

# Tarea 1 - Docker

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## Parte 1 – Comandos Generales

A continuación, se presentan imágenes de los ejercicios realizados en clase

CA. Command Prompt

```
Microsoft Windows [Version 10.0.19043.1288]
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C:\Users\gabri>docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Options:
  --config string      Location of client config files (default
                        "C:\\Users\\gabri\\.docker")
  -c, --context string  Name of the context to use to connect to the
                        daemon (overrides DOCKER_HOST env var and
                        default context set with "docker context use")
  -D, --debug           Enable debug mode
  -H, --host list       Daemon socket(s) to connect to
  -l, --log-level string Set the logging level
                        ("debug"|"info"|"warn"|"error"|"fatal")
                        (default "info")
  --tls                Use TLS; implied by --tlsverify
  --tlscacert string    Trust certs signed only by this CA (default
                        "C:\\Users\\gabri\\.docker\\ca.pem")
```

```
C:\Users\gabri>docker --version
Docker version 20.10.8, build 3967b7d
```

Corrida de imagen Hello-world

```
C:\Users\gabri>docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

## C:\ Command Prompt

operable program or batch file.

```
C:\Users\gabri>docker pull busybox
Using default tag: latest
latest: Pulling from library/busybox
01c2cdc13739: Pull complete
Digest: sha256:15e927f78df2cc772b70713543d6b651e3cd8370abf86b2ea4644a9fba21107f
Status: Downloaded newer image for busybox:latest
docker.io/library/busybox:latest
```

## Verificación de imágenes

```
C:\Users\gabri>docker images
REPOSITORY      TAG         IMAGE ID      CREATED       SIZE
busybox         latest     cabb9f684f8b  2 days ago   1.24MB
hello-world     latest     feb5d9fea6a5  5 weeks ago  13.3kB
```

```
C:\Users\gabri>docker run busybox echo "Hello world from Galileo"
Hello world from Galileo
```

## Contenedores ejecutados

```
C:\Users\gabri>docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
C:\Users\gabri>docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
6935fdb5a772   busybox    "echo 'Hello world f..." 48 seconds ago Exited (0) 47 seconds ago          cranky_albattani
b30cc80308ba   busybox    "sh"                    About a minute ago Exited (0) About a minute ago          great_curie
be02ee8f1476   hello-world "/hello"                4 minutes ago Exited (0) 4 minutes ago          eager_lamarr
a740c14869a0   hello-world "/hello"                5 minutes ago Exited (0) 5 minutes ago          intelligent_mccarthy
```

## Modo interactivo

```
C:\Users\gabri>docker run -it busybox sh
/ # ls
bin    dev    etc    home  proc  root  sys    tmp    usr    var
/ # uptime
02:13:15 up 26 min,  0 users,  load average: 0.09, 0.05, 0.00
/ #
```

## Eliminación de imágenes

```
C:\Users\gabri>docker rm a740c14869a0 be02ee8f1476
a740c14869a0
be02ee8f1476
C:\Users\gabri>docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
ff9a5a618b8e   busybox    "sh"                    2 minutes ago Exited (0) About a minute ago          quizzical_pare
6935fdb5a772   busybox    "echo 'Hello world f..." 6 minutes ago Exited (0) 6 minutes ago          cranky_albattani
b30cc80308ba   busybox    "sh"                    6 minutes ago Exited (0) 6 minutes ago          great_curie
```

## Parte 2 – Docker y Python

```
C:\Users\gabri>docker pull jupyter/base-notebook
Using default tag: latest
latest: Pulling from jupyter/base-notebook
7b1a6ab2e44d: Pull complete
aae7ac7ba423: Pull complete
ac5e015e0bca: Pull complete
d7ee77f7580c: Pull complete
a5db759ff9c8: Pull complete
c464ee64836c: Pull complete
ae5313d07705: Pull complete
0c52b58dd46b: Pull complete
6030cc7cf343: Pull complete
25203b1e1be1: Pull complete
464a3cf035e8: Pull complete
Digest: sha256:5876e42c22c5df950880518f13f9c8e08b2c8fd50d1072519887735c14ee63f7
Status: Downloaded newer image for jupyter/base-notebook:latest
docker.io/jupyter/base-notebook:latest
```

```
C:\Users\gabri>docker run -p 8888:8888 jupyter/base-notebook
WARN: Jupyter Notebook deprecation notice https://github.com/jupyter/docker-stacks#jupyter-notebook-deprecation-notice.
Executing the command: jupyter notebook
[I 02:24:29.943 NotebookApp] Writing notebook server cookie secret to /home/jovyan/.local/share/jupyter/runtime/notebook_cookie_secret
[W 2021-10-30 02:24:31.418 LabApp] 'ip' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2021-10-30 02:24:31.418 LabApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2021-10-30 02:24:31.418 LabApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2021-10-30 02:24:31.418 LabApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[I 2021-10-30 02:24:31.448 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.9/site-packages/jupyterlab
[I 2021-10-30 02:24:31.449 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
[I 02:24:31.468 NotebookApp] Serving notebooks from local directory: /home/jovyan
[I 02:24:31.468 NotebookApp] Jupyter Notebook 6.4.5 is running at:
[I 02:24:31.468 NotebookApp] http://4898d624490f:8888/?token=df60700f122c0fc4f2fc110095f06430dca8aa8612049e12
[I 02:24:31.468 NotebookApp] or http://127.0.0.1:8888/?token=df60700f122c0fc4f2fc110095f06430dca8aa8612049e12
[I 02:24:31.468 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 02:24:31.484 NotebookApp]

