Data Engineering Zoomcamp Week 1 Homework

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Question 1. Knowing docker tags

Q: *Run the command to get information on Docker*

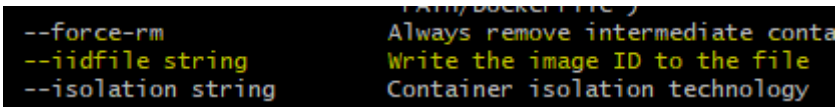
```*docker --help*```

Now run the command to get help on the "docker build" command

*Which tag has the following text? - *Write the image ID to the file**

- `*--imageid string*`
- `*--iidfile string*`
- `*--idimage string*`
- `*--idfile string*`

A: For this question I run the command “docker build –help” and saw that `*--iidfile string*` tag has the text “Write the image ID to the file”

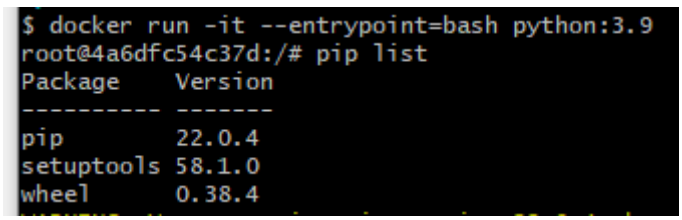


Question 2. Understanding docker first run

Q: *Run docker with the python:3.9 image in an interactive mode and the entrypoint of bash.*
Now check the python modules that are installed (use pip list).
How many python packages/modules are installed?

- *1*
- *6*
- *3*
- *7*

A: I run the command “docker run -it --entrypoint=bash python:3.9” which allowed me to run my next command, which is “pip list”. With this, I saw that there are 3 modules that are installed, as below;


```

Preparing Postgres

- First of all I run this command;

docker run -it -e POSTGRES_USER="root" -e POSTGRES_PASSWORD="root" -e POSTGRES_DB="ny_taxi" -v $(pwd)/ny_taxi_postgres_data:/var/lib/postgresql/data -p 5431:5432 postgres:13

- After it run successfully, I opened another terminal and used this command to connect;

pgcli -h localhost -p 5431 -u root -d ny_taxi

- In another terminal, I used these commands to get the data to the main folder;

wget https://github.com/DataTalksClub/nyc-tlc-data/releases/download/green/green_tripdata_2019-01.csv.gz

wget https://s3.amazonaws.com/nyc-tlc/misc/taxi+_zone_lookup.csv

- Then I opened a Jupyter Notebook, used pandas and sqlalchemy to read and upload the data to PostgreSQL. You can use this notebook in the homework files, as "upload-data.ipynb"

- For the next questions, I used pgcli to write SQL codes and get the correct answers.

Question 3. Count records

Q: *How many taxi trips were totally made on January 15?*

Tip: started and finished on 2019-01-15.

Remember that `lpep_pickup_datetime` and `lpep_dropoff_datetime` columns are in the format timestamp (date and hour+min+sec) and not in date.

- 20689
- 20530
- 17630
- 21090

A: 20530

```
root@localhost:ny_taxi> select count(1) from taxi_data td
where td.lpep_pickup_datetime >= '2019-01-15 00:00:00' and
 td.lpep_dropoff_datetime < '2019-01-16 00:00:00'
+-------+
| count |
|-------|
| 20530 |
+-------+
SELECT 1
Time: 0.058s
```

Question 4. Largest trip for each day

Q: *Which was the day with the largest trip distance*
Use the pick up time for your calculations.

- 2019-01-18
- 2019-01-28
- 2019-01-15
- 2019-01-10

A: 2019-01-15

```
root@localhost:ny_taxi> select lpep_pickup_datetime, max(trip_distance) as max_distance
  from taxi_data group by lpep_pickup_datetime order by max_distance desc limit 1
+---------------------+--------------+
| lpep_pickup_datetime | max_distance |
|---------------------+--------------|
| 2019-01-15 19:27:58  | 117.99       |
+---------------------+--------------+
SELECT 1
Time: 0.722s
```

Question 5. The number of passengers

Q: *In 2019-01-01 how many trips had 2 and 3 passengers?*

- 2: 1282 ; 3: 266
- 2: 1532 ; 3: 126
- 2: 1282 ; 3: 254
- 2: 1282 ; 3: 274

A: 2: 1282 ; 3: 254

```
root@localhost:ny_taxi> select passenger_count, count(1) from taxi_data where passenger_count
 in (2, 3) and (lpep_pickup_datetime between '2019-01-01 00:00:00' and '2019-01-02 00:00:00')
 group by passenger_count
+-----------------+-------+
| passenger_count | count |
|-----------------+-------|
| 2               | 1282  |
| 3               | 254   |
+-----------------+-------+
SELECT 2
Time: 0.049s
```

Question 6. Largest tip

Q: *For the passengers picked up in the Astoria Zone which was the drop off zone that had the largest tip? We want the name of the zone, not the id.*

Note: it's not a typo, it's `tip`, not `trip`

- Central Park
- Jamaica
- South Ozone Park
- Long Island City/Queens Plaza

A: Long Island City/Queens Plaza

```
root@localhost:ny_taxi> select lu."Zone", max(td."tip_amount") as max_tip from taxi_data td inner join
taxi_data_lu lu on td."DOLocationID" = lu."LocationID" where td."PULocationID" = (select distinct
  td."PULocationID" from taxi_data td inner join taxi_data_lu lu on td."PULocationID" = lu."LocationID"
 where lu."Zone" = 'Astoria') group by lu."Zone" order by max_tip desc limit 1
+------------------------------+---------+
| Zone                         | max_tip |
|------------------------------+---------|
| Long Island City/Queens Plaza | 88.0    |
+------------------------------+---------+
SELECT 1
Time: 0.088s
```