

# Lab 3: Getting started with Docker



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# Descargar Docker for Windows

Installing Docker Desktop 4.38.0 (181591)

## Docker Desktop 4.38.0

### Unpacking files...

```
Unpacking file: resources/docker-desktop.iso
Unpacking file: resources/ddvp.ico
Unpacking file: resources/config-options.json
Unpacking file: resources/componentsVersion.json
Unpacking file: resources/bin/docker-compose
Unpacking file: resources/bin/docker
Unpacking file: resources/.gitignore
Unpacking file: InstallerCli.pdb
Unpacking file: InstallerCli.exe.config
Unpacking file: frontend/vk_swiftshader_icd.json
Unpacking file: frontend/v8_context_snapshot.bin
Unpacking file: frontend/snapshot_blob.bin
Unpacking file: frontend/resources/regedit/vbs/wsRegReadListStream.wsf
Unpacking file: frontend/resources/regedit/vbs/wsRegReadList.wsf
```

Installing Docker Desktop 4.38.0 (181591)

## Docker Desktop 4.38.0

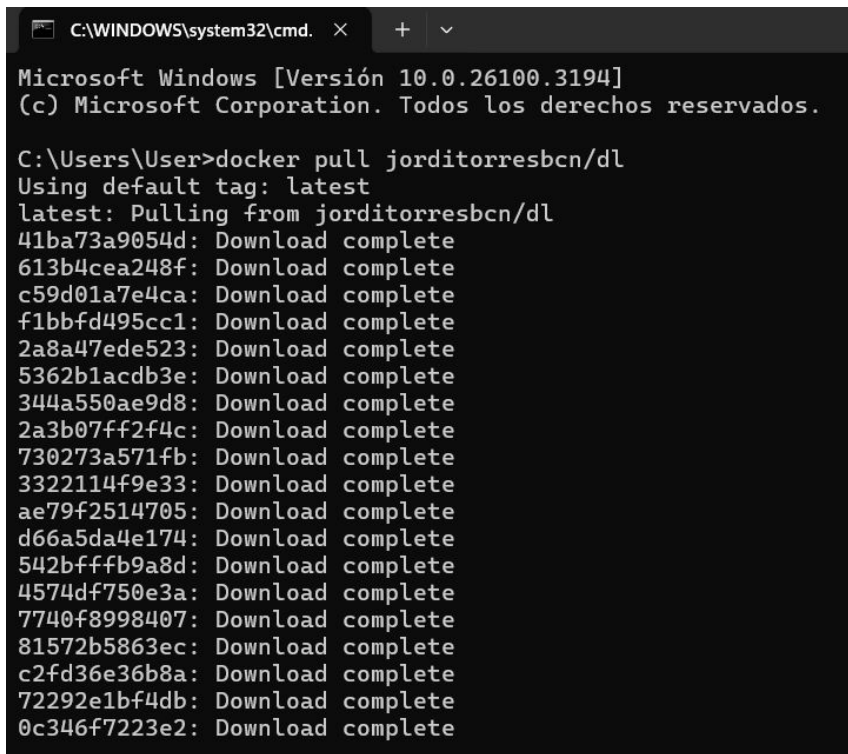
### Installation succeeded

You must restart Windows to complete installation.

Close and restart

# Descargar Docker image

`docker pull jorditorresbcn/dl`



```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Versión 10.0.26100.3194]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\User>docker pull jorditorresbcn/dl
Using default tag: latest
latest: Pulling from jorditorresbcn/dl
41ba73a9054d: Download complete
613b4cea248f: Download complete
c59d01a7e4ca: Download complete
f1bbfd495cc1: Download complete
2a8a47ede523: Download complete
5362b1acdb3e: Download complete
344a550ae9d8: Download complete
2a3b07ff2f4c: Download complete
730273a571fb: Download complete
3322114f9e33: Download complete
ae79f2514705: Download complete
d66a5da4e174: Download complete
542bfff9b9a8d: Download complete
4574df750e3a: Download complete
7740f8998407: Download complete
81572b5863ec: Download complete
c2fd36e36b8a: Download complete
72292e1bf4db: Download complete
0c346f7223e2: Download complete
```

