

FIAP GRADUAÇÃO

TECNOLOGIA EM DESENVOLVIMENTO DE SISTEMAS

DevOps Tools & Cloud Computing

Docker – Exercício – Utilizando vários Containers

PROF. João Menk

profjoao.menk@fiap.com.br

A DimDim quer montar rapidamente um ambiente local de testes usando Docker

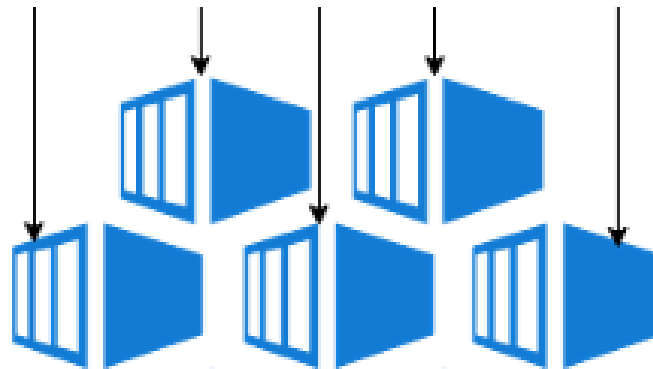
Sua equipe de DevOps na DimDim recebeu a tarefa de criar um ambiente simples e funcional para que os desenvolvedores possam testar a comunicação entre os seguintes Containers:

- ✓ Um Backend PHP
- ✓ O Banco de Dados MySQL
- ✓ E uma interface para administração do Banco (phpMyAdmin)

Hands-on

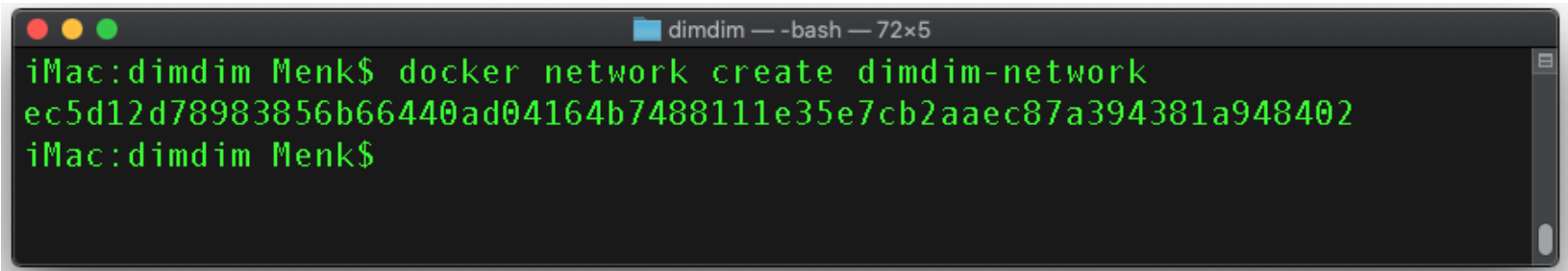
Criar 3 Containers que interagem entre si:

1. MySQL (Banco de Dados)
2. phpMyAdmin (Interface web para gerenciar o MySQL)
3. Aplicação PHP (Simples, que se conecta ao banco somente)



01) Primeiro precisamos criar uma rede para o nosso projeto

docker network create dimdim-network



```
dimdim — -bash — 72x5
iMac:dimdim Menk$ docker network create dimdim-network
ec5d12d78983856b66440ad04164b7488111e35e7cb2aaec87a394381a948402
iMac:dimdim Menk$
```

02) Agora vamos subir o container do MySQL

```
docker run -d \  
  --name dimdim-mysql \  
  --network dimdim-network \  
  -e MYSQL_ROOT_PASSWORD=rootpass \  
  -e MYSQL_DATABASE=dimdimdb \  
  -e MYSQL_USER=dimuser \  
  -e MYSQL_PASSWORD=dimpass \  
  mysql/mysql-server:latest
```



```
docker run -d \  
  --name dimdim-mysql \  
  --network dimdim-network \  
  -e MYSQL_ROOT_PASSWORD=rootpass \  
  -e MYSQL_DATABASE=dimdimdb \  
  -e MYSQL_USER=dimuser \  
  -e MYSQL_PASSWORD=dimpass \  
  mysql/mysql-server:latest
```



