

Trabajo Práctico 2 - Introducción a Docker

Desarrollo:

1- Instalar Docker Community Edition

```
ing-sw-3 — -zsh — 80x24
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker version
Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docke
r daemon running?
Client:
  Cloud integration: v1.0.35-desktop+001
  Version:          24.0.5
  API version:      1.43
  Go version:       go1.20.6
  Git commit:       ced0996
  Built:            Fri Jul 21 20:32:30 2023
  OS/Arch:          darwin/arm64
  Context:          default
pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 %
```

3- Obtener la imagen BusyBox

```
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker pull busybox
Using default tag: latest
latest: Pulling from library/busybox
8a0af25e8c2e: Pull complete
Digest: sha256:3fbc632167424a6d997e74f52b878d7cc478225cffac6bc977eedfe51c7f4e79
Status: Downloaded newer image for busybox:latest
docker.io/library/busybox:latest

What's Next?
  View summary of image vulnerabilities and recommendations → docker scout quickview busybox
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
busybox        latest    fc9db2894f4e   2 weeks ago    4.04MB
pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 %
```

4- Ejecutando contenedores

```
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker run busybox
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker run busybox echo "Hola Mundo"
Hola Mundo
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED    STATUS    PORTS     NAMES
[pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED    STATUS    PORTS     NAMES
474e25463c69   busybox   "echo 'Hola Mundo'"     36 seconds ago    Exited (0) 34 seconds ago    nostalgic_saha
ca02ebdbb777   busybox   "sh"                    3 minutes ago     Exited (0) 3 minutes ago     epic_galileo
pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 %
```

5- Ejecutando en modo interactivo

```
pedrofernandez@MacBook-Air-de-Pedro ing-sw-3 % docker run -it busybox sh
ps
ps
/ # ps
PID    USER      TIME  COMMAND
   1   root         0:00  sh
   7   root         0:00  ps
/ # uptime
[ 17:48:13 up 0 min,  0 users,  load average: 0.00, 0.00, 0.00
/ # free
              total        used        free      shared  buff/cache   available
Mem:          2035832       412428       575612        308720       1047792       1236520
Swap:              0              0              0
/ # ls -l
total 40
[drwxr-xr-x   2 root    root          12288 Jul 17 18:29 bin
[drwxr-xr-x   5 root    root           360 Aug  8 17:48 dev
[drwxr-xr-x   1 root    root          4096 Aug  8 17:48 etc
drwxr-xr-x   2 nobody  nobody        4096 Jul 17 18:29 home
drwxr-xr-x   2 root    root          4096 Jul 17 18:29 lib
lrwxrwxrwx   1 root    root           3 Jul 17 18:29 lib64 -> lib
[dr-xr-xr-x  211 root    root           0 Aug  8 17:48 proc
drwx-----   1 root    root          4096 Aug  8 17:48 root
dr-xr-xr-x   13 root    root           0 Aug  8 17:48 sys
drwxrwxrwt   2 root    root          4096 Jul 17 18:29 tmp
drwxr-xr-x   4 root    root          4096 Jul 17 18:29 usr
drwxr-xr-x   4 root    root          4096 Jul 17 18:29 var
/ #
/ #
```

6- Borrando contenedores terminados

```
Last login: Tue Aug  8 14:22:05 on ttys000
[pedrofernandez@MacBook-Air-de-Pedro ~ % docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS
b119a1c148e   busybox   "sh"                    About a minute ago   Up About a m
inute
474e25463c69   busybox   "echo 'Hola Mundo'"     5 minutes ago       Exited (0) 4
minutes ago
ca02ebdbb777   busybox   "sh"                    7 minutes ago       Exited (0) 7
minutes ago
epic_galileo
[pedrofernandez@MacBook-Air-de-Pedro ~ % docker rm epic_galileo
epic_galileo
[pedrofernandez@MacBook-Air-de-Pedro ~ % docker container prune
WARNING! This will remove all stopped containers.
Are you sure you want to continue? [y/N] y
Deleted Containers:
474e25463c698095125f17216f92c43c5deb38132099decaa0fd91ac41d00664

Total reclaimed space: 0B
pedrofernandez@MacBook-Air-de-Pedro ~ %
```

