

# SQL

- Install RDBMS, DBeaver and connectors
- Create Database and table
- Insert data and query table
- SQL Filter
- Database operations from Python

# Installation

- Postgres: <https://www.enterprisedb.com/downloads/postgres-postgresql-downloads>
- DBeaver: <https://dbeaver.io/download/>
- `pip install psycopg2-binary`
- Open DBeaver and add connection for your database

# Database

- Holds collection of the tables. You can think Database as Excel File and Tables as each sheet in an Excel file
- Table stores data in tabular form similar to the excel. It has rows and columns.
- You can create a new database with command : **CREATE DATABASE {database\_name};**
- For creating table, you need to connect to that database and run command to create it

# Create Table

```
CREATE TABLE {table_name} (  
    {column_name} {data_type}, -- Constraints  
    ....,  
    ....);
```

## Common Data Types

- Int, serial
- float
- varchar
- text

# Add Data

```
INSERT INTO table_name(col_1, col_2) VALUES  
( 'a', '1' ), ( 'b', '2' );
```

```
SELECT  
    col_1  
    , col_2  
FROM table_name;
```

# Filter

- Give only the result that matches the filter provided by user
- We can combine filter with **AND** / **OR**

```
SELECT
```

```
    *
```

```
FROM table
```

```
WHERE col_1 = 'a'
```

```
    AND col_2 = '1';
```

# UPDATE

- Used to update existing record of table using filter condition
- We can combine filter with **AND** / **OR**

UPDATE table

SET col\_1 = val\_1

WHERE col\_1 = 'a'

AND col\_2 = '1';

# DELETE

- Used to remove record from table
- We can combine filter with **AND** / **OR**

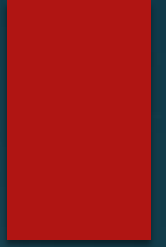
DELETE FROM table

WHERE col\_1 = 'a'

AND col\_2 = '1';



# SQL in Python



```
import psycopg2
from psycopg2.extras import RealDictCursor

conn = psycopg2.connect(dbname='', user='postgres', password='Rabindra', host='localhost',
port=5432)

cur = conn.cursor() # cursor_factory=RealDictCursor for dict

cur.execute(SQL_QUERY)

db_results = cur.fetchall()

for db_record in db_results:
    print(db_record)

cur.close()
conn.close()
```

# Add Record

```
import psycopgp

conn = psycopgp.connect(dbname='', user='postgres', password='Rabindra',
host='localhost', port=5432)

cur = conn.cursor()

data = [("Alice", "alice@example.com"), ("Bob", "bob@example.com")]

cur.executemany("INSERT INTO your_table (name, email) VALUES (%s, %s)", data)

conn.commit()

cur.close()
conn.close()
```



# Exercise