03) Verifique o Log e espere o Banco Subir

docker logs -f dimdim-mysql

```
Menk — com.docker.cli • docker logs -f dimdim-mysql — 104x19

[Entrypoint] Server shut down

[Entrypoint] MySQL init process done. Ready for start up.

[Entrypoint] Starting MySQL 8.0.32-1.2.11-server
2025-04-25T16:56:20.861864Z 0 [Warning] [MY-011068] [Server] The syntax '--skip-host-cache' is deprecated and will be removed in a future release. Please use SET GLOBAL host_cache_size=0 instead.
2025-04-25T16:56:20.863837Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.0.32) starting as process 1
2025-04-25T16:56:20.872355Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2025-04-25T16:56:22.939011Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2025-04-25T16:56:23.339384Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
2025-04-25T16:56:23.339450Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS . Encrypted connections are now supported for this channel.
2025-04-25T16:56:23.560662Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.32' socket: '/var/lib/mysql/mysql.sock' port: 3306 MySQL Community Server - GPL.
2025-04-25T16:56:23.560669Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: '::' port: 33060, socket: /var/run/mysqld/mysqlx.sock
```



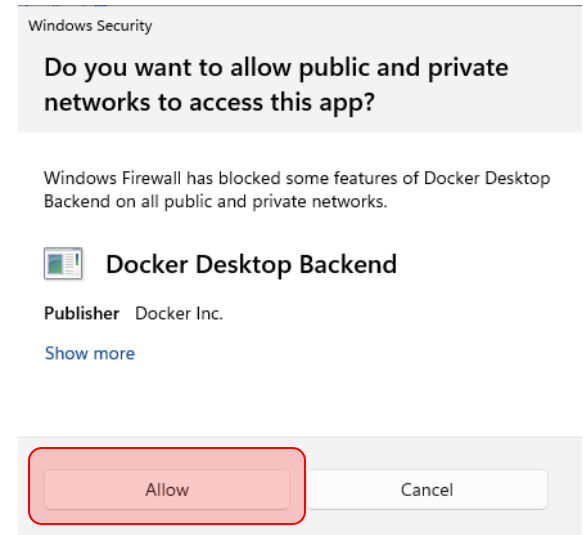
Para sair do LOG

04) Já temos nossa base para persistência de dados, agora vamos subir o **PHPmyadmin** para gerenciar nosso Banco de forma gráfica

```
docker run -d \  
  --name dimdim-phpmyadmin \  
  --network dimdim-network \  
  -p 8080:80 \  
  -e PMA_HOST=dimdim-mysql \  
  -e PMA_USER=dimuser \  
  -e PMA_PASSWORD=dimpass \  
  phpmyadmin
```



```
docker run -d \  
  --name dimdim-phpmyadmin \  
  --network dimdim-network \  
  -p 8080:80 \  
  -e PMA_HOST=dimdim-mysql \  
  -e PMA_USER=dimuser \  
  -e PMA_PASSWORD=dimpass \  
  phpmyadmin
```



<http://localhost:8080>
<http://ipVM:8080>

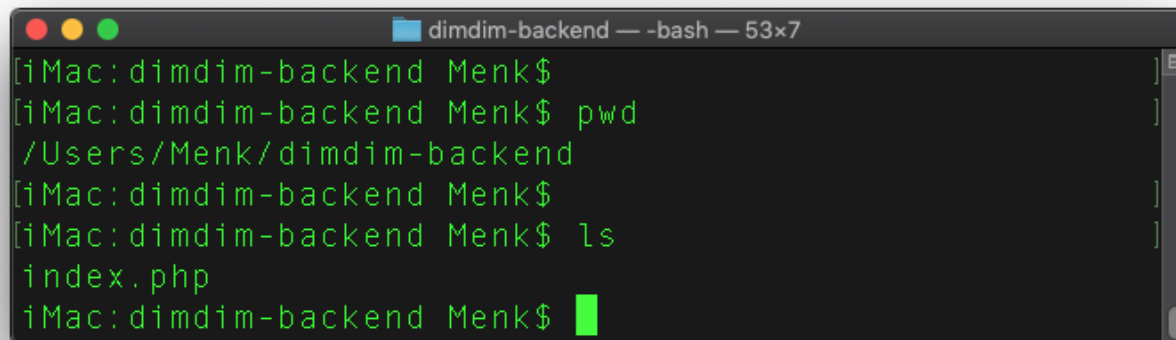


05) Agora só falta criar um **Backend** simples para testar a conexão com o Banco