To access the notebook, open this file in a browser:
file:///home/jovyan/.local/share/jupyter/runtime/nbserver-8-open.html
Or copy and paste one of these URLs:
http://4898d624490f:8888/?token=df60700f122c0fc4f2fc110095f06430dca8aa8612049e12
or http://127.0.0.1:8888/?token=df60700f122c0fc4f2fc110095f06430dca8aa8612049e12
```

127.0.0.1:8888/tree

jupyter

Quit Logout

Files Running Clusters

Select items to perform actions on them.

Upload New

	Name	Last Modified	File size
<input type="checkbox"/>	/		
<input type="checkbox"/>	work	hace un día	
<input checked="" type="checkbox"/>	Untitled.ipynb	Running hace unos segundos	72 B

127.0.0.1:8888/notebooks/Untitled.ipynb?kernel\_name=python3

jupyter Untitled (unsaved changes) Logout

File Edit View Insert Cell Kernel Help Trusted Python 3 (ipykernel)

Run

In [1]: `python --version`

Python 3.9.7

```
Command Prompt
Microsoft Windows [Version 10.0.19043.1288]
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C:\Users\gabri>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
4898d624490f   jupyter/base-notebook   "tini -g -- start-no..."   2 minutes ago   Up 2 minutes   0.0.0.0:8888->8888/tcp
stoic_hermann
```

## Creacion de network

```
C:\Users\gabri>docker network create --driver bridge my_test_network
70555878cfcfc35122b90b095704065c009fbd66f05658d2ff2316e514ae9dbe
```

## MySQL

```
C:\Users\gabri>docker run -it --network my_test_network -p 3306:3306 -e "MYSQL_ROOT_PASSWORD=root123" -e "MYSQL_DATABASE=test" -e "MYSQL_USER=test" -e "MYSQL_PASSWORD=test123" mysql:5.7.35
Unable to find image 'mysql:5.7.35' locally
5.7.35: Pulling from library/mysql
b380bbd43752: Downloading [=>] 556.3kB/27.14MB
f23cbf2ecc5d: Download complete
30cfc6c29c0a: Downloading [====>] 425.2kB/4.179MB
b38609286cbe: Waiting
8211d9e66cd6: Waiting
2313f9eeca4a: Waiting
```

```
C:\Users\gabri>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
4b402d271a60   mysql:5.7.35   "docker-entrypoint.s..."   About a minute ago   Up About a minute   0.0.0.0:3306->3306/tcp,
33060/tcp     bold_thompson
```

```
C:\Users\gabri>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
508216ce5429   jupyter/base-notebook  "tini -g -- start-no..." About a minute ago Up About a minute    0.0.0.0:8888->8888/tcp    gifted_noyce
4b402d271a60   mysql:5.7.35   "docker-entrypoint.s..." 6 minutes ago  Up 6 minutes    0.0.0.0:3306->3306/tcp, 33060/tcp    bold_thompson

C:\Users\gabri>docker network inspect my_test_network
[
  {
    "Name": "my_test_network",
    "Id": "70555878cfc35122b90b095704065c009fbd66f05658d2ff2316e514ae9dbe",
    "Created": "2021-10-30T02:33:01.463260803Z",
    "Scope": "local",
    "Driver": "bridge",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": {},
      "Config": [
        {
          "Subnet": "172.18.0.0/16",
          "Gateway": "172.18.0.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": {
      "4b402d271a60c0aa1064444fe42bec86ca0b3c06bdbb73e93aa11ce99801867": {
        "Name": "bold_thompson",
        "EndpointID": "8f11841153f7be43328cb68f7071be5a5223450405b98ec55b47f830e2826a41",
        "MacAddress": "02:42:ac:12:00:02",
        "IPv4Address": "172.18.0.2/16",
        "IPv6Address": ""
      },
      "508216ce5429f6a86af179bef169869112718a3288d881913ae6f59f506ec9af": {
        "Name": "gifted_noyce",
        "EndpointID": "1dea92c517b6481410dfcd38f90f7ec9e8169897e5098586fc56a52979069531",
        "MacAddress": "02:42:ac:12:00:03",
        "IPv4Address": "172.18.0.3/16",
        "IPv6Address": ""
      }
    },
    "Options": {},
    "Labels": {}
  }
]
```

127.0.0.1:8888/notebooks/Untitled.ipynb?kernel\_name=python3

jupyter Untitled (unsaved changes)

Logout

File Edit View Insert Cell Kernel Help

Trusted Python 3 (ipykernel)

In [2]:

```
pip install mysql-connector-python
```

Requirement already satisfied: mysql-connector-python in /opt/conda/lib/python3.9/site-packages (8.0.27)

Requirement already satisfied: protobuf>=3.0.0 in /opt/conda/lib/python3.9/site-packages (from mysql-connector-python) (3.19.1)

Note: you may need to restart the kernel to use updated packages.

In [1]:

```
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 7.0 MB/s

Requirement already satisfied: pytz>=2017.3 in /opt/conda/lib/python3.9/site-packages (from pandas) (2021.3)

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 10.1 MB/s

Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.9/site-packages (from python-dateutil>=2.7.3->pandas) (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 [12]: from sqlalchemy import create_engine
import pandas as pd
```

```
In [13]: source = create_engine('mysql:mysqlconnector://test:test123@172.18.0.2/test')
```

```
In [14]: pd.read_sql('select now()', con=source)
```

```
Out[14]:
```

now()
0 2021-10-30 02:59:52

## COMPOSE FILE

```
docker-compose.yml
1  version: '3.7'
2
3  services:
4
5      db:
6          image: mysql:5.7.35
7          volumes:
8              - db_data:/var/lib/mysql
9          restart: always
10         ports:
11             - 3306:3306
12         environment:
13             MYSQL_ROOT_PASSWORD: test123
14             MYSQL_DATABASE: test
15             MYSQL_USER: test
16             MYSQL_PASSWORD: test123
17
18         jupyter:
19             image: jupyter/base-notebook
20             ports:
21                 - 8888:8888
22
23     volumes:
24         db_data:
```

```
C:\Users\gabriel\Documents\Docker\Tareal>docker-compose up
Creating network "tareal_default" with the default driver
Creating volume "tareal_db_data" with default driver
Creating tareal_db_1 ... done
Creating tareal_jupyter_1 ... done
Attaching to tareal_jupyter_1, tareal_db_1
db_1      2021-10-30 03:49:58+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.35-1debian10 started.
jupyter_1 WARN: Jupyter Notebook deprecation notice https://github.com/jupyter/docker-stacks#jupyter-notebook-deprecation-notice.
jupyter_1 Executing the command: jupyter notebook
db_1      2021-10-30 03:49:58+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
db_1      2021-10-30 03:49:58+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.35-1debian10 started.
db_1      2021-10-30 03:49:58+00:00 [Note] [Entrypoint]: Initializing database files
db_1      2021-10-30 03:49:58:456227Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details).
db_1      2021-10-30 03:49:58:689190Z 0 [Warning] InnoDB: New log files created, LSN=45790
db_1      2021-10-30 03:49:58:742217Z 0 [Warning] InnoDB: Creating foreign key constraint system tables.
jupyter_1 [I 03:49:58.760 NotebookApp] Writing notebook server cookie secret to /home/jovyan/.local/share/jupyter/runtime/notebook_cookie_secret
db_1      2021-10-30 03:49:58:766972Z 0 [Warning] No existing UUID has been found, so we assume that this is the first time that this server has been started. Generating a new UUID: 73ed7e57-3934-11ec-839e-0242ac130003.
db_1      2021-10-30 03:49:58:772484Z 0 [Warning] Grid table is not ready to be used. Table 'mysql.gtid_executed' cannot be opened.
db_1      2021-10-30 03:49:59:350366Z 0 [Warning] A deprecated TLS version TLSv1 is enabled. Please use TLSv1.2 or higher.
db_1      2021-10-30 03:49:59:350400Z 0 [Warning] A deprecated TLS version TLSv1.1 is enabled. Please use TLSv1.2 or higher.
db_1      2021-10-30 03:49:59:351892Z 0 [Warning] CA certificate ca.pem is self signed.
db_1      2021-10-30 03:49:59:519284Z 1 [Warning] root@localhost is created with an empty password ! Please consider switching off the --initialize-insecure option.
jupyter_1 [W 2021-10-30 03:50:00.031 LabApp] 'ip' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
jupyter_1 [W 2021-10-30 03:50:00.032 LabApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
jupyter_1 [W 2021-10-30 03:50:00.032 LabApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
jupyter_1 [I 2021-10-30 03:50:00.062 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.9/site-packages/jupyterlab
jupyter_1 [I 2021-10-30 03:50:00.062 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
jupyter_1 [I 03:50:00.081 NotebookApp] Serving notebooks from local directory: /home/jovyan
```

```
Command Prompt
Microsoft Windows [Version 10.0.19043.1288]
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C:\Users\gabriel>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
00cbb80ee00   jupyter/base-notebook   "tini -g -- start-no..."   About a minute ago   Up About a minute   0.0.0.0:8888->8888/tcp           tareal_jupyter_1
f3196308098b   mysql:5.7.35          "docker-entrypoint.s..."   About a minute ago   Up About a minute   0.0.0.0:3306->3306/tcp, 33060/tcp   tareal_db_1
```

```
In [1]: from sqlalchemy import create_engine
import pandas as pd
```

```
In [2]: source = create_engine('mysql+mysqlconnector://test:test123@db/test')
pd.read_sql('select now()', con=source)
```

```
Out[2]:
          now()
0  2021-10-30 04:02:03
```