Database Programming

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Reading file in Python

There are several files that can be read in the Python.

You have learned:

- *CSV*
- *Excel*
- *Text*

Text File in Python

Terdapat beberapa mode dalam mengeksekusi file text di dalam Python

Character	Meaning
`'r'`	open for reading (default)
`'w'`	open for writing, truncating the file first
`'x'`	open for exclusive creation, failing if the file already exists
`'a'`	open for writing, appending to the end of file if it exists
`'b'`	binary mode
`'t'`	text mode (default)
`'+'`	open for updating (reading and writing)

source: *Python Docs*

Membuat file text di Python

```
# Writing text in python
with open('untitled.txt', 'w') as writer:
  writer.write('Welcome back to my channel')
```

```
['Welcome back to my channel']
```

Execute text file

```
path = '/content/saham.txt'
```

Dalam membuka file text

```
# reading all text in file text
with open(path, 'r') as text_file:
  print(text_file.readlines())
```

```
['Saham (stock) merupakan salah satu instrumen pasar keuangan yang paling popular.
```

Menambahkan text pada existing file

```
# appending text into the existing file
with open(path, 'a') as text_file:
  text_file.write("\nDigital Skola Batch 11")
```

```
# show the result
with open(path, 'r') as text_file:
  for line in text_file:
    print(line, end="")
```

```
Saham (stock) merupakan salah satu instrumen pasar keuangan yang paling popular.

Saham dapat didefinisikan sebagai tanda penyertaan modal seseorang atau pihak (ba
Digital Skola Batch 11
```

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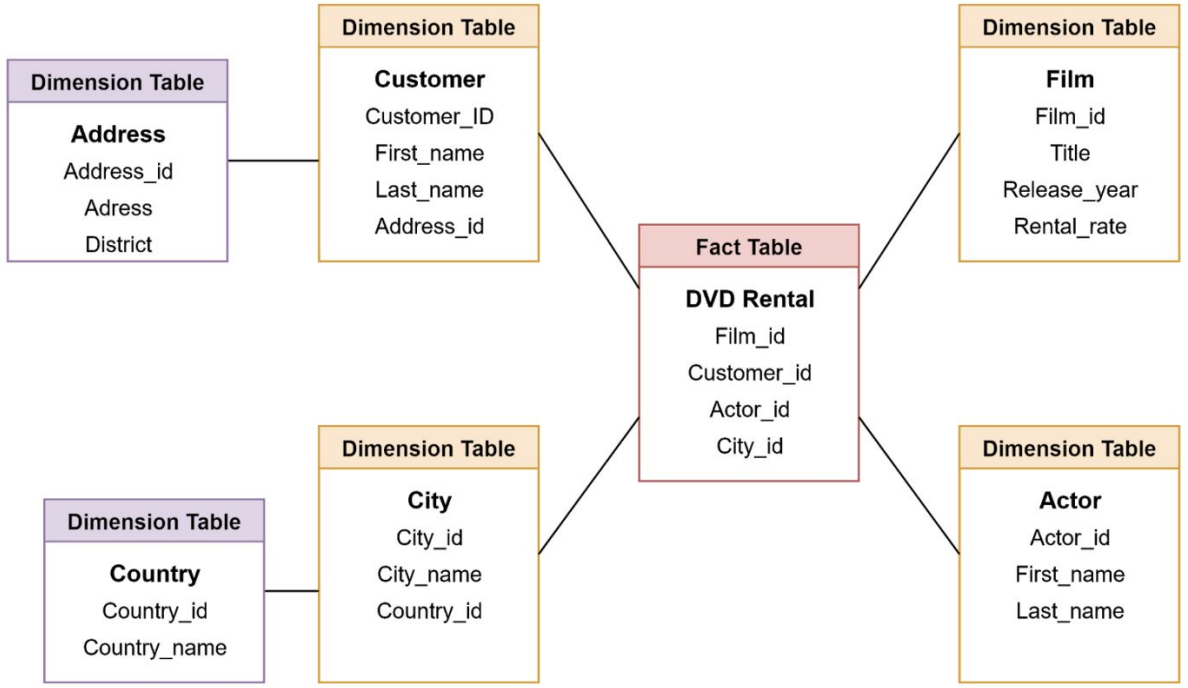
Database Programming



source: *Introduction of Data Modeling in Your Data Career*

Put Postgre to Python

Psycopg library, adaptor database postgreSQL untuk digunakan di dalam pemrograman Python

```
!pip install psycopg2
```

What needs to be prepared?