Crie um diretório com o nome: **dimdim-backend** e, dentro desse diretório **crie um arquivo** com o nome: **index.php**

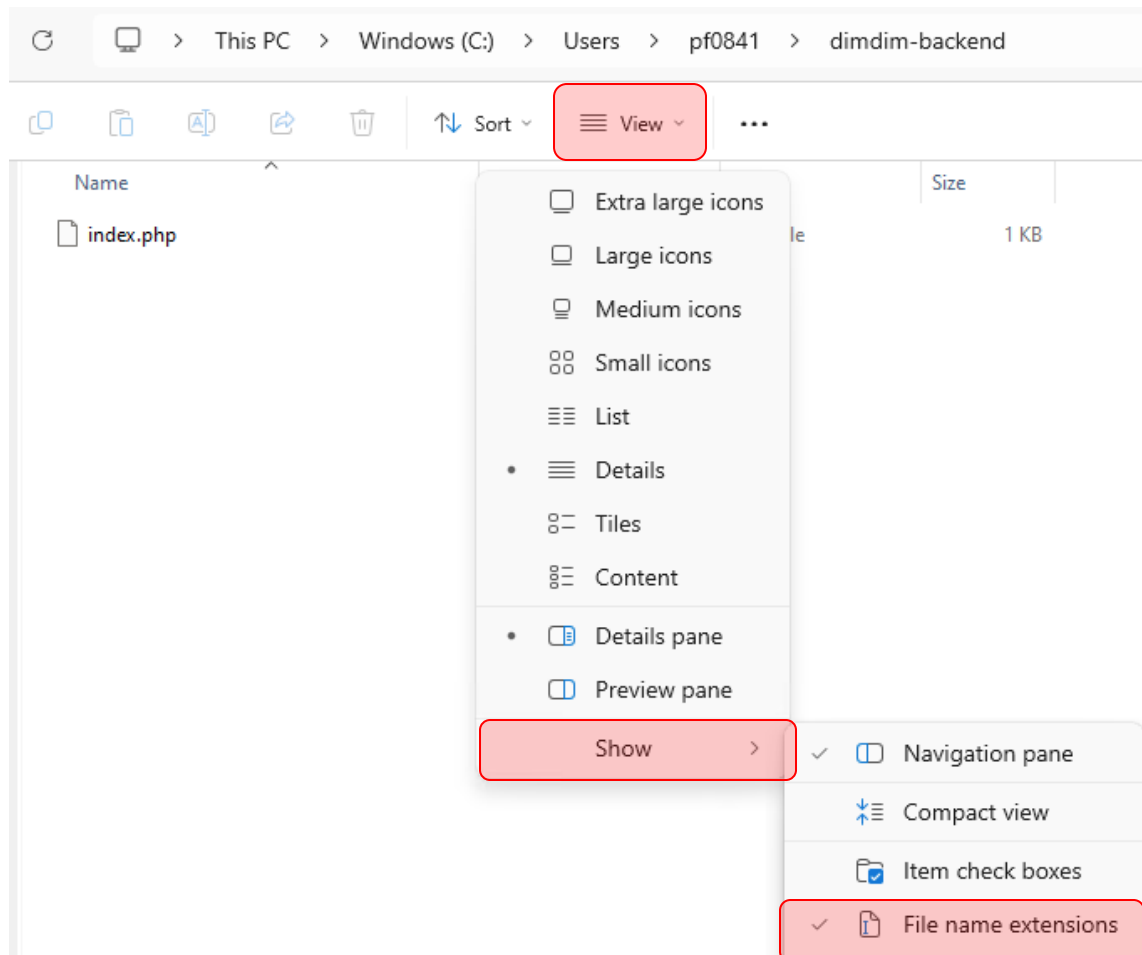
Inclua o seguinte conteúdo dentro do arquivo

```
<?php
$mysqli = new mysqli("dimdim-mysql", "dimuser", "dimpass", "dimdimdb");
if ($mysqli->connect_error) {
    die("Erro na conexão: " . $mysqli->connect_error);
}
echo "Conectado com sucesso ao Banco DimDim!";
?>
```



```
dimdim-backend — -bash — 53x7
[iMac:dimdim-backend Menk$
[iMac:dimdim-backend Menk$ pwd
/Users/Menk/dimdim-backend
[iMac:dimdim-backend Menk$
[iMac:dimdim-backend Menk$ ls
index.php
[iMac:dimdim-backend Menk$
```

