



HEXWARE

MySQL- DDL



Course Objective

- To create ,drop and alter the tables in MySQL Database.
- To implement constraints in table while creating or altering the table.

Session Objective

- DDL – create, alter, drop & truncate.
- Constraints and its types.

An abstract graphic of glowing blue circuit lines and nodes on a dark blue background, extending from the bottom left towards the center.

Database



Commercial Data Bases



MySQL Introduction

- MySQL is a database management system used for many small and big businesses.
- MySQL is developed, marketed and supported by MySQL AB - a Swedish company.
- MySQL is a open source database.
- MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase to a theoretical limit of 8 million terabytes (TB).

Database Client GUI

Database Client GUI
Workbench
Sequel Pro
HeidiSQL
SQLyog
SQLWave
DBTools Manager
MyDB Studio
Navicat for MySQL

Database Client GUI - Workbench

MySQL Workbench

SQL Editor (localhost - sakila)

Query 1

```
SELECT * FROM sakila.country;
```

100% 1:1

Filter: Q

country_id country last_update

1	Afghanistan	2006-02-15 ...
2	Algeria	2006-02-15 ...
3	American Samoa	2006-02-15 ...
4	Angola	2006-02-15 ...
5	Anguilla	2006-02-15 ...
6	Argentina	2006-02-15 ...
7	Armenia	2006-02-15 ...
8	Australia	2006-02-15 ...
9	Austria	2006-02-15 ...
10	Azerbaijan	2006-02-15 ...
11	Bahrain	2006-02-15 ...
12	Bangladesh	2006-02-15 ...
13	Belarus	2006-02-15 ...
14	Bolivia	2006-02-15 ...
15	Brazil	2006-02-15 ...
16	Brunei	2006-02-15 ...
17	Bulgaria	2006-02-15 ...
18	Cambodia	2006-02-15 ...

country 1

Apply Revert

Object Info Session

Table: country

Columns:

country_id	smallint(3) UNSIGNED PK, AI
country	varchar(50)
last_update	timestamp

Snippets

My Snippets

- select 1
- nested select select y, (select x as z from xxxxx)
- sel1 select (select 1)
- megaquery SELECT CAST(CONCAT(PIESNULL) ...
- trivial select x from x.y
- aggreg1 select avg(x) from x
- group_concat SELECT GROUP_CONCAT(FO...
- concat SELECT CAST(CONCAT(PIESNULL) ...
- if SELECT IF(1, 2, 3)
- subselect SELECT * FROM sample_table when...
- @@var select case when @@server_id > 1 ...
- join select a,b,c from tab1 left join tab...
- createproc create procedure p10 deterministic ...
- createtable CREATE TABLE t1 (t1_id SMALL...
- createtrigger

Action Output

	Time	Action	Response	Duration / Fetch Time
1	12:59:10	SELECT * FROM sakila.country LIMIT 0, 1000	109 row(s) returned	0.032 sec / 0.000 sec

Show Database

```
mysql> SHOW DATABASES;
```

Database
mysql
test

2 rows in set (0.13 sec)

Show databases command
Display all database
instances in MySQL
database

Create Database

You can create and drop a MySQL database instance by using My SQL Workbench by using the command

Create Database:

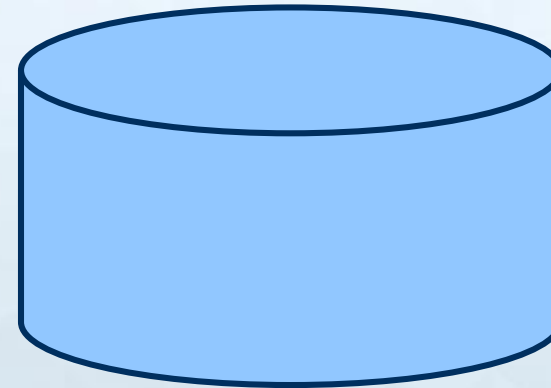
→ Create database <<Database Name >>

Create database Training

Drop Database :

→ Drop Database <<Database Name >>

Drop database Training



An abstract graphic of glowing blue circuit lines and nodes on a dark blue background, extending from the bottom left towards the center.

