

# Implantação e configuração em Docker

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Soluções e consultoria em TI e Negócios

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## **Apresentação**

Como opção de implantação de nosso projeto, criamos a infraestrutura em docker e disponibilizamos para testes, a fim de escolher a melhor das opções para a continuidade do projeto. Esta opção pode acelerar a implementação e migração do projeto para outros ambientes pela própria natureza da tecnologia de containers, que permite levar para o novo ambiente todos os pacotes e dependências necessitando compatibilidade total com o ambiente de implantação.

## **Objetivo**

Criar estrutura wordpress utilizando a tecnologia de containers para implementar o wordpress e o mysql.

## **Container**

Para este projeto criaremos 2 containers, um abarcará a infra do wordpress e outro a do mysql.

## Infraestrutura

Para a implantação do ambiente de containers utilizaremos um servidor virtual com o Ubuntu 2020.

## Containers

Listamos os comandos necessários para a preparação do ambiente para a instalação do Docker:

### **Passo 1 -**

```
sudo apt-get install \  
apt-transport-https \  
ca-certificates \  
curl \  
software-properties-common
```

### **Passo 2 -**

```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg |  
sudo apt-key add -
```

### **Passo 3 -**

```
sudo apt-key fingerprint 0EBFCD88
```

### **Passo 4 -**

```
sudo add-apt-repository \  
"deb [arch=amd64]  
https://download.docker.com/linux/ubuntu \  
$(lsb_release -cs) \  
stable"
```

## Passo 1

```
leonardo@leonardo-Virtual-Machine:~$ sudo apt-get install \
>     apt-transport-https \
>     ca-certificates \
>     curl \
>     software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
ca-certificates is already the newest version (20210119~20.04.1).
ca-certificates set to manually installed.
software-properties-common is already the newest version (0.98.9.4).
apt-transport-https is already the newest version (2.0.4).
The following packages were automatically installed and are no longer required:
  libfprint-2-tod1 libllvm10
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 161 kB of archives.
After this operation, 411 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 curl amd64 7.68.0-1ubuntu2.4 [161 kB]
Fetched 161 kB in 1s (242 kB/s)
Selecting previously unselected package curl.
(Reading database ... 184245 files and directories currently installed.)
Preparing to unpack .../curl_7.68.0-1ubuntu2.4_amd64.deb ...
Unpacking curl (7.68.0-1ubuntu2.4) ...
Setting up curl (7.68.0-1ubuntu2.4) ...
Processing triggers for man-db (2.9.1-1) ...
leonardo@leonardo-Virtual-Machine:~$
```

## Passo 2

```
leonardo@leonardo-Virtual-Machine:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
OK
leonardo@leonardo-Virtual-Machine:~$
```

## Passo 3

```
leonardo@leonardo-Virtual-Machine:~$ sudo apt-key fingerprint 0EBFCD88
pub   rsa4096 2017-02-22 [SCEA]
      9DC8 5822 9FC7 DD38 854A  E2D8 8D81 803C 0EBF CD88
uid   [ unknown] Docker Release (CE deb) <docker@docker.com>
sub   rsa4096 2017-02-22 [S]

leonardo@leonardo-Virtual-Machine:~$
```

## Passo 4

```
leonardo@leonardo-Virtual-Machine:~$ sudo add-apt-repository \
> "deb [arch=amd64] http://download.docker.com/linux/ubuntu \
> $(lsb_release -cs) \
> stable"
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Hit:3 http://br.archive.ubuntu.com/ubuntu focal InRelease
Get:4 http://br.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:2 https://download.docker.com/linux/ubuntu focal InRelease [36,2 kB]
Get:5 http://br.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Hit:6 http://packages.microsoft.com/repos/code stable InRelease
Hit:7 http://ppa.launchpad.net/ansible/ansible/ubuntu focal InRelease
Get:8 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [265 kB]
Get:9 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [8.458 B]
Hit:10 https://packages.microsoft.com/repos/vscode stable InRelease
Get:11 http://br.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [303 kB]
Get:12 http://br.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [2.468 B]
Get:13 http://br.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [1.768 B]
Fetched 940 kB in 2s (441 kB/s)
Reading package lists... Done
leonardo@leonardo-Virtual-Machine:~$
```

:



## Instalação

Listamos os comandos necessários para a instalação do Docker:

### **Passo 1 -**

*sudo apt-get install docker-ce*

```
Leonardo@Leonardo-Virtual-Machine:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfprint-2-tod1 libllvm10
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  containerd.io docker-ce-cli docker-ce-rootless-extras pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-ce docker-ce-cli docker-ce-rootless-extras pigz slirp4netns
0 upgraded, 6 newly installed, 0 to remove and 2 not upgraded.
Need to get 104 MB of archives.
After this operation, 451 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:2 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 pigz amd64 2.4-1 [57,4 kB]
Get:6 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 slirp4netns amd64 0.4.3-1 [74,3 kB]
Get:1 https://download.docker.com/linux/ubuntu focal/stable amd64 containerd.io amd64 1.4.4-1 [28,3 MB]
Get:3 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-cli amd64 5:20.10.5~3-0~ubuntu-focal
[41,4 MB]
Get:4 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:20.10.5~3-0~ubuntu-focal [24
.8 MB]
Get:5 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-rootless-extras amd64 5:20.10.5~3-0~
ubuntu-focal [8.966 kB]
Fetched 104 MB in 17s (5.933 kB/s)
Selecting previously unselected package pigz.
(Reading database ... 184252 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../1-containerd.io_1.4.4-1_amd64.deb ...
Unpacking containerd.io (1.4.4-1) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../2-docker-ce-cli_5%3a20.10.5~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce-cli (5:20.10.5~3-0~ubuntu-focal) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../3-docker-ce_5%3a20.10.5~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce (5:20.10.5~3-0~ubuntu-focal) ...
Selecting previously unselected package docker-ce-rootless-extras.
Preparing to unpack .../4-docker-ce-rootless-extras_5%3a20.10.5~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce-rootless-extras (5:20.10.5~3-0~ubuntu-focal) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../5-slirp4netns_0.4.3-1_amd64.deb ...
Unpacking slirp4netns (0.4.3-1) ...
Setting up slirp4netns (0.4.3-1) ...
Setting up containerd.io (1.4.4-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.
service.
Setting up docker-ce-cli (5:20.10.5~3-0~ubuntu-focal) ...
Setting up pigz (2.4-1) ...
Setting up docker-ce (5:20.10.5~3-0~ubuntu-focal) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Setting up docker-ce-rootless-extras (5:20.10.5~3-0~ubuntu-focal) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3.4) ...
Leonardo@Leonardo-Virtual-Machine:~$
```

## Criação dos Containers

Listamos os comandos necessários para a criação dos dois contêineres que necessitamos para a aplicação:

### **Passo 1 -**

```
sudo docker run --name banco -e  
MYSQL_ROOT_PASSWORD=senha -d mysql:5.6
```

### **Passo 2 -**

```
docker run --name meusite --link banco:mysql -p 80:80  
-d wordpress
```

```
leonardo@leonardo-Virtual-Machine:~$ sudo docker run --name banco -e MYSQL_ROOT_PASSWORD=minhasenha -d mysql:5.6
Unable to find image 'mysql:5.6' locally
5.6: Pulling from library/mysql
a4feded82f54: Pull complete
c1d0e80dd947: Pull complete
a3eb306f0583: Pull complete
9fafb9660ba0: Pull complete
64aef7d42843: Pull complete
488408f75e55: Pull complete
5c154cf95ff0: Pull complete
ae9d479e9699: Pull complete
89e036f05e2f: Pull complete
681eef5c7bd9: Pull complete
1604d620cec0: Pull complete
Digest: sha256:f3515b6a6502d872d5a37db78e4d225c0fcbf8da65d1faf8ce4609c92e2cbaf0
Status: Downloaded newer image for mysql:5.6
be08998f1ec69271551a3b883c3d7171a8bcc78774ab9ec316c2ad5d302c2cbf
leonardo@leonardo-Virtual-Machine:~$
```

*OBS.: Por já conter uma aplicação utilizando a porta 80, escolhemos a porta 8080 para esta aplicação)*



## Criação dos Containers

Listamos os comandos necessários para a criação dos dois contêineres que necessitamos para a aplicação:

### **Passo 1 -**

*sudo docker run --name banco -e  
MYSQL\_ROOT\_PASSWORD=senha -d mysql:5.6*

```
leonardo@leonardo-Virtual-Machine:~$ sudo docker run --name banco -e MYSQL_ROOT_PASSWORD=minhasenha -d mysql:5.6
Unable to find image 'mysql:5.6' locally
5.6: Pulling from library/mysql
a4feded82f54: Pull complete
c1d0e80dd947: Pull complete
a3eb306f0583: Pull complete
9fafb9660ba0: Pull complete
64aef7d42843: Pull complete
488408f75e55: Pull complete
5c154cf95ff0: Pull complete
ae9d479e9699: Pull complete
89e036f05e2f: Pull complete
681eef5c7bd9: Pull complete
1604d620cec0: Pull complete
Digest: sha256:f3515b6a6502d872d5a37db78e4d225c0fcbf8da65d1faf8ce4609c92e2cbaf0
Status: Downloaded newer image for mysql:5.6
be08998f1ec69271551a3b883c3d7171a8bcc78774ab9ec316c2ad5d302c2cbf
leonardo@leonardo-Virtual-Machine:~$
```

### **Passo 2 -**

*docker run --name meusite --link banco:mysql -p 80:80  
-d wordpress*

```
leonardo@leonardo-Virtual-Machine:~$ sudo docker run --name meudocker --link banco:mysql -p 8080:8080 -d wordpress
Unable to find image 'wordpress:latest' locally
latest: Pulling from library/wordpress
45b42c59be33: Pull complete
a48991d6909c: Pull complete
935e2abd2c2c: Pull complete
61ccf45ccdb9: Pull complete
27b5ac70765b: Pull complete
5638b69045ba: Pull complete
0fdaed064166: Pull complete
e932cec09ced: Pull complete
fbe190145b1c: Pull complete
f747612094ef: Pull complete
300f68c220b1: Pull complete
efd583fc4f80: Pull complete
011e53c9540e: Pull complete
90d05db0a960: Pull complete
5faae26e6219: Pull complete
7bf1209c35d8: Pull complete
527f0104274c: Pull complete
435b4e30e1cf: Pull complete
2c8618e23e3e: Pull complete
38bf6a404b0c: Pull complete
Digest: sha256:36553d77baea0a54e84700a08405881281cbaea36553d70c062fd2e2cbaea365
Status: Downloaded newer image for wordpress:latest
3ac291c7f385f136154a574d4885ff2c8b1b7c75c704ce43da2cf9dd1eb52d37
```

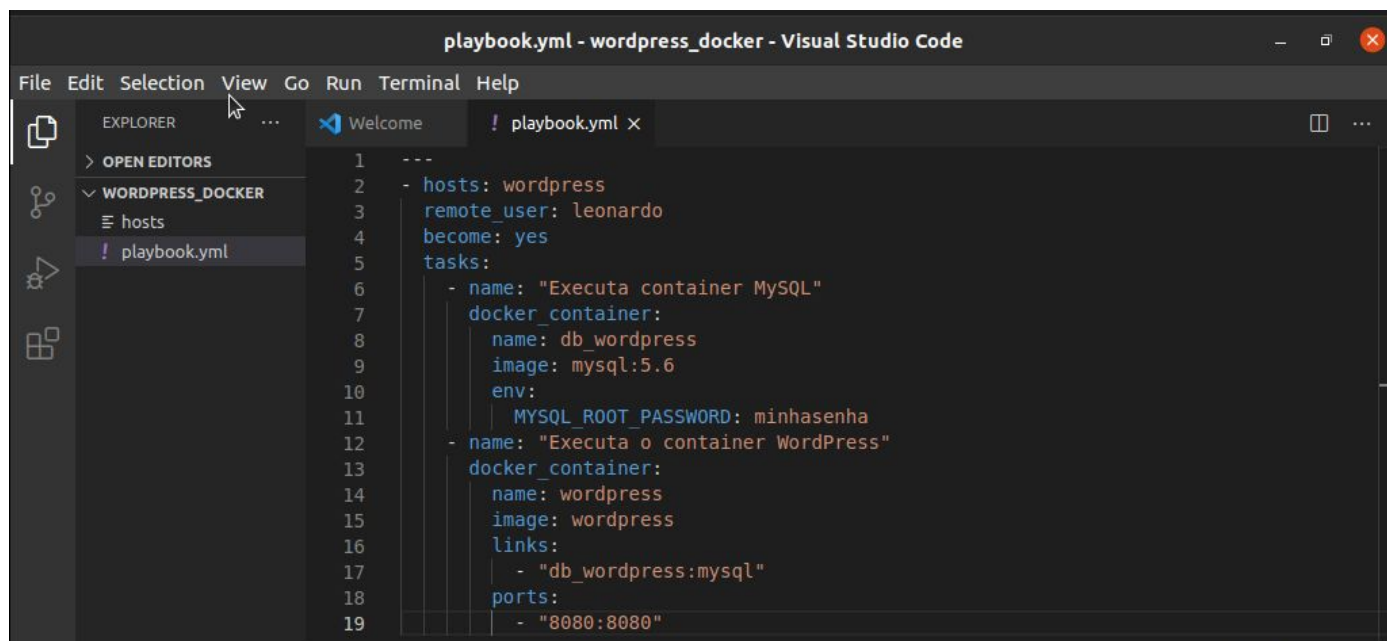
*OBS.: Por já conter  
uma aplicação  
utilizando a porta 80,  
escolhemos a porta  
8080 para esta  
aplicação)*

