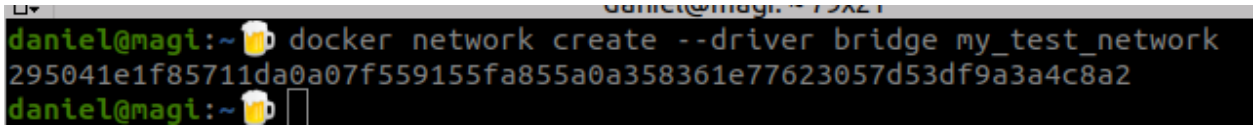
Daniel Josué Rodríguez Paiz
Carné 09001437
Product Development

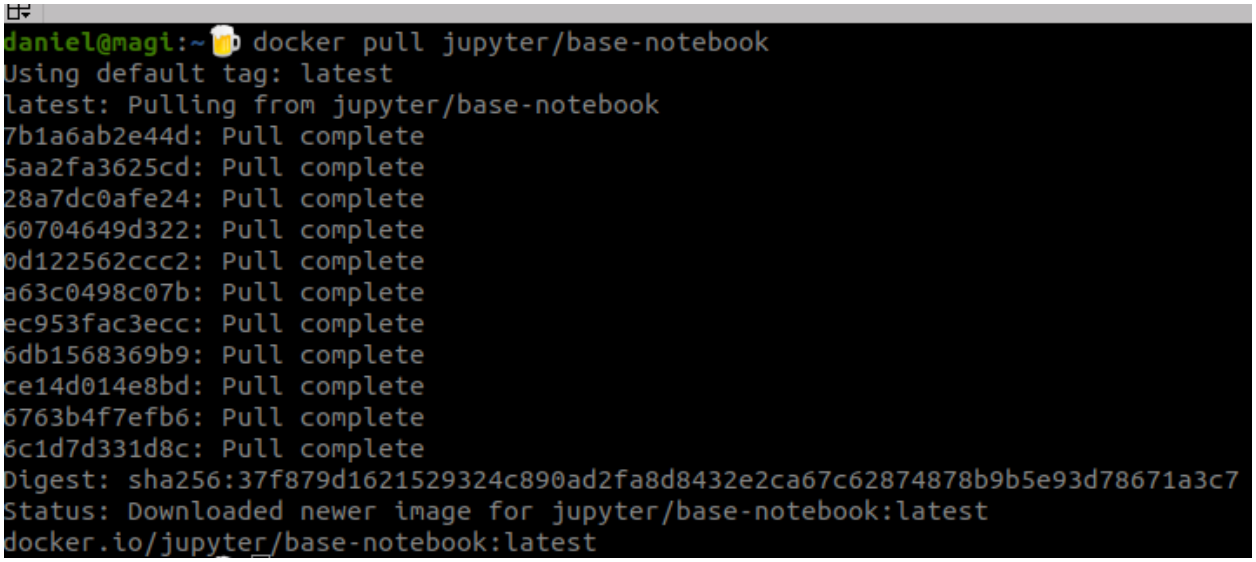
Docker y Docker Compose

Ejecutando contenedores con Docker

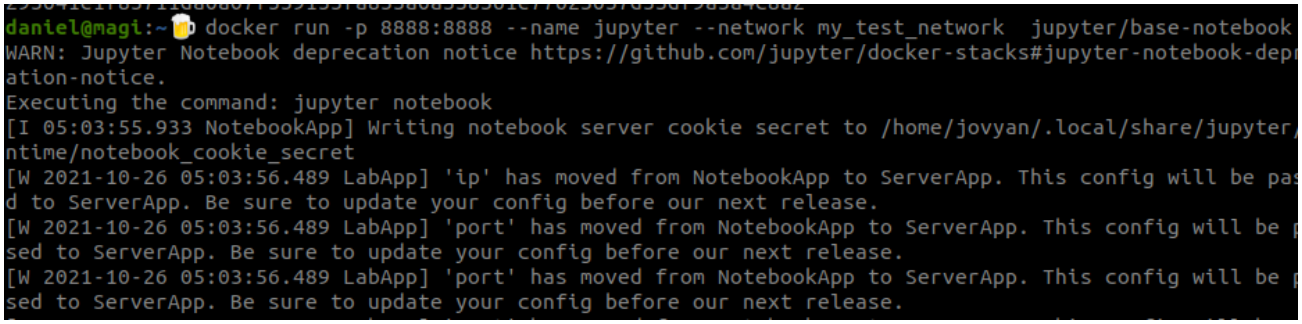