DDL Statement



DDL

- DDL is short name of Data Definition Language.
- DDL deals with database schemas like table.

DDL Commands

- CREATE – create the structure of a data base object (ex: table).
- ALTER – alters the structure of the existing database.
- DROP – delete objects from the database.
- TRUNCATE – remove all records from a table, including all spaces allocated for the records are removed.

Create Table

- CREATE TABLE Table_Name (column_specifications)
- Example

```
CREATE TABLE student
(  
  student_ID INT UNSIGNED NOT NULL,  
  name      VARCHAR(20) NOT NULL,  
  major     VARCHAR(50),  
  grade     VARCHAR(5)  
);
```

✓	6	14:27:28	CREATE TABLE student (student_ID INT UNSIGNED NOT NULL, name VA...	0 row(s) affected	0.203 sec
---	---	----------	---	-------------------	-----------


Display Table Structure

- **show tables** : command display the tables from current database
`SHOW tables;`

Result Grid		Filter Rows: <input type="text"/>	Export: 	Wrap Cell Content: 
Tables_in_sampledb				
student				
employee				


- **describe** : command display the structure of the table
`DESCRIBE student; / DESC student;`

Result Grid




Filter Rows:

Export:



Wrap Cell Content:



	Field	Type	Null	Key	Default	Extra
	student ID	int(10) unsigned	NO		NULL	
	name	varchar(20)	NO		NULL	
	maior	varchar(50)	YES		NULL	
	grade	varchar(5)	YES		NULL	




Modify Table Structure

- alter the existing structure of the table

```
ALTER TABLE student ADD PRIMARY KEY (student_ID);
```

✓ 15 14:35:59 alter table student add primary key (student... 0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0

```
DESCRIBE student;
```

Result Grid  Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 						
	Field	Type	Null	Key	Default	Extra
	student ID	int(10) unsigned	NO	PRI	NULL	
	name	varchar(20)	NO		NULL	
	maior	varchar(50)	YES		NULL	
	grade	varchar(5)	YES		NULL	

Drop

Syntax:

`DROP TABLE table_name;`

Example

`DROP TABLE student;`

✓	23	14:42:19	drop table student	0 row(s) affected
✗	24	14:42:22	SELECT * FROM student LIMIT 0, 1000	Error Code: 1146. Table 'sampledb.student' doesn't exist

Truncate

Syntax : TRUNCATE TABLE table_name;

Example:

TRUNCATE TABLE student

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

	student_ID	name	major	grade
--	------------	------	-------	-------

student 9

Output

Action Output

#	Time	Action	Message
26	14:44:41	Truncate table student	0 row(s) affected
27	14:44:45	SELECT * FROM student LIMIT 0, 1000	0 row(s) returned



Difference
Between
drop and
truncate

An abstract graphic of glowing blue circuit lines and nodes on a dark blue background, extending from the bottom left towards the center.

Constraints



What are Constraints?

- Constraints enforce rules at the table level.
- Constraints prevent the deletion of a table if there are dependencies.

The following constraint types are valid:

- **NOT NULL**
- **UNIQUE**
- **PRIMARY KEY**
- **FOREIGN KEY**
- **DEFAULT**

Defining Constraints




Syntax:

```
CREATE TABLE [schema.]table  
(column datatype [DEFAULT expr]  
[column_constraint],  
...  
[table_constraint][,...]);  
  
);
```

Example:

```
CREATE TABLE employees(  
    emp_id VARCHAR(8) NOT NULL ,  
    emp_name VARCHAR(50) NOT NULL,  
    CONSTRAINT PRIMARY KEY (emp_id)  
);
```

✓ 57 15:20:24 CREATE TABLE employees(emp_id varchar(8) NOT NULL , ... 0 row(s) affected

Result Grid  Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 						
	Field	Type	Null	Key	Default	Extra
	emp id	varchar(8)	NO	PRI	NULL	
	emp name	varchar(50)	NO		NULL	

The NOT NULL Constraint

- The NOT NULL Constraint Ensures that null values are not permitted for the column
- The NOT NULL constraint can be specified only at the column level, not at the table level.

