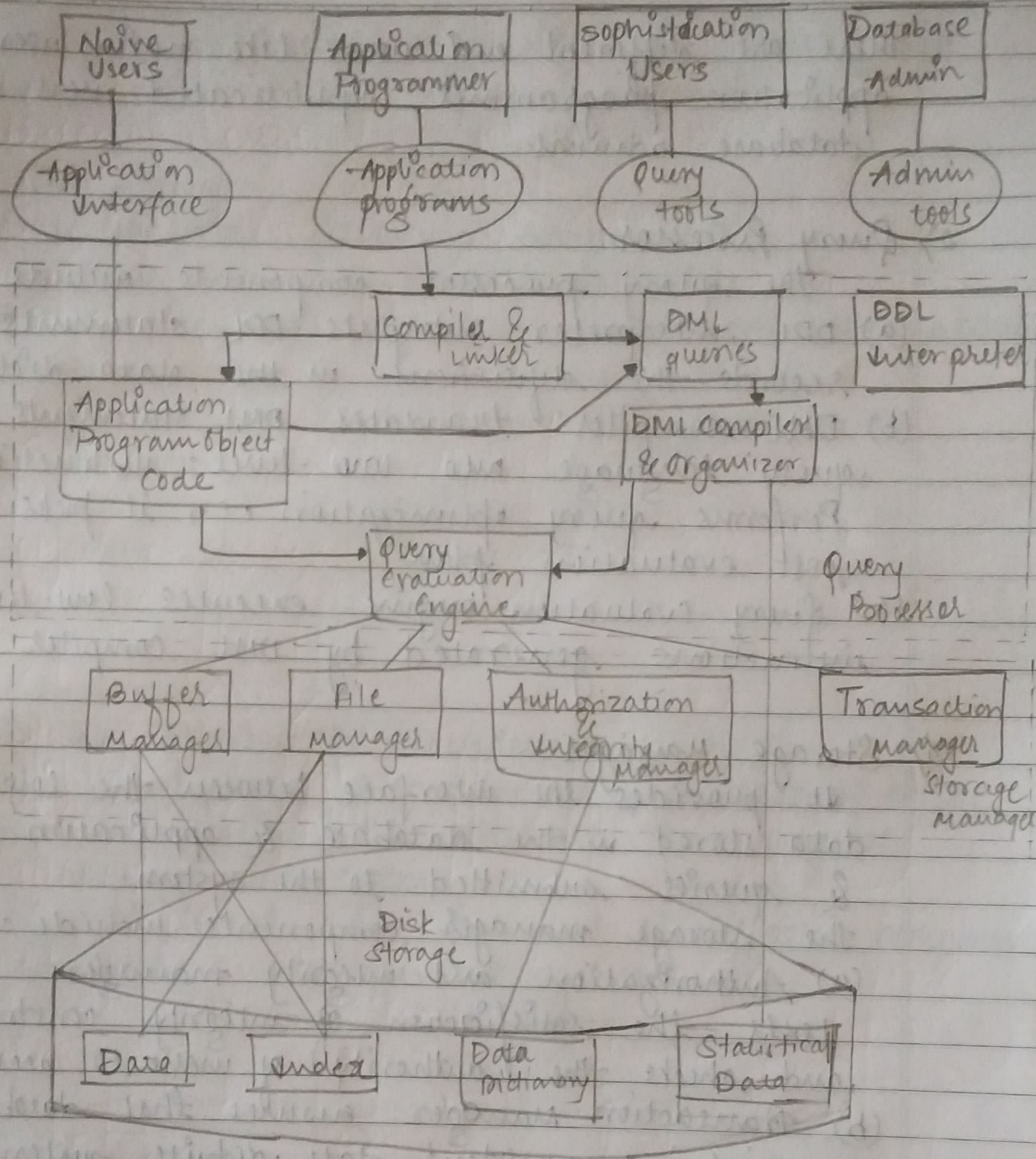
Syntax: grant all permission 1,2 on database-name.
table-name to 'user'@'localhost'

- Grant all privileges:

Syntax: grant all privileges on db-name.* to
'user'@'y.';

- Grant privileges on all databases:

Syntax: grant all privileges on *.* to 'user'@'y.'



Database System Architecture.

1. Application Layer and Interfaces / End Users:
It is the layer where the client and user interact with the MySQL RDBMS.

- There are different end users like naive users, application programmes, sophisticated users and database admins.

2) Query Processor:

The query processor components include:

- (a) DDL interpreter: interprets DDL statements & records the definitions in the data dictionary.
- (b) DML compiler: translates DML statements in query language into low-level instructions. Performs query optimization i.e., it picks lowest cost evaluation plan.
- (c) query evaluation engine: executes low-level instructions generated by DML compiler.

3) Storage Manager:

It provides the interface between the low level data stored in the database & application programs & queries submitted to the system.

The storage manager components include:

- (a) Authorization and integrity manager: tests the satisfaction of integrity constraints and checks the authority of users to access data.
- (b) Transaction Manager: ensures that database remains in consistent state despite system failures and that concurrent transaction execution proceed without conflicting.
- (c) File Manager: manages the allocation of space on disk storage & the data structure used to represent information stored on disk.

(d) Buffer manager: responsible for fetching data from disk storage to main memory.

4) Disk Storage:

It contains following components:

(a) Data Files: It stores actual data.

(b) Data dictionary: contains information about the structure of any database object. It is repository of information that governs the metadata.

(c) Indices: it provides faster retrieval of data item.

→ Conclusion:-

i) We studied the architecture of MySQL.

ii) We explored the different features of MySQL.

iii) We studied the structure of a database management system.

iv) We learnt the functions of different components of database management system.