Lab 01: Foundation statements of SQL

Objective(s):

1. MYSQL Installation
2. Connect to MYSQL Database from Command Line
3. What is SQL?
4. USE Statement
5. SELECT Statement.
6. DISTINCT Statement.
7. SELECT Top Clause.
8. Functions with SELECT Statement.
9. Aliases
10. ORDER BY Keyword

1: MYSQL Installation

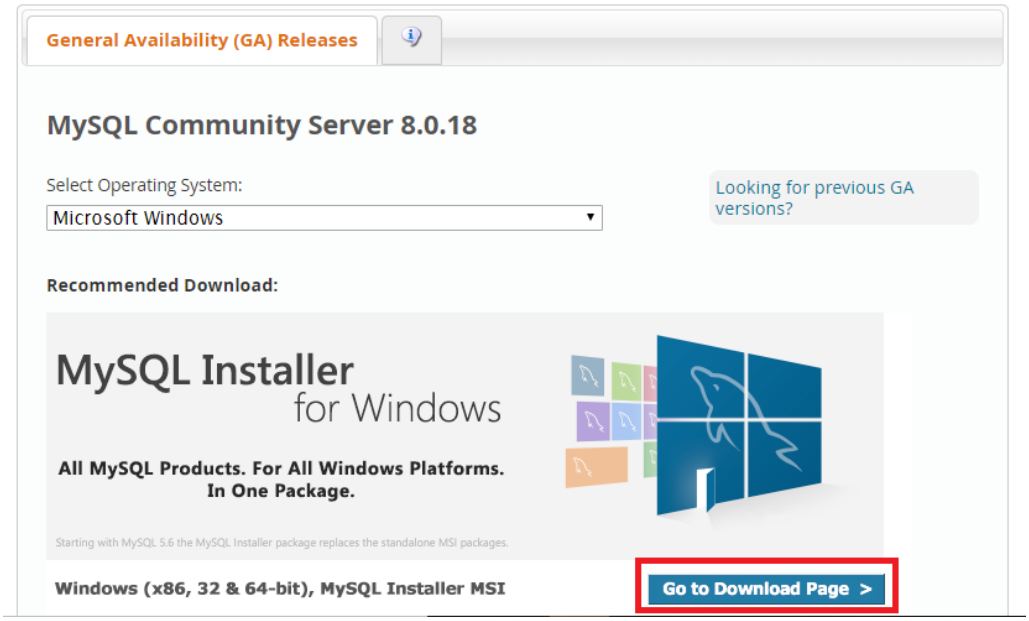
Step 01:

Download MYSQL

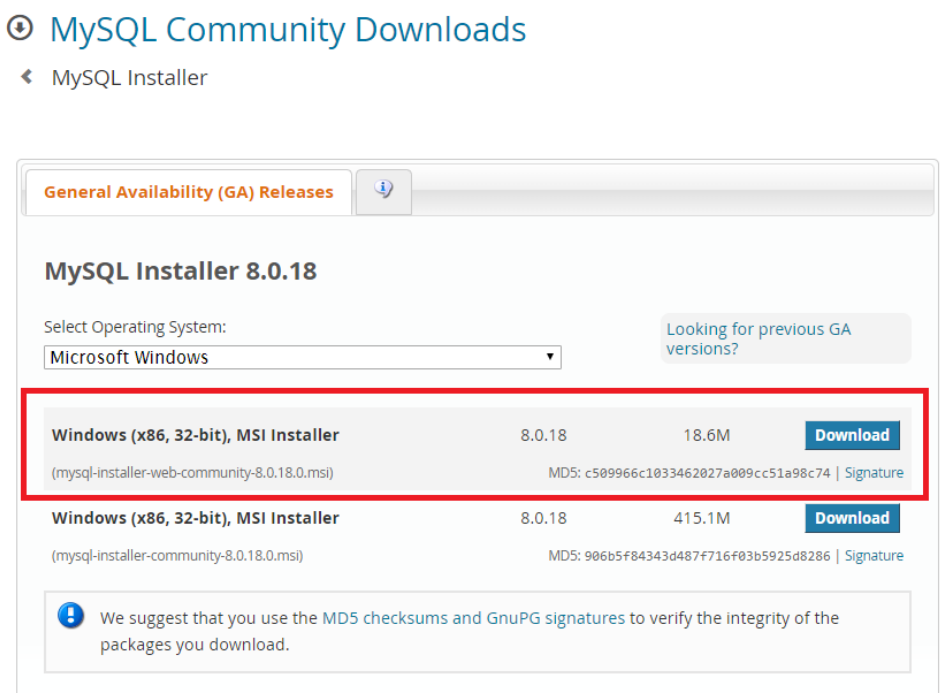
Step 02:

- MySQL Yum Repository
- MySQL APT Repository
- MySQL SUSE Repository
- MySQL Community Server
- MySQL Cluster
- MySQL Router
- MySQL Shell
- MySQL Workbench
- MySQL Installer for Windows
- MySQL for Excel
- MySQL for Visual Studio
- MySQL Notifier
- C API (libmysqlclient)
- Connector/C++
- Connector/J
- Connector/NET
- Connector/Node.js
- Connector/ODBC
- Connector/Python
- MySQL Native Driver for PHP
- MySQL Benchmark Tool
- Time zone description tables
- Download Archives

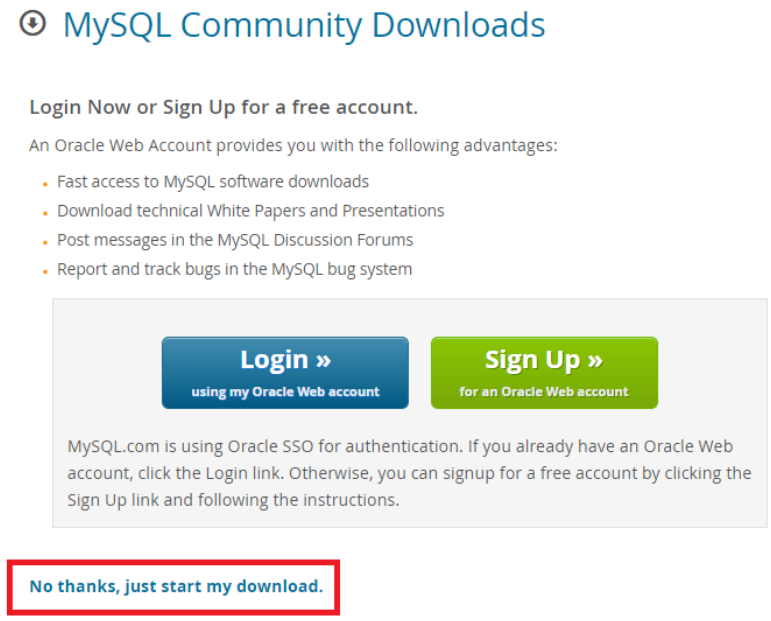
Step 03:



Step 04:



Step 05:



Step 06:

Run downloaded file and follow steps in wizard.

2: Connect to MYSQL Database from Command Line

At the command line, type the following command, replacing *USERNAME* with your username:

```
mysql -u USERNAME -p
```

At the **Enter Password** prompt, type your password. When you type the correct password, the **mysql>** prompt appears.

To display a list of databases, type the following command at the **mysql>** prompt:

```
show databases;
```

To access a specific database, type the following command at the **mysql>** prompt, replacing *DBNAME* with the database that you want to access:

```
use DBNAME;
```

After you access a database, you can run SQL queries, list tables, and so on.

3: What is SQL?

SQL is a standard language for accessing and manipulating databases. SQL stands for Structured Query Language, it lets you access and manipulate databases.

SQL can do...

