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Database:

In small cases we store data in form of list, tuple, dict, or set or in local files.

But in ideal situation when we are doing data wise transactions that time we have to store data in a database to build fresh applications.

Types of database

SQL based

database

(some companies made their own tools like -)

→ MySQL (by MySQL)

→ MSSQL (by Microsoft)

DB2 (by IBM)

NoSQL

(here everything belong to noSQL has their own syntax)

→ MongoDB ← this first syllable

→ Cassandra

→ Hbase

→ inflex

→ Neo4j

SQL:

- (1) Data stored in SQL is always in structured format just like excel sheet.
- (2) In SQL we store data in database. For this we create database by using commands then we create ^{Tables & then} columns, defines datatype of that column. just like folder in jupyter notebook.

How to create database in SQL:

- ① Open - MySQL + Python tab
- ② click (+) button present in right side of our SQL IP address.
- ③ sample code will generate
- ④ Give database name and click on Execute button present above.
eg: ▶ Execute CREATE DATABASE test2 ← command to create database

Note:

① Data type VARCHAR - for string values.

Note:

When we try to recreate the database or table which is already present we get error (that is).

How to create table in created database:

④ Click on database created. It will show like:

✓ test

 ✗ Tables

 > Views

 > Procedures

 > Functions

② Click on table (+) button

③ To create table following is command:

CREATE TABLE (table_name) ((column_name) (datatype
of colⁿ), ...)

Eg;

CREATE TABLE test-table (c1 INT, c2 VARCHAR,
c3 INT, c4 FLOAT)

④ Click on Execute button. You will see table created at left side.

⑤ By clicking on side we see column names with datatypes.

⑥ To add columns now click (+) button present right at column.

⑦ When we want to add column we can add by clicking (+) blue button present right side.

* ⑧ To create the same table available in another database just write database (in which you want that table). (tablename) in another database. (i.e. append database name).

Eg: CREATE TABLE IF NOT EXISTS test. test-table (c1 INT
c2 FLOAT);

Table, or database is already created) to avoid that message write (if not exist) before table name, then system will create it if not exists otherwise it will not do anything. e.g.: `CREATE DATABASE IF NOT EXISTS test;`

* How we can do these commands using python.

- ① For this python provides a library from that we can connect database and do modification in that.
- ② Go to explorer and click on 'demo.py'. This will give you code.
- ③ `import mysql.connector` < This library is responsible to establish connection. (before SQL database & python)
- ④ If we are doing this in local this will not work because this lab is hosted on cloud. If you want to do this in local take that data which is globally available database i.e. global database which exposed to the outside world otherwise install mysql in local then you can call it.
- ⑤ We are doing it in pwskills so "import.mysql.connector" library is already installed but in local we should install it.
- ⑥ By clicking on 'demo.py' this will give us:

```
import mysql.connector  
# Import mysql.connector  
# Create user 'user'@'%' Identified by 'password'  
mydb = mysql.connector.connect(  
    host = "localhost",  
    user = "abc",  
    password = "password")  
print(mydb)  
mycursor = mydb.cursor()  
mycursor.execute("SHOW DATABASES")  
for x in mycursor:  
    print(x)
```

(connection
string)

These
are
commonly
used in
every
program.

Though this
object
can execute
queries.

In industry:

If you go in industry. There if someone says you that they want to 'communicate with python code'. The admin team will give you URL of host (where it is hosted if may be hosted on cloud or somewhere else) that time you just replace this URL with that URL. and this admin will give you your userid & password just write that in this.

In industry same is procedure just you have to change host, user, & password with whatever they give then it done.

Output of written code: (This will give databases available)

```
(mysql.connector.connection_context.CMySQLConnection object at 0x7f51980b1730>
('information-schema')
('mysql')
('performance-schema')
('sys')
('test')
('test1')
('test2'))
```

* To create database using python:

```
import mysql.connector
mydb = mysql.connector.connect(
    host = "localhost"
    user = "abc"
    password = "password")
```

```
mycursor = mydb.cursor()  
mycursor.execute("CREATE DATABASE IF NOT EXISTS  
test2")  
mydb.close()
```

- ① First create a file in explorer & give name and save with (.py) extension.
- ② Write command to execute & create database.
command is: "CREATE DATABASE if not exists
(name of database)".
- ③ Then right click and execute i.e. (run code).

* To create table in database:
command: "CREATE TABLE test2.test2_table (c1
INT, c2 FLOAT)"
i.e.
"(CREATE TABLE (name of database). (name of table)
(columns name) (datatype), ...)

* Every thing in code is same just replace
command in mycursor.execute(" ") .

* To insert data in table:
command: "insert into (database name). (table
name) values (give values according to no
of col's & their datatype)"

eg:

```
mycursor.execute("insert into test2.test2_table  
values (12, 'sanjana', 2.2)
```

mydb.commit() ← while inserting data we should
always commit the data.
mydb.close.

* Query (to check / search data is entered):-

command:

To select + get all data → mycursor.execute ("select * from (name of database). (tablename)")

To specific data → mycursor.execute ("select (column name that you want to select) From test2.test2-table")

To get all data → ① mycursor.execute ("select * From test2.test2-table")
For i in mycursor.fetchall():
print(i)
mydb.close()

To get specific data → ② mycursor.execute ("select c1, c2, c3 from test2. test2-table")
For i in mycursor.fetchall():
print(i)
mydb.close()