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## docker version

```
C:\Program Files\WindowsApps\Microsoft.PowerShell_7.4.5.0_x64__8wekyb3d8bbwe\pw
PowerShell 7.4.5
PS C:\Windows\System32>
PS C:\Windows\System32> cd '\Users\marco\'
PS C:\Users\marco> docker version
Client:
Version:           27.0.3
API version:       1.46
Go version:        go1.21.11
Git commit:        7d4bcd8
Built:             Sat Jun 29 00:03:32 2024
OS/Arch:           windows/amd64
Context:           desktop-linux

Server: Docker Desktop 4.32.0 (157355)
Engine:
Version:           27.0.3
API version:       1.46 (minimum version 1.24)
Go version:        go1.21.11
Git commit:        662f78c
Built:             Sat Jun 29 00:02:50 2024
OS/Arch:           linux/amd64
Experimental:      false
containerd:
Version:           1.7.18
GitCommit:         ae71819c4f5e67bb4d5ae76a6b735f29cc25774e
runc:
Version:           1.7.18
GitCommit:         v1.1.13-0-g58aa920
docker-init:
Version:           0.19.0
GitCommit:         de40ad0
PS C:\Users\marco> _
```

Este comando muestra las versiones del cliente y del servidor de Docker instaladas en la máquina.

Si el comando no funciona, puede ser porque Docker no esté instalado correctamente o no esté en el PATH. Solución: Asegúrate de que Docker esté instalado y el servicio esté corriendo.

## docker --help

```
Seleccinar C:\Program Files\WindowsApps\Microsoft.PowerShell_7.4.5.0_x64_8wekyb3d8bbwe\pwsh.exe
PS C:\Users\marco> ^C
PS C:\Users\marco> docker --help

Usage: docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
run          Create and run a new container from an image
exec         Execute a command in a running container
ps           List containers
build        Build an image from a Dockerfile
pull         Download an image from a registry
push         Upload an image to a registry
images       List images
login        Log in to a registry
logout       Log out from a registry
search       Search Docker Hub for images
version      Show the Docker version information
info         Display system-wide information

Management Commands:
builder      Manage builds
buildx*      Docker Buildx
compose*     Docker Compose
container    Manage containers
context       Manage contexts
debug*       Get a shell into any image or container
desktop*     Docker Desktop commands (Alpha)
dev*         Docker Dev Environments
extension*   Manages Docker extensions
feedback*    Provide feedback, right in your terminal!
image        Manage images
init*        Creates Docker-related starter files for your project
manifest     Manage Docker image manifests and manifest lists
network      Manage networks
plugin       Manage plugins
sbom*        View the packaged-based Software Bill Of Materials (SBOM) for an image
scout*       Docker Scout
system       Manage Docker
```

Este comando muestra las opciones disponibles y una lista completa de comandos

### How many arguments are absolutely required by the command 'docker pull'?

- El comando docker pull requiere **un argumento** como mínimo: la **imagen** que deseas descargar. Por ejemplo, docker pull ubuntu descarga la imagen de Ubuntu desde DockerHub. Este argumento incluye el nombre de la imagen y opcionalmente la etiqueta (tag) si no se desea usar la predeterminada "latest".

### Do you remember what a registry is?

- Un **registry** (registro) es un servicio que almacena y distribuye imágenes Docker. DockerHub es el registro público más común, donde los usuarios pueden subir y descargar imágenes. También existen registros privados que las organizaciones usan para almacenar y gestionar imágenes Docker dentro de su infraestructura.

**docker pull japeto/pujgcc:lastest**

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```
PS C:\Users\marco> docker pull japeto/pujgcc:latest
latest: Pulling from japeto/pujgcc
Digest: sha256:9b3d7bbf410396d0a26e6bcffbb54e4239736d5a23ad694b03d93c26f9fc6868
Status: Image is up to date for japeto/pujgcc:latest
docker.io/japeto/pujgcc:latest

What's next:
  View a summary of image vulnerabilities and recommendations → docker scout quickview japeto/pujgcc:latest
PS C:\Users\marco> docker pull japeto/pujgcc:latest
latest: Pulling from japeto/pujgcc
a18ad1a0d33: Already exists
5a33158a136: Already exists
f67323742a64: Already exists
4b45e832c38: Already exists
5d4afe2cf59: Already exists
efbd2d5674a: Already exists
022a58c161f7: Already exists
461d3be7619: Already exists
287aab02fcd: Already exists
dd3d1d6fad6: Already exists
6dbbe32db7e: Already exists
Digest: sha256:9b3d7bbf410396d0a26e6bcffbb54e4239736d5a23ad694b03d93c26f9fc6868
Status: Downloaded newer image for japeto/pujgcc:latest
docker.io/japeto/pujgcc:latest

