Skill Pill: Database Manipulation

Session 3 - DB creation and manipulation with SQL
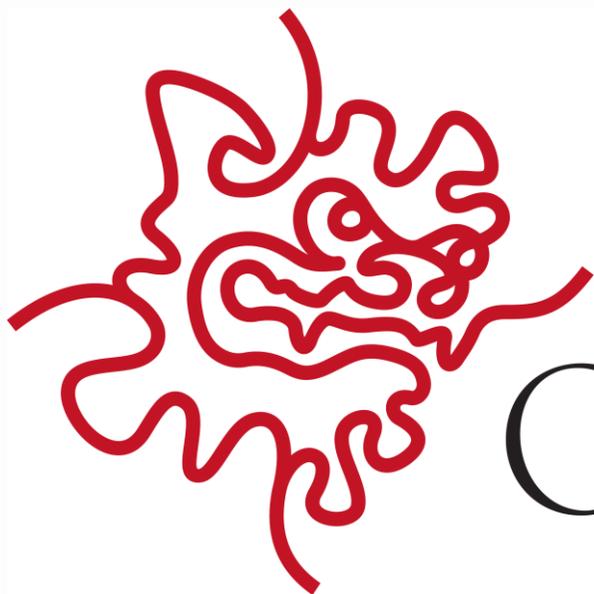
SKILLPILLS

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- ## Access Skill Pill MySQL server via terminal

  ```
  $ mysql -u userX -p -h localhost
  ```

- ## Check what databases exist in DB

  ```
  > SHOW DATABASES [LIKE 'pattern' | WHERE expr];
  ```

- ## Try the following:

  ```
  > SHOW DATABASES;

  > SHOW DATABASES LIKE 'user%'

  > SHOW DATABASE WHERE `Database` LIKE 'user%' or
  `Database` LIKE '%schema'
  ```

- ## Default MySQL DBs

  ```
  > information_schema, performance_schema, mysql
  ```

**CREATE DATABASE [IF NOT EXISTS] database_name
[CHARACTER SET charset] [COLLATE collation]**

```
> CREATE DATABASE students;
> CREATE DATABASE IF NOT EXISTS students;
```

Character set is a set of symbols and encoding while collation dictates rules for character comparison for sorting.

Character	ISO-8859-15 or Latin-9 (hex)	UTF-8 (hex)
¥	0xa5	0xc2a5

```
> SELECT * FROM information_schema.SCHEMATA;

> CREATE DATABASE IF NOT EXISTS teachers CHARACTER
SET utf8 COLLATE utf_general_ci;
```

ALTER **DATABASE database_name [CHARACTER SET charset] [COLLATE collation]**

```
> ALTER DATABASE students CHARACTER SET utf8
COLLATE utf8_general_ci;
> ALTER DATABASE students CHARACTER SET latin1;
> SELECT * FROM information_schema.SCHEMATA;
```

DROP **DATABASE database_name**

```
> DROP DATABASE students;
> SELECT * FROM information_schema.SCHEMATA;
> SHOW DATABASES;
> DROP DATABASE teachers;
```

Create Table

```
CREATE TABLE [IF NOT EXISTS] table_name(
    field1 type1 [NOT NULL|NULL] [DEFAULT val],
    field2 type2 [NOT NULL|NULL] [DEFAULT val],
    …,
    PRIMARY KEY (field1,field2));
```

Recall: `DESCRIBE table_name;`

`column_name` – name of the column, e.g. studentID

`data_type[size]` – data type & size of values, e.g. VARCHAR(6)

`[NOT NULL|NULL]` – indicates if column accepts NULL value

`[DEFAULT value]` – specify a default value

`[AUTO_INCREMENT]` – column value is increased automatically when a new row is inserted (Note: Each table has only 1 auto_increment column)

Sample table creation for student list

```
CREATE TABLE IF NOT EXISTS students (
    studentID INT(2) NOT NULL AUTO_INCREMENT,
    lastName VARCHAR(15) NOT NULL DEFAULT ' ',
    givenName VARCHAR(10) NOT NULL DEFAULT ' ',
    thesisUnit VARCHAR(50) DEFAULT NULL,
    birthDate DATE DEFAULT NULL,
    country CHAR(10) NULL DEFAULT ' ',
    PRIMARY KEY (studentID)
);
```

Try: Include class year and count students per class year.

Alter Table

ALTER TABLE table_name action1[,action2,…];

rename table

old_table_name RENAME (TO) new_table_name

modify/change field

MODIFY field1 type1 …;

CHANGE COLUMN field1 field11 type1 …;

add/drop field

ADD COLUMN field1 type1 … [FIRST|AFTER field2];

DROP COLUMN field1;

add primary key

ADD PRIMARY KEY field2;

```
INSERT INTO table_name (field list)
    VALUES (value list);

INSERT table_name SET field1 = value1, …;

LOAD DATA INFILE '/tmp/students.txt' INTO
TABLE table_name FIELDS TERMINATED BY '\t'
ESCAPED BY '\n';
```

Example:

```
INSERT INTO students (studentID, lastName,
givenName, thesisUnit, birthDate, country) VALUES
(1,'Esporlas','Cindy',NULL,DATE(19881014),'PH');
```

```
UPDATE table_name
    SET field1=value11,… WHERE condition;


UPDATE table1 t1, table2 t1
    SET field1=value11, field2=value22,…
    WHERE t1.id1 = t2.id2 and …;


DELETE FROM table_name WHERE condition;
    SET field1=value11,… WHERE condition;


DELETE FROM table1 t1, table2 t1
    WHERE t1.id1 = t2.id2 and …;
```