SQL can execute queries against a database

SQL can retrieve data from a database

SQL can insert records in a database

SQL can update records in a database

SQL can delete records from a database

SQL can create new databases

SQL can create new tables in a database

SQL can create stored procedures in a database

SQL can create views in a database

SQL can set permissions on tables, procedures, and views

4: USE Statement

To select a particular database to work with you issue the USE statement as follows:

```
USE database_name;
```

In this statement, following the USE keyword is the name of the database that you want to select.

5: SELECT Statement

The SELECT statement is used to select data from a database. The data returned is stored in a result table, called the result-set. A SELECT indicates that we are merely reading information, as opposed to modifying it. What we are selecting is identified by an expression or column list immediately following the SELECT. The FROM statement specifies the name of the table or tables from which we are getting our data.

When you want to select **particular fields** available in the table, use the following syntax:

```
SELECT column1, column2, ...
FROM table_name;
```

Example:

```
SELECT FirstName, LastName
FROM Employees;
```

Selects data of these two columns from the Employees table

When you want to select **all the fields** available in the table, use the following syntax:

```
SELECT *
FROM table_name;
```

Example:

```
SELECT *
FROM Employees;
```

Selects all the employees records from the database and displays its columns.

6: DISTINCT Statement

The SELECT DISTINCT statement is used to return only distinct (different) values.

Inside a table, a column often contains many duplicate values; and sometimes you only want to list the different (distinct) values.

Syntax:

```
SELECT DISTINCT column1, column2, ...
FROM table_name;
```

7: SELECT Top Clause

The SELECT TOP clause is used to specify the number of records to return.

The SELECT TOP clause is useful on large tables with thousands of records. Returning a large number of records can impact performance.

Note: Not all database systems support the SELECT TOP clause. MySQL supports the **LIMIT** clause to select a limited number of records while Oracle uses ROWNUM.

MYSQL Syntax:

```
SELECT *
FROM table_name
LIMIT number;
```

The **OFF SET** value is also most often used together with the LIMIT keyword. The OFF SET value allows us to specify which row to start from retrieving data.

LIMIT with OFFSET Syntax:

```
SELECT *
FROM table_name
LIMIT OFFSET, number;
```

Visit link for Oracle & SQL Server Syntax

8: Functions with SELECT Statement

There are some functions that can be used in select statement.

Syntax:

```
SELECT function_name()
FROM table_name;
```

Functions are:

- MIN
- MAX
- AVG
- SUM
- COUNT
- UPPER
- LOWER
- LENGTH
- etc

9: Aliases

SQL aliases are used to give a table, or a column in a table, a temporary name. Aliases are often used to make column names more readable.

An alias only exists for the duration of the query.

Alias Column Syntax:

```
SELECT column_name AS alias_name
FROM table_name;
```

Alias Table Syntax:

```
SELECT column_name(s)
FROM table_name AS alias_name;
```

10: ORDER BY Keyword

The ORDER BY keyword is used to sort the result-set in ascending or descending order.

The ORDER BY keyword sorts the records in ascending order by default. To sort the records in descending order, use the DESC keyword.

Syntax:

```
SELECT column_name(s)
FROM table_name
ORDER BY column1, column2, ... ASC|DESC
```

Lab Task(s):

Exercise 1 (MYSQL Installation & Use of Command Line)

1. Download and install MYSQL in your computer.
2. Import provided "hr.sql" database by using command line.
3. Connect imported database from command line.

Exercise 2 (SELECT Statement)

1. Write a query to display the names (first_name, last_name) using alias name "First Name", "Last Name".
2. Write a query to get unique department ID from employee table.
3. Write a query to get all employee details from the employee table order by first name, descending.
4. Write a query to get the employee ID, names (first_name, last_name), salary in ascending order of salary.
5. Write a query to get the total salaries payable to employees.
6. Write a query to get the maximum and minimum salary from employees table.
7. Write a query to get the average salary and number of employees in the employees table.
8. Write a query to get the number of jobs available in the employees table.
9. Write a query get all first name from employees table in upper case.
10. Write a query to select first 10 records from a table.
11. Write a query to select 3rd & 4th record of employees table.
12. Write a query to select 2nd last record of employees table.

END