7- Construir una imagen

```
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker build -t mywebapi .
[+] Building 282.2s (18/18) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 810B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for mcr.microsoft.com/dotnet/sdk:7.0
=> [internal] load metadata for mcr.microsoft.com/dotnet/aspnet:7.0
=> [build 1/7] FROM mcr.microsoft.com/dotnet/sdk:7.0@sha256:9827223bc7525587ab076f92b7e8e762b82ec6db7f9b023bea2e03e5bc2182f0
=> => resolve mcr.microsoft.com/dotnet/sdk:7.0@sha256:9827223bc7525587ab076f92b7e8e762b82ec6db7f9b023bea2e03e5bc2182f0
=> => sha256:9827223bc7525587ab076f92b7e8e762b82ec6db7f9b023bea2e03e5bc2182f0 1.82kB / 1.82kB
=> => sha256:26bb9cf0cecb1b755b3e7344b1cc1f6fe795dfbcc19346eb7f86f4fb38166053 7.23kB / 7.23kB
=> => sha256:795b5d192ab1819e75375fead3f2f931bd86046e3308224944f16a5ec3b97424 30.06MB / 30.06MB
=> => sha256:aca33a7f27b420cdf2fd5bb52c06e696dfff372ea8f2fe0aa8a9eee607239a00 2.01kB / 2.01kB
=> => sha256:8dd863e03c5ce97c250c196718114eaa7ddd54cd769ceee2893c9bb5e268303b 14.68MB / 14.92MB
=> => sha256:d996f511790b20f4767f8d8480853ea28264501e60f82b00eabca571be48f94e 30.72MB / 30.72MB
=> => sha256:33bf6b68d663d45d3a571947668a6540c1c72ccb0fc9cff0bd5bf75079201a6e 156B / 156B
=> => sha256:9cdd15bfaf022ff53341e6f0cc371e949bbe7e7f6d9860f2ab0d379ecdad0696 9.81MB / 9.81MB
=> => sha256:4ffad076198dd759614fd6ccf0566c383bb926bee67c8c29cf195e31b5822fa0 25.39MB / 25.39MB
=> => sha256:b6b43bad14f7d2c9e4106431128bfe2741388288a5d98e82abef2ebc0df39d83 177.62MB / 177.62MB
=> => extracting sha256:795b5d192ab1819e75375fead3f2f931bd86046e3308224944f16a5ec3b97424
=> => extracting sha256:8dd863e03c5ce97c250c196718114eaa7ddd54cd769ceee2893c9bb5e268303b
=> => sha256:53e675c0ac6ead8aa96ae480d12615ba0bb349bdf7df7945f495e73ffab609be 13.33MB / 13.33MB
=> => extracting sha256:d996f511790b20f4767f8d8480853ea28264501e60f82b00eabca571be48f94e
=> => extracting sha256:33bf6b68d663d45d3a571947668a6540c1c72ccb0fc9cff0bd5bf75079201a6e
=> => extracting sha256:4ffad076198dd759614fd6ccf0566c383bb926bee67c8c29cf195e31b5822fa0
```

8- Publicando puertos

```
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker run --name myapi -d mywebapi
793eb1affa489b47d4aad85bc34299f0f37c156eeb6dc49f3d56c091d474a82
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % ps
  PID TTY          TIME CMD
 38783 ttys000      0:00.17 -zsh
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
793eb1affa48   mywebapi      "dotnet SimpleWebAPI..." About a minute ago Up About a minute 80/tcp, 443/tcp, 5254/tcp          myapi
b29e07e94c24   mywebapi:latest "dotnet SimpleWebAPI..." 2 minutes ago Up 2 minutes 80/tcp, 443/tcp, 5254/tcp          distracted_shannon
b119a1c148e    busybox       "sh"                    21 minutes ago Up 21 minutes                               great_kapitsa
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI %
```

←

→

↺

localhost/WeatherForecast



No se puede acceder a este sitio

localhost rechazó la conexión.

