

Day 80- 90 days of Analytics: Pandas with SQL

In today's video, we looked at pandas with SQL, we saw how we can connect to our SQL database using pandas

The following were mentioned

-SQLAlchemy is a popular SQL toolkit and Object Relational Mapper. It is written in Python and gives full power and flexibility of SQL to an application developer. It is an open source and cross-platform software released under MIT license.

-ORM (Object Relational Mapping) is a programming technique for converting data between incompatible type systems in object-oriented programming languages. Usually, the type system used in an Object Oriented (OO) language like Python contains non-scalar types. These cannot be expressed as primitive types such as integers and strings. Hence, the OO programmer has to convert objects in scalar data to interact with backend database. However, data types in most of the database products such as Oracle, MySQL, etc., are primary.

-To install sqlalchemy we use the command: `pip install sqlalchemy`

-Engine class connects a Pool and Dialect together to provide a source of database connectivity and behavior. An object of Engine class is instantiated using the `create_engine()` function.

-The `create_engine()` function takes the database as one argument. The database is not needed to be defined anywhere. The standard calling form has to send the URL as the first positional argument, usually a string that indicates database dialect and connection arguments. Example, using PyMySQL driver with MySQL

```
import pandas as pd
from sqlalchemy import create_engine
engine = create_engine("mysql+pymysql://root:MySQL@localhost:3306/company_ltd", echo = True)
```

-To read content of tables, we use the `read_sql_table()` method. Examples

```
stafftable = pd.read_sql_table("stafftable", engine)
customertable = pd.read_sql_table("customertable", engine)
```

-Questions can be answered using commands seen in previous videos. Example

- Number of staff: `len(stafftable["MatriculeNo"].unique())`
- Number of staff aged less than 30: `len(stafftable[stafftable["Age"]<30])`

-We can also insert new tables in the database. Example

```
df= pd.read_csv('auditors.csv')
df.to_sql('auditors', con=engine, if_exists='append', index=False)
```

Link to the YouTube Recording: <https://www.youtube.com/watch?v=9wDCrLNs0hE>

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