What's next:
  View a summary of image vulnerabilities and recommendations → docker scout quickview japeto/pujgcc:latest
```

**How many times was the japeto image downloaded ?**

11 veces

**docker image**

```
PS C:\Users\marco> docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
japeto/pujgcc       latest         05141310a94c   19 months ago  1.39GB
PS C:\Users\marco>
```

**What is the size of the japeto/pujgcc image ?**

1.39GB

**docker run --help**

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```
PS C:\Users\marco> docker run --help

Usage:  docker run [OPTIONS] IMAGE [COMMAND] [ARG...]

Create and run a new container from an image

Aliases:
  docker container run, docker run

Options:
  --add-host list          Add a custom host-to-IP mapping
                           (host:ip)
  --annotation map         Add an annotation to the
                           container (passed through to the
                           OCI runtime) (default map[])
  -a, --attach list        Attach to STDIN, STDOUT or STDERR
  --blkio-weight uint16    Block IO (relative weight),
                           between 10 and 1000, or 0 to
                           disable (default 0)
  --blkio-weight-device list
                           Block IO weight (relative device
                           weight) (default [])
  --cap-add list           Add Linux capabilities
  --cap-drop list          Drop Linux capabilities
  --cgroup-parent string   Optional parent cgroup for the
                           container
  --cgroupns string        Cgroup namespace to use
                           (host|private)
                           'host':   Run the container in
                           the Docker host's cgroup
                           namespace
                           'private': Run the container in
                           its own private cgroup namespace
                           '':       Use the cgroup
                           namespace as configured by the
                           default-cgroupns-mode
                           option on the daemon (default)
  --cidfile string         Write the container ID to the file
```

<code>--cpuset-mems string</code>	MEMs in which to allow execution (0-3, 0,1)
<code>-d, --detach</code>	Run container in background and print container ID
<code>--detach-keys string</code>	Override the key sequence for detaching a container
<code>--device list</code>	Add a host device to the container
<code>--device-cgroup-rule list</code>	Add a rule to the cgroup allowed devices list
<code>--device-read-bps list</code>	Limit read rate (bytes per second) from a device (default [])
<code>--device-read-iops list</code>	Limit read rate (IO per second) from a device (default [])
<code>--device-write-bps list</code>	Limit write rate (bytes per second) to a device (default [])
<code>--device-write-iops list</code>	Limit write rate (IO per second) to a device (default [])
<code>--disable-content-trust</code>	Skip image verification (default true)
<code>--dns list</code>	Set custom DNS servers
<code>--dns-option list</code>	Set DNS options
<code>--dns-search list</code>	Set custom DNS search domains
<code>--domainname string</code>	Container NIS domain name
<code>--entrypoint string</code>	Overwrite the default ENTRYPOINT of the image
<code>-e, --env list</code>	Set environment variables
<code>--env-file list</code>	Read in a file of environment variables
<code>--expose list</code>	Expose a port or a range of ports
<code>--gpu gpu-request</code>	GPU devices to add to the container ('all' to pass all GPUs)
<code>--group-add list</code>	Add additional groups to join
<code>--health-cmd string</code>	Command to run to check health
<code>--health-interval duration</code>	Time between running the check (ms s m h) (default 0s)
<code>--health-retries int</code>	Consecutive failures needed to report unhealthy
<code>--health-start-interval duration</code>	Time between running the check during the start period

### What are the options and parameters of the 'run' command ?

❓ `-d` (detached)

- Ejecuta el contenedor en segundo plano (modo desacoplado).

❓ `-i` (interactive)

- Mantiene la sesión estándar de entrada (stdin) abierta incluso si no se está adjuntada.

❓ `-t` (tty)

- Asigna una pseudo-terminal, lo que permite la interacción con el contenedor en modo interactivo.

❓ `-e` (environment)

- Establece variables de entorno dentro del contenedor. Ejemplo: `-e "MYVAR=value"`.

❓ `--name`

- Asigna un nombre personalizado al contenedor en lugar de que Docker asigne uno automáticamente.

#### ❓ -p (publish)

- Publica puertos del contenedor en el host. Ejemplo: -p 8080:80 mapea el puerto 80 del contenedor al puerto 8080 en el host.

#### ❓ -v (volume)

- Monta volúmenes, permitiendo compartir directorios entre el host y el contenedor. Ejemplo: -v /host/path:/container/path.

#### ❓ --rm

- Elimina automáticamente el contenedor una vez que termina su ejecución.

#### ❓ --network

- Conecta el contenedor a una red específica. Ejemplo: --network=my-network.

#### ❓ -u (user)

- Especifica el usuario bajo el cual ejecutar el contenedor. Ejemplo: -u user1.