- Intenta:
- Comprobar la conexión.
 - [Comprobar el proxy y el firewall.](#)

ERR_CONNECTION_REFUSED

Detalles

Volver a cargar

elimino contenedores

```
b119a1c148e busybox sh 21 minutes
[pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker kill myapi
myapi
[pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker rm myapi
myapi
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI %
```

con el comando nano edito el archivo Dockerfile y vuelvo a ejecutar

9- Modificar Dockerfile para soportar bash

```
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker run --name myapi -d -p 80:80 -p 5254:5254 mywebapi
9d262877d5353bf5761a54ec631671fa3bd29d56721478b8481129f65991dab2
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % ls
Dockerfile      README.md      SimpleWebAPI      SimpleWebAPI.sln
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % nano Dockerfile
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker build -t mywebapi .
[+] Building 0.8s (18/18) FINISHED
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 810B
=> [internal] load metadata for mcr.microsoft.com/dotnet/aspnet:7.0
=> [internal] load metadata for mcr.microsoft.com/dotnet/sdk:7.0
=> [build 1/7] FROM mcr.microsoft.com/dotnet/sdk:7.0@sha256:9827223bc7525587ab076f92b7e8e762b82ec6db7f9b023bea2e03e5bc2182f0
=> [internal] load build context
=> => transferring context: 2.44kB
=> [base 1/2] FROM mcr.microsoft.com/dotnet/aspnet:7.0@sha256:c38ca869e13de0f3afa35b2f75941bf8daebcbcd5d0616a34a05c7fcf1addb0f5
=> CACHED [base 2/2] WORKDIR /app
=> CACHED [final 1/2] WORKDIR /app
=> CACHED [build 2/7] WORKDIR /src
=> CACHED [build 3/7] COPY [SimpleWebAPI/SimpleWebAPI.csproj, SimpleWebAPI/]
=> CACHED [build 4/7] RUN dotnet restore "SimpleWebAPI/SimpleWebAPI.csproj"
=> CACHED [build 5/7] COPY . .
=> CACHED [build 6/7] WORKDIR /src/SimpleWebAPI
=> CACHED [build 7/7] RUN dotnet build "SimpleWebAPI.csproj" -c Release -o /app/build
=> CACHED [publish 1/1] RUN dotnet publish "SimpleWebAPI.csproj" -c Release -o /app/publish /p:UseAppHost=false
=> CACHED [final 2/2] COPY --from=publish /app/publish .
=> exporting to image
=> => exporting layers
=> => writing image sha256:616904433de25164b2e98784ea4ed7bb0aa5b4216667a168cf9d5a9af187dc5d
=> => naming to docker.io/library/mywebapi

What's Next?
View summary of image vulnerabilities and recommendations → docker scout quickview
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI %
```

```
localhost/WeatherForecast
[{"date": "2023-08-09", "temperatureC": -18, "temperatureF": 0, "summary": "Cool"}, {"date": "2023-08-10", "temperatureC": -11, "temperatureF": 13, "summary": "Balmy"}, {"date": "2023-08-11", "temperatureC": 23, "temperatureF": 73, "summary": "Balmy"}, {"date": "2023-08-12", "temperatureC": 50, "temperatureF": 121, "summary": "Balmy"}, {"date": "2023-08-13", "temperatureC": 34, "temperatureF": 93, "summary": "Chilly"}]
```

10- Montando volúmenes

```
pedrofernandez@MacBook-Air-de-Pedro SimpleWebAPI % docker run -it --rm -p 80:80 -v pedrofernandez mywebapi
info: Microsoft.Hosting.Lifetime[14]
      Now listening on: http://[::]:80
info: Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
      Hosting environment: Production
info: Microsoft.Hosting.Lifetime[0]
      Content root path: /app
ls -l /var/temp
^[[O^[[O
ls -l /var/temp
touch /var/temp/hola.txt
```