Example:

```
CREATE TABLE employee (    id INT,  
                             last_name VARCHAR(255) NOT NULL,  
                             salary DOUBLE(5,2),  
                             hire_date DATE NOT NULL  
                             );
```

60 15:22:37 CREATE TABLE employee (id INT, last_name VARCHAR(255) NO... 0 row(s) affected

Field	Type	Null	Key	Default	Extra
id	int(11)	YES		NULL	
last name	varchar(255)	NO		NULL	
salary	double(5.2)	YES		NULL	
hire date	date	NO		NULL	

The UNIQUE Constraint

- A UNIQUE key integrity constraint requires that every value in a column or set of columns (key) be unique
- Defined at either the table level or the column level

Example:



CREATE TABLE employees(

```
    employee_id INT(6),  
    last_name VARCHAR(25) NOT NULL,  
    email VARCHAR(25),  
    salary DOUBLE(8,2),  
    commission_pct DOUBLE(2,2),  
    hire_date DATE NOT NULL,  
    CONSTRAINT emp_email_uk UNIQUE(email)
```

);

✓ 63 15:25:03 CREATE TABLE employees(employee_id INT(6), last_name VARCHAR... 0 row(s) affected

Contd..

Result Grid  Filter Rows: <input type="text"/> Export: 					
	Field	Type	Null	Key	Default
	employee id	int(6)	YES		NULL
	last name	varchar(25)	NO		NULL
	email	varchar(25)	YES	UNI	NULL
	salary	double(8.2)	YES		NULL
	commission pct	double(2.2)	YES		NULL
	hire date	date	NO		NULL

The PRIMARY KEY Constraint

- A PRIMARY KEY constraint creates a primary key for the table
- Defined at either the table level or the column level

Example:

```
CREATE TABLE departments(  
    department_id INT(4),  
    department_name VARCHAR(30) NOT NULL,  
    manager_id INT(6),  
    location_id INT(4),  
    CONSTRAINT dept_id_pk PRIMARY KEY(department_id)  
);
```

✓	68	15:29:15	CREATE TABLE departments(department_id INT(4), department_name ...	0 row(s) affected
---	----	----------	---	-------------------

Contd..

	Field	Type	Null	Key	Default
	department id	int(4)	NO	PRI	NULL
	department name	varchar(30)	NO		NULL
	manager id	int(6)	YES		NULL
	location id	int(4)	YES		NULL

The FOREIGN KEY Constraint



- The FOREIGN KEY, or referential integrity constraint, designates a column or combination of columns as a foreign key and establishes a relationship between a primary key or a unique key in the same table or a different table.

Example:

CREATE TABLE employees(

```
    employee_id INT(6),  
    last_name VARCHAR(25) NOT NULL,  
    email VARCHAR(25),  
    salary DOUBLE(8,2),  
    commission_pct DOUBLE(2,2),  
    hire_date DATE NOT NULL,  
    department_id INT(4),
```

```
    CONSTRAINT emp_dept_fk FOREIGN KEY (department_id)  
    REFERENCES departments(department_id),  
    CONSTRAINT emp_email_uk UNIQUE(email)  
);
```



71 15:32:26 CREATE TABLE employees(employee_id INT(6), last_name VARCHAR... 0 row(s) affected

Contd..