#### ❓ --restart

- Define la política de reinicio del contenedor. Ejemplo: --restart=always reinicia el contenedor si se detiene.

#### ❓ --entrypoint

- Sobrescribe el comando predeterminado (entrypoint) que ejecuta el contenedor.

#### ❓ --privileged

- Da acceso a un contenedor a todos los dispositivos del host, lo que es útil para ejecutar contenedores que necesitan permisos adicionales.

#### ❓ --link

- Conecta contenedores para que puedan comunicarse entre sí.

#### ❓ -w (workdir)

- Especifica el directorio de trabajo dentro del contenedor.

### What is the difference between an image and a container ?

- **Imagen:** Es un archivo de sólo lectura, que sirve como una plantilla para crear contenedores. No cambia ni se ejecuta por sí misma.
- **Contenedor:** Es una instancia en ejecución de una imagen, que se puede modificar y que ejecuta la aplicación en un entorno aislado

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**docker run japeto/pujgcc bash --help**

```
PS C:\Users\marco> docker run japeto/pujgcc bash --help
GNU bash, version 4.3.30(1)-release-(x86_64-pc-linux-gnu)
Usage: bash [GNU long option] [option] ...
        bash [GNU long option] [option] script-file ...
GNU long options:
    --debug
    --debugger
    --dump-po-strings
    --dump-strings
    --help
    --init-file
    --login
    --noediting
    --noprofile
    --norc
    --posix
    --rcfile
    --restricted
    --verbose
    --version
Shell options:
    -ilrsD or -c command or -O shopt_option      (invocation only)
    -abefhkmnptuvxBCHP or -o option
Type `bash -c "help set"' for more information about shell options.
Type `bash -c help' for more information about shell builtin commands.
Use the `bashbug' command to report bugs.
PS C:\Users\marco> _
```

**Pwd**

```
Use the `bashbug' command to report bugs.
PS C:\Users\marco> pwd

Path
----
C:\Users\marco

PS C:\Users\marco>
```

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**docker run -v \${PWD}:/data/ japeto/pujgcc:latest ls /data**

```
PS C:\Users\marco> docker run -v ${PWD}:/data/ japeto/pujgcc:latest ls /data
>>
3D Objects
AppData
AppMods
Application Data
ClionProjects
Contacts
Cookies
Desktop
Documentos
Documents
Downloads
Favorites
IntelGraphicsProfiles
JuanBernal
Links
Local Settings
Music
My Documents
NTUSER.DAT
NTUSER.DAT{a2332f18-cdbf-11ec-8680-002248483d79}.TM.blf
NTUSER.DAT{a2332f18-cdbf-11ec-8680-002248483d79}.TMContainer000000000000000001.regtrans-ms
NTUSER.DAT{a2332f18-cdbf-11ec-8680-002248483d79}.TMContainer000000000000000002.regtrans-ms
NetHood
OneDrive
PrintHood
Recent
Recorded Calls
Saved Games
Searches
SendTo
Start Menu
Templates
Videos
node_modules
npm-cache
```

**Is the displayed list the same as what is in your current folder?**

el comando ls /data dentro del contenedor muestra el mismo contenido que tu carpeta actual en el host, entonces la carpeta se montó correctamente.

**docker run -v \${PWD}:/data/ japeto/pujgcc:latest gcc /data/helloworld.c**

```
PS C:\Users\marco> docker run -v ${PWD}:/data/ japeto/pujgcc:latest gcc /data/helloworld.c
PS C:\Users\marco> docker start -ti mycontainer /bin/bash
```



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```
benjaminortiz@japeto:pujgcc$ docker help
PS C:\Users\marco> docker start pensive_kalam
pensive_kalam
PS C:\Users\marco> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS          NAMES
f1eb68907097   japeto/pujgcc "bin/bash"             About a minute ago    Up 12 seconds                pensive_kalam
PS C:\Users\marco> docker exec pensive_kalam bin/bash
PS C:\Users\marco> docker exec -it pensive_kalam bin/bash
root@f1eb68907097:/# exit
exit

What's next:
  Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug pensive\_kalam
  Learn more at https://docs.docker.com/go/debug-cli/
PS C:\Users\marco>
```

What happens now when you exit the container? Is it stopped?

El contenedor sigue corriendo.

docker ps -l

```
PS C:\Users\marco> docker ps -l
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS          NAMES
f1eb68907097   japeto/pujgcc "bin/bash"             6 minutes ago    Up 5 minutes                pensive_kalam
PS C:\Users\marco>
```

```
PS C:\Users\marco> docker ps -l
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS          NAMES
f1eb68907097   japeto/pujgcc "bin/bash"             10 minutes ago    Exited (0) 32 seconds ago                pensive_kalam
PS C:\Users\marco>
```