# Comprobar librerías

## Comprobar librerías python

```
root@50471d4b7423:/app# pip list
DEPRECATION: The default format will switch to columns in the future. You can use --format=(legacy|columns) (or define a format=(legacy|columns) in your pip
.conf under the [list] section) to disable this warning.
bleach (1.5.0)
certifi (2018.1.18)
chardet (3.0.4)
click (6.7)
cycller (0.10.0)
decorator (4.2.1)
entrypoints (0.2.3)
enum34 (1.1.6)
Flask (0.12.2)
Flask-Cors (3.0.3)
google-api-python-client (1.6.5)
h5py (2.7.1)
html5lib (0.9999999)
httplib2 (0.10.3)
idna (2.6)
ipykernel (4.8.0)
ipython (6.2.1)
ipython-genutils (0.2.0)
ipywidgets (7.1.0)
itsdangerous (0.24)
jedi (0.11.1)
Jinja2 (2.10)
jsonschema (2.6.0)
jupyter (1.0.0)
jupyter-client (5.2.1)
jupyter-console (5.2.0)
>ix (1.11.0)
tensorflow (1.4.1)
tensorflow-tensorboard (0.4.0)
terminado (0.8.1)
testpath (0.3.1)
tornado (4.5.3)
traitlets (4.3.2)
tweepy (3.5.0)
uritemplate (3.0.0)
urllib3 (1.22)
wcwidth (0.1.7)
webencodings (0.5.1)
Werkzeug (0.14.1)
wheel (0.30.0)
widgetsnbextension (3.1.0)
You are using pip version 9.0.1, however version 25.0.1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
root@50471d4b7423:/app# |
```

# Comprobar librerías

## Comprobar librerías Linux

```
C:\Users\User>
C:\Users\User>docker run -it jorditorresbcn/dl /bin/bash
root@50471d4b7423:/app#
root@50471d4b7423:/app#
root@50471d4b7423:/app# cat /etc/os-release
NAME="Ubuntu"
VERSION="16.04.3 LTS (Xenial Xerus)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 16.04.3 LTS"
VERSION_ID="16.04"
HOME_URL="http://www.ubuntu.com/"
SUPPORT_URL="http://help.ubuntu.com/"
BUG_REPORT_URL="http://bugs.launchpad.net/ubuntu/"
VERSION_CODENAME=xenial
UBUNTU_CODENAME=xenial
root@50471d4b7423:/app#
root@50471d4b7423:/app#
```

# Cerrar el Docker

Cerrar Docker con *docker stop*

```
C:\Users\User>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
50471d4b7423   jorditorresbcn/dl  "/bin/bash"            8 minutes ago  Up 8 minutes  8888/tcp, 8954/tcp      pensive_elgama1

C:\Users\User>docker stop 50471d4b7423
50471d4b7423

C:\Users\User>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
C:\Users\User>
```

# Mapear puerto 8888

```
docker run -it -p 8888:8888 --name test jorditorresbcn/dl :latest
```

```
C:\Users\User>  
C:\Users\User>docker run -it -p 8888:8888 --name test jorditorresbcn/dl:latest  
root@d8964de042e0:/app#  
root@d8964de042e0:/app# |
```



Only show running containers

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	CPU (%)	Last started	Actions
<input type="checkbox"/>	● test	d8964de042e0	<a href="#">jorditorresbcn/dl:latest</a>	<a href="#">8888:8888</a> ↗	0%	14 minutes ago	

# Iniciar Jupyter Notebook

Se inicia el servidor de Jupyter Notebook dentro del docker

```
root@d8884ff3ef00:/app# jupyter notebook --ip=0.0.0.0 --allow-root
[I 11:14:09.433 NotebookApp] Serving notebooks from local directory: /app
[I 11:14:09.434 NotebookApp] 0 active kernels
[I 11:14:09.434 NotebookApp] The Jupyter Notebook is running at:
[I 11:14:09.434 NotebookApp] http://0.0.0.0:8888/
[I 11:14:09.434 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[W 11:14:09.435 NotebookApp] No web browser found: could not locate runnable browser.
```

*jupyter notebook --ip=0.0.0.0 --allow-root*



# Entrar en Jupyter y entrenar modelo

*Password: dl*



Password:

••|

Log in

# Entrar en Jupyter y entrenar modelo

Notebook creado



Logout

Files

Running

Clusters

Select items to perform actions on them.

Upload

New ▾



☐ 0 ▾

📁 /

Name ▾

Last Modified

☐ 📁 data

hace 7 años

☐ 📄 Lab 3.ipynb

Running hace un minuto

# Lab 3 - Cloud Computing

## TASK 7

Printing a basic Hello World

```
In [12]: print("Hello World")
```

```
Hello World
```

## TASK 8

Training a model

```
In [3]: import tensorflow as tf
        from tensorflow import keras
        import numpy as np
        import matplotlib.pyplot as plt
        print(tf.__version__)
```

```
1.4.1
```

```
In [6]: x_train = x_train.astype('float32')
x_test = x_test.astype('float32')
x_train /= 255
x_test /= 255
x_train = x_train.reshape(60000, 784)
x_test = x_test.reshape(10000, 784)
```

```
In [7]: from keras.utils import to_categorical
```