Creamos la red my_test_network



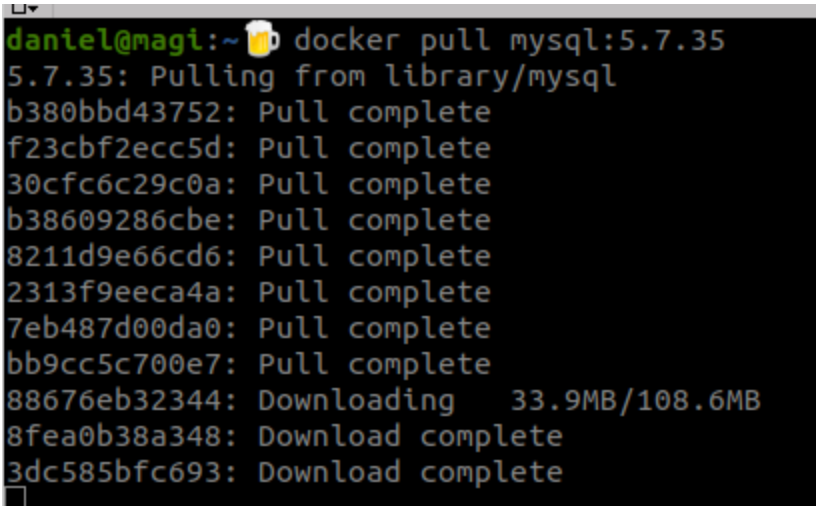
Hacemos pull de de imagen de Jupyter Notebook



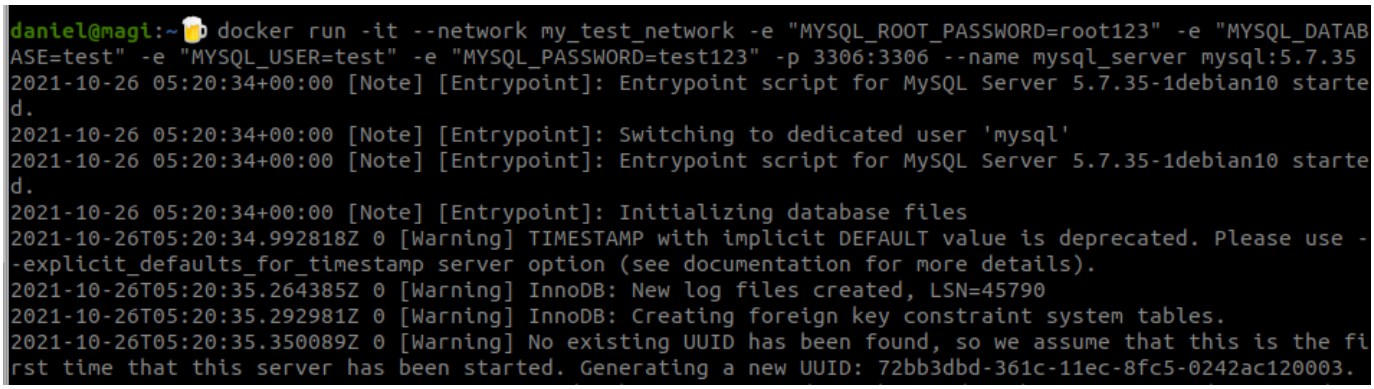
Corremos un contenedor de Jupyter en el puerto TCP 8888 y red my_test_network



