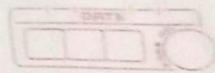


## Assignment No. 1



Title - Study of Open source relational database: MySQL

Problem statement - To study open source relational mysql.

Objective - To learn & understand the basic database architecture.

slw package : MySQL

Learning objective: To learn & understand the basic data base architecture & version.

Theory -

MySQL is fast, easy to use RDBMS being used for many small & big business. MySQL is developed & supported by MySQL AB which is a Swedish company.

MySQL is released under open-source library so you have nothing to pay to use it. MySQL is a very powerful program in its own right. It handles a large number of users & a large set of the functionality of more expensive & powerful db packages.



## 1. Application Layer & interfaces

MySQL application layer is where the clients & users interact with the MySQL RDBMS. There are three components in this layer as can be seen in the layered. These components illustrate the different kinds of user that can interact with MySQL RDBMS.

## 2. Logical Layer -

It was found that MySQL does indeed have a logical architecture. The MySQL documentation gave an indication as to precisely how these modules could be further broken down into subsystems arranged in a layered hierarchy corresponding to the layered architecture.

### 2.1) Query processor -

The vast majority of interaction in the system occurs when users wish to view or manipulate underlying data in storage.

#### 2.1.1) Embedded DML precompiler -

When a request is received from a client in application layer, it is responsible



of embedded DML.

### 2.1.2) DDL compiler

Requests to access the MySQL database received from an administrator are processed by DDL compiler.

### 2.1.3) Query Parser

After the relevant SQL query statements are obtained from deciphering the client request or administrative request, next step involves parsing the MySQL query.

### 2.1.4) Query Preprocessor

The query parse tree, as obtained from query parser is then used by query pre-processor to check the SQL syntax & semantics.

### 2.1.5) Security Manager

Once the MySQL query is deemed to be valid, the MySQL server needs to check the access control list for client.

### 2.1.6) Query Optimizer

After determining that the client has the proper permissions to access the specific table in database.



### 2.1.7) Execution engine

Once the MySQL query optimizer has optimized the MySQL query, the query can then be executed against the database.

### 2.1.8) Scalability / Evolvability

The layered architecture of logical layers of the MySQL DBMS supports the evolvability of the system.

### 2.2.1) Transaction Manager

As the version MySQL 4.0.x, support was added for transaction in MySQL. A transaction is single unit of work that has one or more SQL.

### 2.2.2) Concurrency - control Manager

The concurrency - control manager is responsible for making sure that transactions are executed separately & independently.

### 2.3) Recovery Management

2.3.1) Log Manager: The log manager is responsible for logging every operation executed in the database.



### 2.3.2.) Recovery Manager:-

The recovery manager is responsible for restoring the database to its last stable state. It does so by using the log for the database.

### 2.4) Storage Management:-

Storage is physically done on some type of secondary storage, however dynamic access of this medium is not practical. Thus all work is done

#### 2.4.1.) Storage Manager:-

At the lowest level exists the storage manager. It makes request through underlying disk controller.

#### 2.4.2.) Buffer Manager:-

The role of the buffer manager is to allocate memory resources for the use of viewing & manipulating data.

#### 2.4.3.) Resource Manager:-

It accepts request from execution programs and puts them into table requests.



## 2.5) Evolvability :

The goal of transaction Management subsystem & the Recovery management subsystem seem to provide non-functional requirements.

## Conclusion :

Hence we studied open-source relational database : MySQL.