Using TensorFlow backend.

```
In [8]: y_train = to_categorical(y_train, num_classes=10)
y_test = to_categorical(y_test, num_classes=10)
```

```
In [9]: from keras import Sequential
from keras.layers import Dense
model = Sequential()
model.add(Dense(10, activation='sigmoid', input_shape=(784,)))
model.add(Dense(10, activation='softmax'))
model.summary()
```

Layer (type)	Output Shape	Param #
=====		
dense_1 (Dense)	(None, 10)	7850
-----		
dense_2 (Dense)	(None, 10)	110
=====		
Total params: 7,960		
Trainable params: 7,960		
Non-trainable params: 0		

---

# Crear repositorio en Docker Hub


- Ir a la página de Docker Hub.
- Crear un perfil.
- Seguir los pasos del “Step 1” para hacer pull

## Step 1: Find an image in Docker Hub's library

You can search for content in Docker Hub itself, in the Docker Desktop Dashboard, or by using the CLI.

To search or browse for content on Docker Hub:

Docker Hub Docker Desktop CLI

1. Navigate to the [Docker Hub Explore page](#) .  
On the **Explore** page, you can browse by catalog or category, or use the search to quickly find content.
2. Under **Categories**, select **Web servers**.  
After the results are displayed, you can further filter the results using the filters on the left side of the page.
3. In the filters, select **Docker Official Image**.  
Filtering by Trusted Content ensures that you see only high-quality, secure images curated by Docker and verified publishing partners.
4. In the results, select the **nginx** image.  
Selecting the image opens the image's page where you can learn more about how to use the image. On the page, you'll also find the `docker pull` command to pull the image.

# Crear repositorio en Docker Hub

Una vez hecho el *pull*, se hace *docker run*



```
PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers> docker run -d -p 8080:80 mi-nginx  
a09ecc5f33734b33d7ae7248e8c1647bf3352525a9c296c81bafb36030bda1d2  
PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers> 
```

# Crear repositorio en Docker Hub

Se crea el  
*Dockerfile* (ej:  
VS Code)

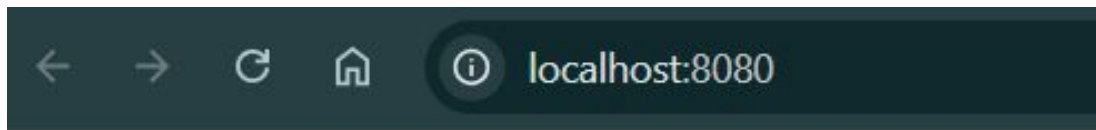
```
Dockerfile
1 FROM nginx
2 RUN echo "<h1>Hello world from Docker!</h1>" > /usr/share/nginx/html/index.html

PROBLEMAS  SALIDA  CONSOLA DE DEPURACIÓN  TERMINAL  PUERTOS  AZURE  COMENTARIOS

PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers> docker build -t mi-nginx .
[+] Building 2.3s (7/7) FINISHED
=> [internal] load build definition from Dockerfile                                docker:desktop-linux 0.1s
=> => transferring dockerfile: 128B                                              0.0s
=> [internal] load metadata for docker.io/library/nginx:latest                  0.0s
=> [internal] load .dockerignore                                                 0.0s
=> => transferring context: 2B                                                  0.0s
=> [1/2] FROM docker.io/library/nginx:latest@sha256:9d6b58feebd2dbd3c56ab5853333d627cc6e281011cfd6050fa4bcf2072c9496 1.1s
=> => resolve docker.io/library/nginx:latest@sha256:9d6b58feebd2dbd3c56ab5853333d627cc6e281011cfd6050fa4bcf2072c9496 1.0s
=> [auth] library/nginx:pull token for registry-1.docker.io                    0.0s
=> [2/2] RUN echo "<h1>Hello world from Docker!</h1>" > /usr/share/nginx/html/index.html 0.4s
=> exporting to image                                                            0.4s
=> => exporting layers                                                            0.2s
=> => exporting manifest sha256:bbbfe71e7e491b0f2c57eb6c8ab9b58dc343046e12e555c01e1f6b3671dd0f 0.0s
=> => exporting config sha256:2c7878deec4e2aaec4f5e64e889d48ff757d160f8d3e47404355077a72b00928 0.0s
=> => exporting attestation manifest sha256:85f9608f0b05ad29c846ee0275001466a237189427cac74ad50976e66b27ae91 0.0s
=> => exporting manifest list sha256:dae6291b153f8de87dc3312fc69453bc1c0ecd1ef317a5e829aa01c54073c964 0.0s
=> => naming to docker.io/library/mi-nginx:latest                             0.0s
=> => unpacking to docker.io/library/mi-nginx:latest                           0.1s
PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers>
```