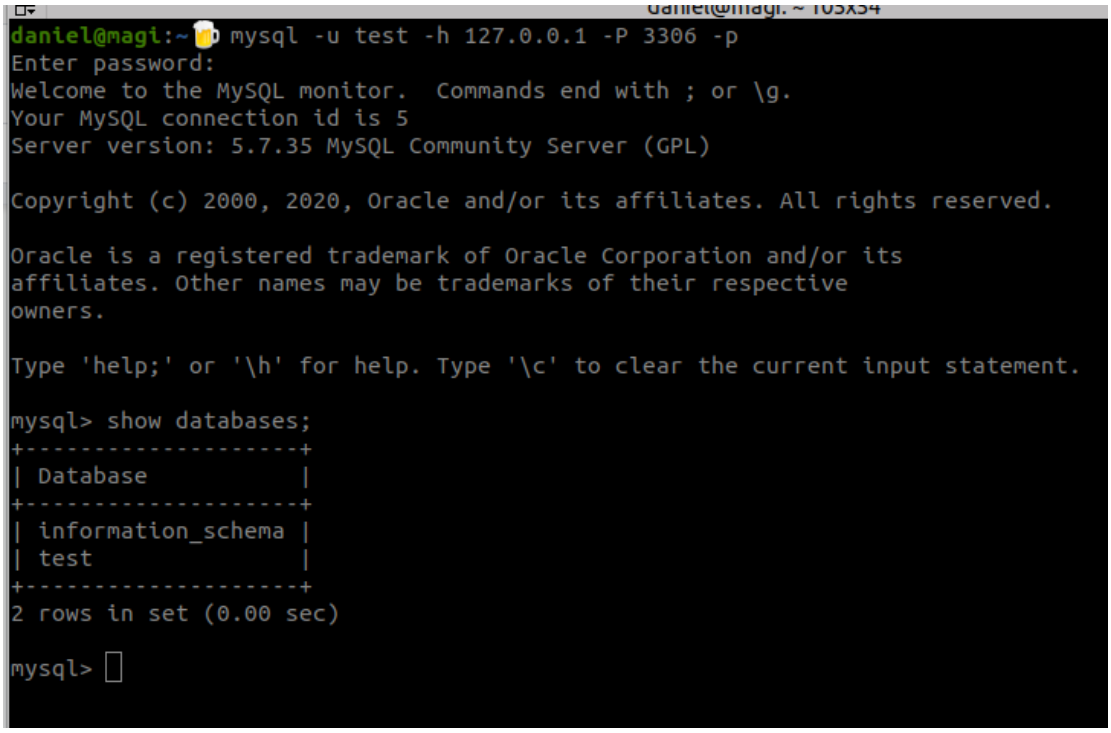
Hacemos pull de de imagen de MySQL versión 5.7.35



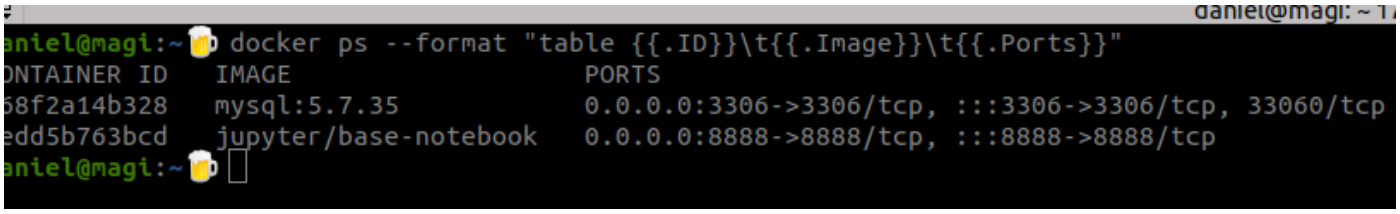
Creamos el contenedor de MySQL con las respectivas variables de entorno en el puerto TCP 3306 y red my_test_network



