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Training on Koha ILS organized by BALID Institute of Information Management - Basic of MySQL

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Basic of MySQL

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MySQL

The world's most widely used open source database application. MySQL is a relational database management system. World Class SQL Server.

MySQL was originally founded and developed in Sweden by two Swedes and a Finn: David Axmark, Allan Larsson and Michael "Monty" Widenius, who had worked together since the 1980's.

There are four type of commands in MySQL:

1. Data Definition Language
2. Data Manipulation Language
3. Transactional Control Language
4. Data Control Language

FACTS Of MySQL

- MySQL is the largest growing relational database out on the market.
- MySQL acts as a DBMS
- MySQL is one of the most used open source databases in the world.
- Capacity to handle 50,000,000+ records.
- Very fast command execution, perhaps the fastest to be found on the market.
- Easy and efficient user privilege system.

SQL Tools in MySQL

- DBTools Manager
- DBUI
- exportSQL
- ForwardSQL
- Intelligent Converters Software
- KMySQLAdmin
- Mac SQL
- MyAccess
- MySQL Data Manager
- MySQL WebClient
- MySQL Admin
- Phpmyadmin

1. **Data Definition Language** is used to create and modify the structure of database objects in database.

Examples:

CREATE, ALTER, DROP statements

CREATE

Creates objects in the database the query used to create the object is

```
create database [databasename];
```

Example :

```
create database koha;
```


ALTER

Alters objects of the database

```
ALTER TABLE <table_name>
```

```
ADD <column_name1> <datatype1> <constraint1>
```

```
ALTER TABLE <table_name>
```

```
ALTER COLUMN <column_name1> <datatype1>  
<constraint1>
```

```
ALTER TABLE <table_name>
```

```
DROP COLUMN <column_name1> <datatype1>
```

Add a new column to Table.

```
mysql> alter table borrowers add column  
cardnumber varchar (20);
```

Change column name.

```
mysql> alter table [table name] change [old  
column name] [new column name] varchar  
(50);
```

DROP

Deletes objects of the database the syntax for drop

```
DROP TABLE [ IF EXISTS ] table_name1, table_name2, ....  
drop database koha;
```

Removes the table(s) from the database. The IF EXISTS clause will drop the table only if it exists. If this clause is not present an error is generated if the table does not exist. Any data that was in a dropped table is lost so use with care.

Data Manipulation Language is used to retrieve, store, modify, delete, insert and update data in database.

Examples:

SELECT, UPDATE, INSERT statements

SELECT

```
SELECT * FROM table_name WHERE column_name='some value';
```

```
SELECT borrowers.cardnumber, borrowers.surname,  
borrowers.firstname, borrowers.dateenrolled FROM  
borrowers;
```

The SELECT statement is used to form queries for extracting information out of the database. The above example query will return the card number, name and enrolment date of all borrowers.

UPDATE

There may be a requirement where existing data in a MySQL table needs to be modified. You can do so by using SQL **UPDATE** command. This will modify any field value of any MySQL table.

```
UPDATE table_name
    SET col_name1 = expression1, col_name2 =
expres          sion2, ....
    [ WHERE expression ]
    [ LIMIT limit_amount ]
```

```
UPDATE table_name SET  
([column_name],[...column_name],...)  
VALUES ( [column_va  
lue],[..column_value]);
```

```
UPDATE borrowers SET sur_name='Sumona'  
WHERE id='102981';
```

INSERT

To insert data into MySQL table, you would need to use SQL **INSERT INTO** command.

```
INSERT INTO table_name ( field1, field2,  
...fieldN ) VALUES ( value1, value2,...valueN );
```

```
INSERT INTO borrowers (borrowers_title,  
sur_name, first_name) VALUES ("Ms", "Islam",  
'Sumona');
```


Transactional Control Language is used to manage different transactions occurring within a database.

Examples: COMMIT, ROLLBACK
statements

These two keywords **Commit** and **Rollback** are mainly used for MySQL Transactions.

- When a successful transaction is completed, the COMMIT command should be issued so that the changes to all involved tables will take effect.
- If a failure occurs, a ROLLBACK command should be issued to return every table referenced in the transaction to its previous state.

```
START TRANSACTION; SELECT @A:=SUM(salary)
FROM table1 WHERE type=1; UPDATE table2 SET
summary=@A WHERE type=1; COMMIT;
```

```
START TRANSACTION [WITH CONSISTENT
SNAPSHOT] | BEGIN [WORK] COMMIT
ROLLBACK SET autocommit = {0 | 1}
```

Data Control Language is used to create roles, permissions, and referential integrity as well it is used to control access to database by securing it.

Examples:

GRANT, REVOKE statements

```
grant all privileges on koha.* to 'kohaadmin'@'localhost'  
identified by 'your_kohaadmin_password';
```

```
revoke all privileges on koha.* to 'kohaadmin'@'localhost'  
identified by 'your_kohaadmin_password';
```

More commands

Describe

Show

Set

mysqldump

Database Backup & restore

The following use to take backup MySQL database:

```
mysqldump -u root -p koha >/home/koha/Desktop/koha.sql
```

To restore the database use the following command:

```
mysql -u root -p koha </home/koha/Desktop/koha.sql
```

Useful sites

- <http://www.mysql.org/>
- <http://www.mysql.org/documentation>
- http://www.devshed.com/Server_Side/MySQL