Cuidado ao criar o arquivo: Verifique se a extensão está como **.php** e não **.txt**



06) **PERMANEÇA NO DIRETÓRIO CRIADO** e rode o Container com o Backend

```
docker run -d \
  --name dimdim-php-app \
  --network dimdim-network \
  -p 80:80 \
  -v "$PWD":/var/www/html \
  php:8.2-apache \
  bash -c "apt update \
    && apt install -y libpng-dev libjpeg-dev libonig-dev libxml2-dev libzip-dev unzip zip
  libmcrypt-dev \
    && docker-php-ext-install mysqli \
    && docker-php-ext-enable mysqli \
    && apachectl -D FOREGROUND"
```



```
docker run -d \
  --name dimdim-php-app \
  --network dimdim-network \
  -p 80:80 \
  -v "$PWD":/var/www/html \
  php:8.2-apache \
  bash -c "apt update && apt install -y libpng-dev libjpeg-dev libonig-dev libxml2-dev libzip-dev
  unzip zip libmcrypt-dev && docker-php-ext-install mysqli && docker-php-ext-enable mysqli &&
  apachectl -D FOREGROUND"
```



07) Verifique o Log e espere o fim das instalações

`docker logs -f dimdim-php-app`

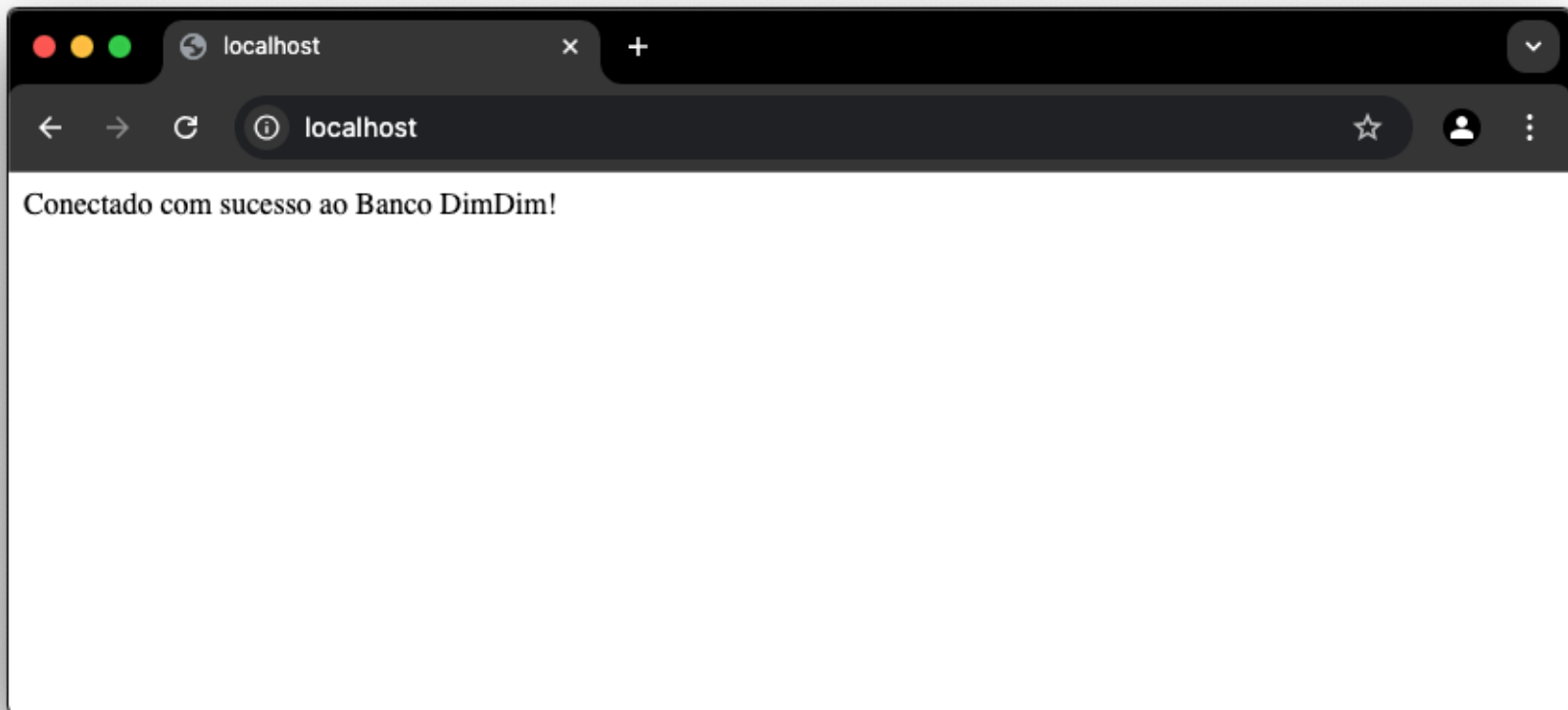
```
Administrator: Windows PowerShell
Installing header files:      /usr/local/include/php/
find . -name \*.gcno -o -name \*.gcda | xargs rm -f
find . -name \*.lo -o -name \*.o -o -name \*.dep | xargs rm -f
find . -name \*.la -o -name \*.a | xargs rm -f
find . -name \*.so | xargs rm -f
find . -name .libs -a -type d|xargs rm -rf
rm -f libphp.la      modules/* libs/*
rm -f ext/opcache/jit/zend_jit_x86.c