Probamos la conexión al servidor de MySQL desde el cliente de MySQL



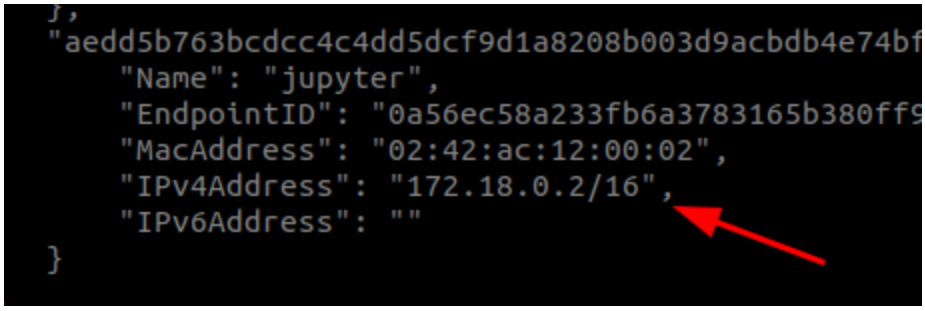
Validamos que ambos contenedores se encuentren corriendo con el comando **docker ps**



Instalamos mysql-connector en el contenedor de Jupyter

```
daniel@magi:~$ docker exec -it jupyter /bin/bash
(base) jovyan@aedd5b763bcd:~$ pip install mysql-connector-python
Collecting mysql-connector-python
  Downloading mysql_connector_python-8.0.27-1commercial-cp39-cp39-manylinux1_x86_64.whl (37.5 MB)
     |████████████████████████████████| 37.5 MB 336 kB/s
Collecting protobuf>=3.0.0
  Downloading protobuf-3.19.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.1 MB)
     |████████████████████████████████| 1.1 MB 3.8 MB/s
Installing collected packages: protobuf, mysql-connector-python
Successfully installed mysql-connector-python-8.0.27 protobuf-3.19.0
(base) jovyan@aedd5b763bcd:~$
```

Se confirma la IP del contenedor de MySQL con el comando **docker inspect my_test_network**



Probamos la conexión desde el contenedor de Jupyter hacia MySQL

In [1]:
```
from sqlalchemy import create_engine

source = create_engine('mysql+mysqlconnector://test:test123@172.18.0.3/test')
```

In [2]:
```
pip install pandas
```

```
Collecting pandas
  Downloading pandas-1.3.4-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.5 MB)
     |████████████████████████████████| 11.5 MB 3.7 MB/s
Requirement already satisfied: python-dateutil>=2.7.3 in /opt/conda/lib/python3.9/site-packages (from pandas) (2.
8.2)
Collecting numpy>=1.17.3
  Downloading numpy-1.21.3-cp39-cp39-manylinux_2_12_x86_64.manylinux2010_x86_64.whl (15.7 MB)
     |████████████████████████████████| 15.7 MB 2.5 MB/s
Requirement already satisfied: pytz>=2017.3 in /opt/conda/lib/python3.9/site-packages (from pandas) (2021.3)
Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.9/site-packages (from python-dateutil>=2.7.3->pa
ndas) (1.16.0)
Installing collected packages: numpy, pandas
Successfully installed numpy-1.21.3 pandas-1.3.4
Note: you may need to restart the kernel to use updated packages.
```

In [3]:
```
import pandas as pd

pd.read_sql('select now()', con=source)
```

Out[3]:

	now()
0	2021-10-26 05:38:12

Docker Compose

Definimos el archivo docker-compose.yml para el contenedor de Jupyter Notebooks y MySQL.

docker-compose.yml

```yaml
version: '3.7'

services:
  db:
    image: mysql:5.7.35
    volumes:
      - db_data:/var/lib/mysql
    restart: always
    ports:
      - 3306:3306
    environment:
      MYSQL_ROOT_PASSWORD: test123
      MYSQL_DATABASE: test
      MYSQL_USER: test
      MYSQL_PASSWORD: test123
  jupyter:
    image: jupyter/base-notebook
    ports:
      - 8888:8888
volumes:
  db_data:
```