Abaixo podemos ver os containers criados:

```
leonardo@leonardo-Virtual-Machine:~$ sudo docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
3ac291c7f385   wordpress     "docker-entrypoint.s..." 3 minutes ago Up 3 minutes  80/tcp, 0.0.0.0:8080->8080/tcp
p_meudocker    wordpress     "docker-entrypoint.s..." 3 minutes ago Up 3 minutes  80/tcp, 0.0.0.0:8080->8080/tcp
be08998f1ec6   mysql:5.6     "docker-entrypoint.s..." 11 hours ago  Up 11 hours   3306/tcp
banco          mysql:5.6     "docker-entrypoint.s..." 11 hours ago  Up 11 hours   3306/tcp
leonardo@leonardo-Virtual-Machine:~$
```

## Playbook e sincronização

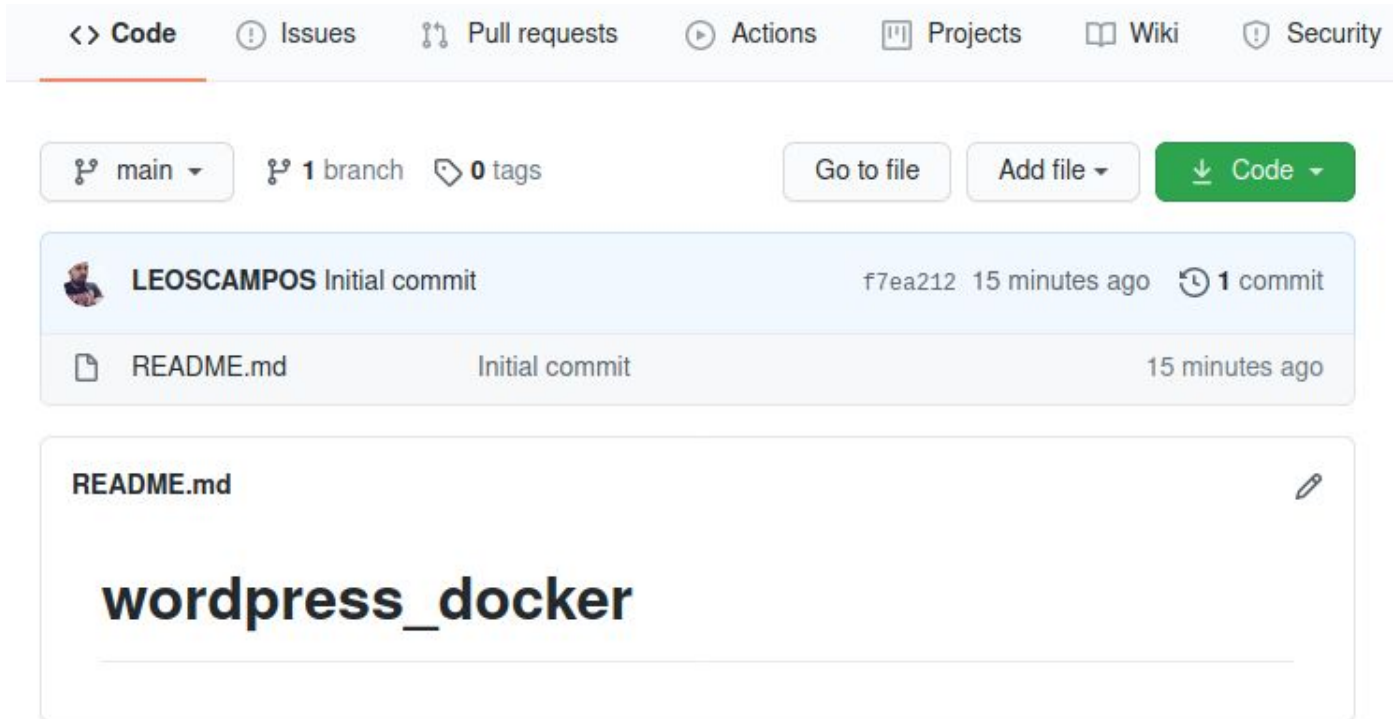
Abaixo evidenciamos a utilização do VS Code para manipulação do playbook e sincronização com o github, bem como evidências do código commitado no perfil do github:



The screenshot shows the Visual Studio Code interface with a file explorer on the left and a code editor on the right. The file explorer shows a project named 'WORDPRESS\_DOCKER' with files 'hosts' and 'playbook.yml'. The code editor displays the content of 'playbook.yml'.

```
1 ---
2 - hosts: wordpress
3   remote_user: leonardo
4   become: yes
5   tasks:
6     - name: "Executa container MySQL"
7       docker_container:
8         name: db_wordpress
9         image: mysql:5.6
10        env:
11          MYSQL_ROOT_PASSWORD: minhasenha
12    - name: "Executa o container WordPress"
13      docker_container:
14        name: wordpress
15        image: wordpress
16        links:
17          - "db_wordpress:mysql"
18        ports:
19          - "8080:8080"
```

Projeto criado no github, ainda sem conteúdo:



Listamos os comandos necessários para realização do commit e sincronização com o Github:

**Passo 1 -**

*\$ git init*

**Passo 2 -**

*\$ git add \**

**Passo 3 -**

*\$ git commit -m*

**Passo 4 -**

*\$ git remote add origin*

[https://github.com/LEOSCAMPOS/wordpress\\_docker.git](https://github.com/LEOSCAMPOS/wordpress_docker.git)

**Passo 5 -**

*\$ git push -u origin master*



```
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git init
Initialized empty Git repository in /home/leonardo/wordpress_docker/.git/
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git add *
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git commit -m
error: switch `m' requires a value
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git commit -m "Importanto novo p
laybook"

*** Please tell me who you are.

Run

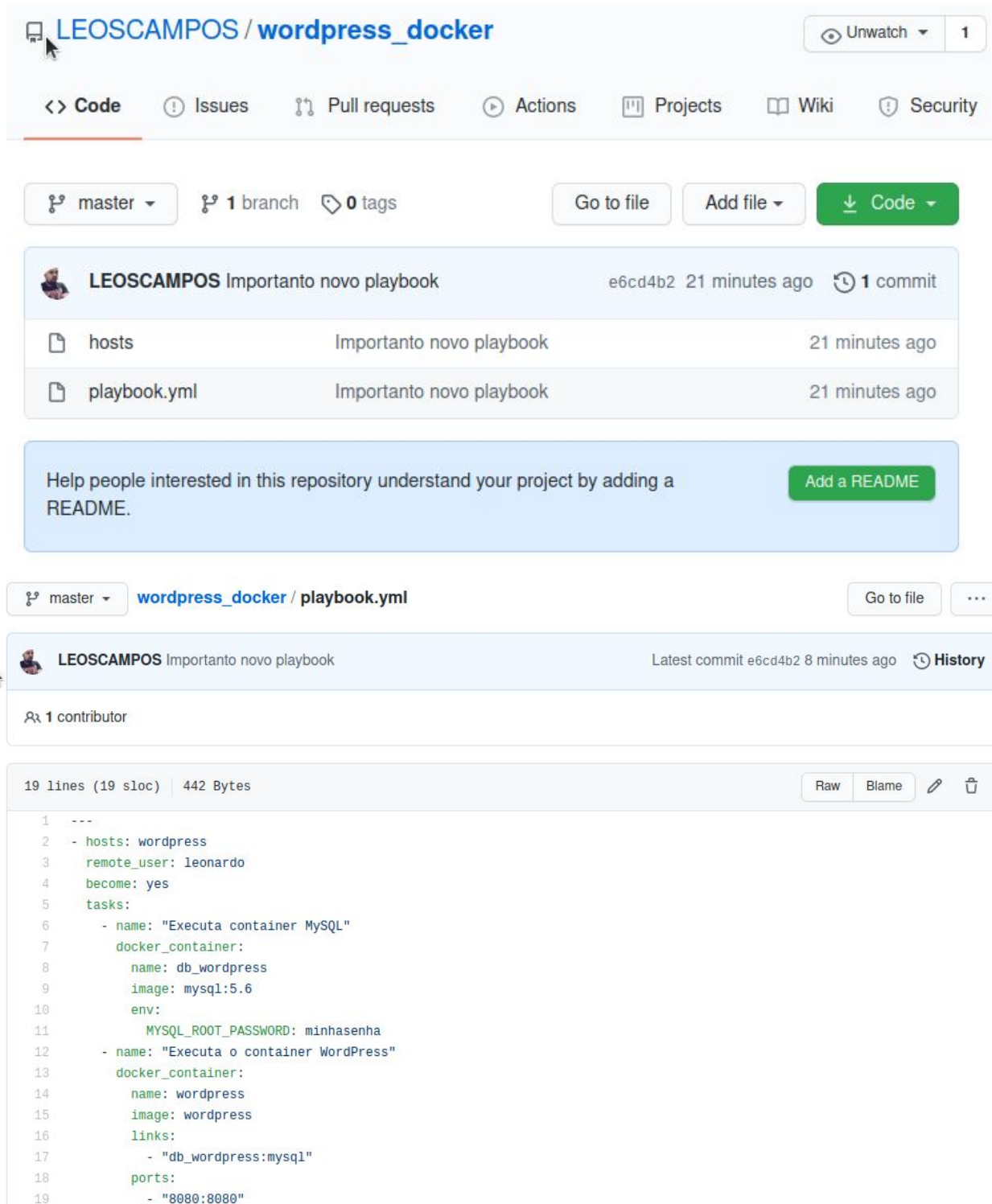
  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: unable to auto-detect email address (got 'root@leonardo-Virtual-Machine.(none)')
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git config --global user.email "
nadinholsc@gmail.com"
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# ^C
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git config --global user.name "l
eonardo.campos"
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git commit -m "Importanto novo p
laybook"
