Atividade Container

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Acessando a EC2:


```
vinic@Vinicius_Aoki MINGW64 /c/SPTech/SO nuvem/Chaves
$ ssh -i "primeira_chave.pem" ubuntu@ec2-3-83-193-92.compute-1.amazonaws.com
The authenticity of host 'ec2-3-83-193-92.compute-1.amazonaws.com (3.83.193.92)'
 can't be established.
ED25519 key fingerprint is SHA256:UGB9y6r9c2lwOnNubI+Q8hYPsYbTmZxCmHkrPnDxzVY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-83-193-92.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1024-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Wed Mar  5 08:40:08 UTC 2025

  System load:    1.35      Processes:             27
  Usage of /home: unknown   Users logged in:       0
  Memory usage:   5%        IPv4 address for eth0: 10.10.10.2
  Swap usage:     0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
```

Atualizando pacotes:


```
ubuntu@ip-172-31-95-234:~$ sudo apt update && sudo apt upgrade -y
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [671 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [130 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [922 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [209 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:18 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8996 B]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1041 kB]
Get:21 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [6936 B]
Get:22 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [820 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [262 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [25.9 kB
```

Instalando Docker:

```
ubuntu@ip-172-31-95-234:~$ sudo apt install docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-buildx
  docker-compose-v2 docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 0 not upgraded.
Need to get 78.6 MB of archives.
After this operation, 302 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 pigz amd64 2.8-1 [65.
6 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 bridge-utils amd64 1.7.1-
1ubuntu2 [33.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.1.12
-0ubuntu3.1 [8599 kB]
```

Verificando a versão do Docker:

```
ubuntu@ip-172-31-95-234:~$ docker --version
Docker version 26.1.3, build 26.1.3-0ubuntu1~24.04.1
ubuntu@ip-172-31-95-234:~$
```

Ativando o Docker:

```
ubuntu@ip-172-31-95-234:~$ sudo systemctl start docker
ubuntu@ip-172-31-95-234:~$
```

Habilitando o Docker:

```
ubuntu@ip-172-31-95-234:~$ sudo systemctl enable docker
ubuntu@ip-172-31-95-234:~$
```

Baixando o imagem do contêiner do mysql:

```
ubuntu@ip-172-31-95-234:~$ sudo docker pull mysql:5.7
5.7: Pulling from library/mysql
20e4dcae4c69: Pull complete
1c56c3d4ce74: Pull complete
e9f03a1c24ce: Pull complete
68c3898c2015: Pull complete
6b95a940e7b6: Pull complete
90986bb8de6e: Pull complete
ae71319cb779: Pull complete
ffc89e9dfd88: Pull complete
43d05e938198: Pull complete
064b2d298fba: Pull complete
df9a4d85569b: Pull complete
Digest: sha256:4bc6bc963e6d8443453676cae56536f4b8156d78bae03c0145cbe47c2aad73bb
Status: Downloaded newer image for mysql:5.7
docker.io/library/mysql:5.7
ubuntu@ip-172-31-95-234:~$
```

Verificando o download da imagem:

```
ubuntu@ip-172-31-95-234:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
mysql         5.7       5107333e08a8   15 months ago  501MB
ubuntu@ip-172-31-95-234:~$
```

Criando o conteiner:

```
ubuntu@ip-172-31-95-234:~$ sudo docker run -d -p 3306:3306 --name ContainerBD -e "MYSQL_DATABAS
E=banco1" -e "MYSQL_ROOT_PASSWORD=urubu100" mysql:5.7
7f60d17524a5b0d7851cb7280d8c35d786ee48bf96da49c72f3badd1720107b8
ubuntu@ip-172-31-95-234:~$
```

Confirmando a criação do contêiner:

```
ubuntu@ip-172-31-95-234:~$ sudo docker ps -a
CONTAINER ID    IMAGE      COMMAND              CREATED        STATUS        PORTS
                                        NAMES
7f60d17524a5    mysql:5.7  "docker-entrypoint.s…"  55 seconds ago  Up 54 seconds  0.0.0.0:33
06->3306/tcp, :::3306->3306/tcp, 33060/tcp   ContainerBD
ubuntu@ip-172-31-95-234:~$
```

Monitorando o consumo de recursos do container:

```
ubuntu@ip-172-31-95-234:~$ sudo docker stats ContainerBD
CONTAINER ID    NAME         CPU %    MEM USAGE / LIMIT    MEM %    NET I/O        BLOCK I/O
        PIDS
7f60d17524a5    ContainerBD  0.45%    220.9MiB / 957.4MiB  23.07%   1.39kB / 0B    45.9MB / 2
91MB    27
CONTAINER ID    NAME         CPU %    MEM USAGE / LIMIT    MEM %    NET I/O        BLOCK I/O
        PIDS
7f60d17524a5    ContainerBD  0.04%    220.9MiB / 957.4MiB  23.07%   1.39kB / 0B    45.9MB / 2
91MB    27
CONTAINER ID    NAME         CPU %    MEM USAGE / LIMIT    MEM %    NET I/O        BLOCK I/O
        PIDS
7f60d17524a5    ContainerBD  0.04%    220.9MiB / 957.4MiB  23.07%   1.39kB / 0B    45.9MB / 2
91MB    27
CONTAINER ID    NAME         CPU %    MEM USAGE / LIMIT    MEM %    NET I/O        BLOCK I/O
        PIDS
```

Comando para manipular o container:

```
ubuntu@ip-172-31-95-234:~$ sudo docker exec -it ContainerBD bash
bash-4.2#
```

Acessando o Mysql:

```
bash-4.2# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.44 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

Rodando comando Myslq:

```
mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| banco1             |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)

mysql>
```

Saindo do Mysql:

```
mysql> exit
Bye
bash-4.2#
```

Saindo do Container:

```
bash-4.2# exit
exit
ubuntu@ip-172-31-95-234:~$
```

Parando o Container:

```
ubuntu@ip-172-31-95-234:~$ sudo docker stop ContainerBD
ContainerBD
ubuntu@ip-172-31-95-234:~$ sudo docker ps -a
CONTAINER ID   IMAGE       COMMAND             CREATED         STATUS                   PORTS     NAMES
7f60d17524a5   mysql:5.7   "docker-entrypoint.s…"   40 minutes ago   Exited (0) 19 seconds ago          ContainerBD
ubuntu@ip-172-31-95-234:~$
```

Desafio:

Não consegui fazer :(

Pesquisa:

Imagens Docker para criação de container

Imagens são como 'diretórios' que possuem todos os arquivos e configurações sobre um programa ou SO, então ao invés de ser necessário configurar um container do zero, é apenas necessário usar uma imagem.

Como o DockerFile ajuda na criação das imagens Docker

O DockerFile é uma documentação com todos os comandos Docker que podem ser utilizados para criar e configurar uma imagem.

Gerenciamento dos containers via Docker Compose

O Docker Compose permite a criação de um arquivo de configuração que gerencia vários containers diferentes, facilitando sua gestão e implementação.

Como é feita a comunicação entre container criado pelo Docker

Os containers se comunicam por meio de redes, onde elas criam uma zona de confiança para comunicação entre container. As redes podem ser configuradas por meio de linha de comando ou pelo Docker Compose.