	Field	Type	Null	Key	Default
	employee id	int(6)	YES		NULL
	last name	varchar(25)	NO		NULL
	email	varchar(25)	YES	UNI	NULL
	salary	double(8,2)	YES		NULL
	commission pct	double(2,2)	YES		NULL
	hire date	date	NO		NULL
	department id	int(4)	YES	MUL	NULL

FOREIGN KEY Constraint Keywords

- **FOREIGN KEY:** Defines the column in the child table at the table constraint level
- **REFERENCES:** Identifies the table and column in the parent table
- **ON DELETE CASCADE:** Deletes the dependent rows in the child table when a row in the parent table is deleted.
- **ON DELETE SET NULL:** Converts dependent foreign key values to null

Default constraint



- DEFAULT is used to set a default value for a column .
- Can be implemented using DEFAULT default_value where default_value is the default value set to the column.

```
CREATE TABLE employees(  
    emp_id varchar(8) NOT NULL UNIQUE DEFAULT '',  
    emp_name varchar(50) NOT NULL,  
    emp_city varchar(25) NOT NULL ,  
    country varchar(25) NOT NULL DEFAULT 'India',  
    PRIMARY KEY (emp_id));
```







75 15:36:10 CREATE TABLE employees (emp_id varchar(8) NOT NULL UNIQUE D... 0 row(s) affected

```
INSERT INTO employees(emp_id,emp_name,emp_city,country) VALUES('20302','Rahul','NEWYORK','US');  
INSERT INTO employees(emp_id,emp_name,emp_city) VALUES('20304','Rohit','Mumbai');  
  
SELECT * FROM employees;
```

Result Grid   Filter Rows: <input type="text"/> Edit:					
	emp_id	emp_name	emp_city	country	doj
	20302	Rahul	NEWYORK	US	NULL
	20304	Rohit	Mumbai	India	NULL
	NULL	NULL	NULL	NULL	NULL

List constraints

```
SELECT column_name,constraint_name,referenced_column_name,referenced_table_name
FROM information_schema.KEY_COLUMN_USAGE
where TABLE_NAME='employees'
```

Result Grid   Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 				
	column_name	constraint_name	referenced_column_name	referenced_table_name
	emp id	PRIMARY	NULL	NULL
	emp id	emp id	NULL	NULL
	email	emp_email_uk	NULL	NULL
	department id	emp_dept_fk	department id	departments
	employee id	PRIMARY	NULL	NULL
	email	emp_email_uk	NULL	NULL
	department id	emp_dept_fk	department id	departments

Adding a Constraint Syntax

Use the ALTER TABLE statement to:

- Add or drop a constraint, but not modify its structure
- Enable or disable constraints
- Add a NOT NULL constraint by using the MODIFY Clause

Syntax

```
ALTER TABLE table  
ADD [CONSTRAINT constraint] type (column);
```

Adding a Constraint

- Add a FOREIGN KEY constraint to the Orders table indicating that a person must be a valid user in the Persons table.

Example:

```
ALTER TABLE Orders  
ADD CONSTRAINT FK_PersonOrder FOREIGN KEY (PersonID)  
REFERENCES Persons(PersonID);
```

✓	116	16:17:14	ALTER TABLE Orders ADD CONSTRAINT FK_PersonOrder FOREIGN KEY (PersonID) REFERENCES Persons(PersonID);	0 row(s) affected	Records: 0	Duplicates: 0	Warnings: 0
---	-----	----------	---	-------------------	------------	---------------	-------------

Dropping a Constraint

- Remove the fk_PersonOrder constraint from the Orders table.

Example:

```
ALTER TABLE Orders  
DROP FOREIGN KEY FK_PersonOrder;
```

✓	118	16:20:06	ALTER TABLE Orders DROP FOREIGN KEY F...	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0
---	-----	----------	--	--

- Remove the PRIMARY KEY constraint on the DEPARTMENTS

Example:

```
ALTER TABLE departments  
DROP PRIMARY KEY;
```



Gamification

Objective:

To make the participants familiarize with tables, fields and keys through activity.



Microsoft Word
Document

Assignment

1. DDL



Microsoft Word
Document

2. Constraints



Microsoft Word
Document



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Delighted Customers

Thank you

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