Postman



hola

11- Utilizando una base de datos

```
Last login: Tue Aug  8 14:49:21 on ttys000
pedrofernandez@MacBook-Air-de-Pedro ~ % mkdir $HOME/.postgres
pedrofernandez@MacBook-Air-de-Pedro ~ % docker run --name my-postgres -e POSTGRES_PASSWORD=mysecretpassword -v $HOME/.postgres:/var/lib/postgresql/data -p 5432:5432 -d postgres:9.4
Unable to find image 'postgres:9.4' locally
9.4: Pulling from library/postgres
5e630fa6465e: Pull complete
5a28899232ff: Pull complete
72390476b7ab: Pull complete
48f4470eb370: Pull complete
0b51db6dc34b: Pull complete
918217c35d15: Pull complete
aa01905f4f68: Pull complete
f5ff0687a25d: Pull complete
5dc143e33906: Pull complete
582894ca74e1: Pull complete
c116dd4b34b6: Pull complete
48d8ac22e10b: Pull complete
3accad31540e: Pull complete
fd9d1c2f57c6: Pull complete
Digest: sha256:42a7a6a647a602efa9592edd1f56359800d079b93fa52c5d92244c58ac4a2ab9
Status: Downloaded newer image for postgres:9.4
4b76267535405076c97c0198f737b2f3296fd2e1146a7f01a12f4dd50a3cbe7
pedrofernandez@MacBook-Air-de-Pedro ~ % docker exec -it my-postgres /bin/bash
root@4b7626753540:/# psql -h localhost -U postgres
psql (9.4.26)
Type "help" for help.

postgres=# \l

```

Name	Owner	Encoding	Collate	Ctype	Access privileges
postgres	postgres	UTF8	en_US.utf8	en_US.utf8	
template0	postgres	UTF8	en_US.utf8	en_US.utf8	=c/postgres +
template1	postgres	UTF8	en_US.utf8	en_US.utf8	postgres=CTC/postgres -

```
(3 rows)

postgres=#
```

Descargo postgres y ejecuto comandos...

```
[postgres=# create database test;
CREATE DATABASE
[postgres=# \connect test
You are now connected to database "test" as user "postgres".
[test=# create table tabla_a (mensaje varchar(50));
CREATE TABLE
[test=# insert into tabla_a (mensaje) values('Hola mundo!');
INSERT 0 1
[test=# select * from tabla_a;
      mensaje
-----
 Hola mundo!
(1 row)

[test=# \q
[root@4b7626753540:/# exit
exit
pedrofernandez@MacBook-Air-de-Pedro ~ %
```

Los comandos docker run se utilizan para crear y ejecutar contenedores con bases de datos (PostgreSQL o SQL Server) con configuraciones específicas. Luego, los comandos docker exec permiten interactuar con el shell de los contenedores para ejecutar sentencias SQL o comandos específicos.

12- Hacer el punto 11 con Microsoft SQL Server

```
pedrofernandez@MacBook-Air-de-Pedro ~ % docker run --name my-sqlserver -e 'ACCEPT_EULA=Y' -e 'SA_PASSWORD=mysecretpassword' -p 1433:1433 -d mcr.microsoft.com/mssql/server:2019-latest
Unable to find image 'mcr.microsoft.com/mssql/server:2019-latest' locally
2019-latest: Pulling from mssql/server
bbfe84ab0c13: Downloading [=====] 18.68MB/29.92MB
a14ea050667: Downloading [==>] 22.69MB/413.1MB
875ff34fc734: Downloading [=====] 22.69MB/77.84MB
^C
pedrofernandez@MacBook-Air-de-Pedro ~ %
```

Se descarga y se realizan los mismos pasos y se ejecutan comandos SQL.