[master (root-commit) e6cd4b2] Importanto novo playbook
 2 files changed, 21 insertions(+)
 create mode 100644 hosts
 create mode 100644 playbook.yml
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git remote add origin https://gi
thub.com/LEOSCAMPOS/wordpress_docker.git
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker# git push -u origin master
Username for 'https://github.com': nadinholsc@gmail.com
Password for 'https://nadinholsc@gmail.com@github.com':
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 504 bytes | 252.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'master' on GitHub by visiting:
remote:   https://github.com/LEOSCAMPOS/wordpress_docker/pull/new/master
remote:
To https://github.com/LEOSCAMPOS/wordpress_docker.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
root@leonardo-Virtual-Machine:/home/leonardo/wordpress_docker#
```

Ln 19, Col 24 Spaces: 2 UTF-8 LF YAML

Aqui evidenciamos que o playbook foi commitado para o github ([https://github.com/LEOSCAMPOS/wordpress\\_docker.git](https://github.com/LEOSCAMPOS/wordpress_docker.git)):



LEOSCAMPOS / **wordpress\_docker** Unwatch 1

<> Code Issues Pull requests Actions Projects Wiki Security

master 1 branch 0 tags Go to file Add file Code

LEOSCAMPOS	Importante novo playbook	e6cd4b2 21 minutes ago	1 commit
hosts	Importante novo playbook	21 minutes ago	
playbook.yml	Importante novo playbook	21 minutes ago	

Help people interested in this repository understand your project by adding a README. Add a README

master **wordpress\_docker** / **playbook.yml** Go to file ...

LEOSCAMPOS Importante novo playbook Latest commit e6cd4b2 8 minutes ago History

1 contributor

19 lines (19 sloc) 442 Bytes Raw Blame

```
1 ---
2 - hosts: wordpress
3   remote_user: leonardo
4   become: yes
5   tasks:
6     - name: "Executa container MySQL"
7       docker_container:
8         name: db_wordpress
9         image: mysql:5.6
10        env:
11          MYSQL_ROOT_PASSWORD: minhasenha
12    - name: "Executa o container WordPress"
13      docker_container:
14        name: wordpress
15        image: wordpress
16        links:
17          - "db_wordpress:mysql1"
18        ports:
19          - "8080:8080"
```