Iniciamos los contenedores con el comando **docker-compose up**

```
daniel@magi:docker$ docker-compose up
Creating network "docker_default" with the default driver
Creating volume "docker_db_data" with default driver
Creating docker_db_1      ... done
Creating docker_jupyter_1 ... done
Attaching to docker_jupyter_1, docker_db_1
db_1       | 2021-10-26 05:58:39+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.35-1debian10 start
jupyter_1  | WARN: Jupyter Notebook deprecation notice https://github.com/jupyter/docker-stacks#jupyter-notebook-depr
jupyter_1  | Executing the command: jupyter notebook
db_1       | 2021-10-26 05:58:40+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
db_1       | 2021-10-26 05:58:40+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.35-1debian10 start
db_1       | 2021-10-26 05:58:40+00:00 [Note] [Entrypoint]: Initializing database files
db_1       | 2021-10-26T05:58:40.094200Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use
documentation for more details).
db_1       | 2021-10-26T05:58:40.289658Z 0 [Warning] InnoDB: New log files created, LSN=45790
jupyter_1  | [I 05:58:40.309 NotebookApp] Writing notebook server cookie secret to /home/jovyan/.local/share/jupyter/
db_1       | 2021-10-26T05:58:40.327936Z 0 [Warning] InnoDB: Creating foreign key constraint system tables.
db_1       | 2021-10-26T05:58:40.383545Z 0 [Warning] No existing UUID has been found, so we assume that this is the f
ng a new UUID: c4b7adee-3621-11ec-b409-0242ac130002.
db_1       | 2021-10-26T05:58:40.384403Z 0 [Warning] Gtid table is not ready to be used. Table 'mysql.gtid_executed'
db_1       | 2021-10-26T05:58:40.724426Z 0 [Warning] A deprecated TLS version TLSv1 is enabled. Please use TLSv1.2 or
db_1       | 2021-10-26T05:58:40.724439Z 0 [Warning] A deprecated TLS version TLSv1.1 is enabled. Please use TLSv1.2
db_1       | 2021-10-26T05:58:40.724879Z 0 [Warning] CA certificate ca.pem is self signed.
db_1       | 2021-10-26T05:58:40.839705Z 1 [Warning] root@localhost is created with an empty password ! Please consid
```

Validamos la conexión desde el contenedor de Jupyter Notebook hacia MySQL Server

In [1]:
```
!pip install mysql-connector-python
!pip install pandas
```

```
Collecting mysql-connector-python
  Downloading mysql_connector_python-8.0.27-1commercial-cp39-cp39-manylinux1_x86_64.whl (37.5 MB)
     |████████████████████████████████| 37.5 MB 2.1 MB/s
Collecting protobuf>=3.0.0
  Downloading protobuf-3.19.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.1 MB)
     |████████████████████████████████| 1.1 MB 3.8 MB/s
Installing collected packages: protobuf, mysql-connector-python
Successfully installed mysql-connector-python-8.0.27 protobuf-3.19.0
Collecting pandas
  Downloading pandas-1.3.4-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.5 MB)
     |████████████████████████████████| 11.5 MB 717 kB/s
Collecting numpy>=1.17.3
  Downloading numpy-1.21.3-cp39-cp39-manylinux_2_12_x86_64.manylinux2010_x86_64.whl (15.7 MB)
     |████████████████████████████████| 15.7 MB 3.8 MB/s
Requirement already satisfied: python-dateutil>=2.7.3 in /opt/conda/lib/python3.9/site-packages (from pandas)
8.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/lib/python3.9/site-packages (from pandas) (2021.3)
Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.9/site-packages (from python-dateutil>=2.7.3
ndas) (1.16.0)
Installing collected packages: numpy, pandas
Successfully installed numpy-1.21.3 pandas-1.3.4
```

In [2]:
```
from sqlalchemy import create_engine

source = create_engine('mysql+mysqlconnector://test:test123@db/test')
```

In [5]:
```
import pandas as pd

pd.read_sql('select now()', con=source)
```

Out[5]:

	now()
0	2021-10-26 06:17:24