Siapkan dulu alat-alat dan bahan untuk keperluan ~~masak~~ database programming

Cloud server yg terkoneksi dengan PostgreSQL:

host: digitalskoladb.c04me33o8tni.ap-southeast-1.rds.amazonaws.com

database: sandbox

Your access:

User Admin: **********

Password: **********

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Connect your database

Connect first

```
conn = psycopg2.connect(
          host = "digitalskoladb.c04me33o8tni.ap-southeast-1.rds.amazonaws.com",
          database = "sandbox",
          user = "**********",
          password = "**********")
```

Store the database table menggunakan cursor (Temporary Memory)

```
cur = conn.cursor()
```

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Result of query

Execute query and read the result in pandas dataframe

```
sql = """SELECT * FROM batch_11.cb_stations"""
data = pd.read_sql_query(sql, conn)
data.head()
```

	station_id	name	short_name	latitude	longitude	region_id	rental_methods	capacity	eightd_has_key_dispenser	r
0	128	MacDougal St & Prince St	5687.04	40.727104	-74.002970	71.0	CREDITCARD,KEY	0	False	
1	224	Spruce St & Nassau St	5137.10	40.711464	-74.005520	71.0	CREDITCARD,KEY	0	False	
2	229	Great Jones St	5636.11	40.727436	-73.993790	71.0	CREDITCARD,KEY	0	False	
3	410	Suffolk St & Stanton St	5445.02	40.720665	-73.985176	71.0	CREDITCARD,KEY	0	False	
4	434	9 Ave & W 18 St	6190.08	40.743176	-74.003660	71.0	CREDITCARD,KEY	0	False	

Make it more challenging

Use Common Table Expression (CTE) (data1)

```
sql = """WITH TABS AS
              (SELECT *
               FROM batch_11.cb_trips
              )

         SELECT *
         from TABS"""
data = pd.read_sql_query(sql, conn)
data.head()
```

CTE more challenging (data2)

```
sql = """WITH TABS AS
              (SELECT b.tripduration, a.name as station_name, b.starttime
               FROM batch_11.cb_stations as a
               JOIN batch_11.cb_trips as b
               on a.station_id = b.end_station_id)

         SELECT station_name, sum(tripduration) as total_trip_duration
         from TABS
         where station_name like '%Clermont%'
         group by 1
         having sum(tripduration) < 3000000
         """
data2 = pd.read_sql_query(sql, conn)
data2.head(7)
```

Applied Data Wrangling

Sekarang saatnya memanggil the almighty pandas

untuk melakukan pengolahan data

Pengolahan data menggunakan pandas

Exercise 1

Lakukan query dan ambil table **cb_trips,** filter gender = 0 dan tripduration = 634 seconds. Buat output ke dalam pandas dan lakukan statation_start apa saja yang ada dan berapa banyak kemudian urutkan dari yang terbesar sampai terkecil

Exercise 2

Lakukan query dan ambil table **cb_trips,** filter end_station_name yang mengandung tulisan broadway (pastikan set lower di field-nya) dan ambil tripduration di bawah dari atau sama dengan 500 seconds. Buat output untuk mencari tau proporsi dari usertype dan tampilkan dalam visualisasi

Homework

CB_Stations X CB_trips

lakukan:

- Menggabungkan table cb_station dan cb_trips berdasarkan start_station_id
- Ambil hanya kolom name, region_id, rental_methods, tripduration
- Filter tripduration di atas 1 hari (satuan tripduration adalah second)
- Lakukan pivot table guna melihat station mana aja dan tunjukan rata-rata tripduration

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Thank YOU