# Crear repositorio en Docker Hub

Se crea el  
***Dockerfile*** (ej:  
VS Code)



**Hello world from Docker!**



# Crear repositorio en Docker Hub

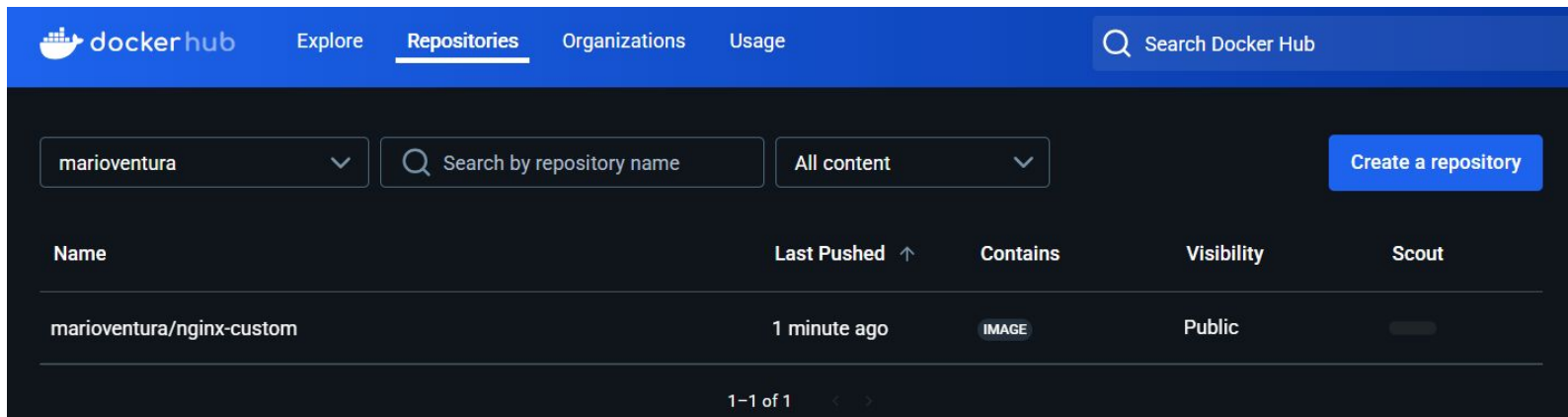
Se crea un **tag** y se hace **push** del repositorio hacia Docker Hub

```
PROBLEMAS  SALIDA  CONSOLA DE DEPURACIÓN  TERMINAL  PUERTOS  AZURE  COMENTARIOS  powershell + v [icon] [icon] ... ^ x

PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers> docker tag mi-nginx marioventura/nginx-custom
PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers> docker push marioventura/nginx-custom
Using default tag: latest
The push refers to repository [docker.io/marioventura/nginx-custom]
943ea0f0c2e4: Mounted from library/nginx
bf9acace214a: Mounted from library/nginx
7cf63256a31a: Mounted from library/nginx
62f361b38fe5: Pushed
41cab5c266c7: Pushed
d014f92d532d: Mounted from library/nginx
103f50cb3e9f: Mounted from library/nginx
513c3649bb14: Mounted from library/nginx
9dd21ad5a4a6: Mounted from library/nginx
latest: digest: sha256:dae6291b153f8de87dc3312fc69453bc1c0ecd1ef317a5e829aa01c54073c964 size: 856
PS C:\Users\User\Desktop\Lab 3 Getting Started with Dockers>
```

# Crear repositorio en Docker Hub

Adicionalmente, comprobar que el repositorio existe en Docker Hub



The screenshot shows the Docker Hub interface. The top navigation bar is blue with the Docker Hub logo and links for Explore, Repositories (active), Organizations, and Usage. A search bar on the right says "Search Docker Hub". Below the navigation bar, there's a dark blue section with a dropdown menu set to "marioventura", a search bar labeled "Search by repository name", a dropdown menu set to "All content", and a blue button labeled "Create a repository". Below this is a table with the following columns: Name, Last Pushed, Contains, Visibility, and Scout. The table has one row: "marioventura/nginx-custom", "1 minute ago", "IMAGE", "Public", and a Scout button. At the bottom, it says "1-1 of 1" with navigation arrows.

Name	Last Pushed	Contains	Visibility	Scout
marioventura/nginx-custom	1 minute ago	IMAGE	Public	<button></button>

**Gracias**