rm -f ext/opcache/jit/zend_jit_arm64.c
rm -f ext/opcache/minilua

warning: mysqli (mysqli) is already loaded!

AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.18.0.4. Set the 'ServerName'
directive globally to suppress this message
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.18.0.4. Set the 'ServerName'
directive globally to suppress this message
[Fri Apr 25 18:35:33.936219 2025] [mpm_prefork:notice] [pid 3646:tid 3646] AH00163: Apache/2.4.62 (Debian) PHP/8.2.28 configured
-- resuming normal operations
[Fri Apr 25 18:35:33.936441 2025] [core:notice] [pid 3646:tid 3646] AH00094: Command line: '/usr/sbin/apache2 -D FOREGROUND'
```

<http://localhost:80>

<http://ipVM:80>



docker ps

```
iMac:dimdim-backend Menk$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
028ec4be206c	php:8.2-apache	"docker-php-entrypoi..."	3 minutes ago	Up 3 minutes	0.0.0.0:80->80/tcp	dimdim-php-app
ec75270d8707	phpmyadmin	"/docker-entrypoint..."	13 minutes ago	Up 12 minutes	0.0.0.0:8080->80/tcp	dimdim-phpmyadmin
940bfc7724a6	mysql/mysql-server:latest	"/entrypoint.sh mysql..."	19 minutes ago	Up 19 minutes (healthy)	3306/tcp, 33060-33061/tcp	dimdim-mysql

```
iMac:dimdim-backend Menk$
```

docker image ls

```
iMac:dimdim-backend Menk$ docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
php	8.2-apache	74e4c5f60de4	6 weeks ago	502MB
phpmyadmin	latest	d97b0ce1da09	3 months ago	570MB
mysql/mysql-server	latest	1d9c2219ff69	2 years ago	496MB

```
iMac:dimdim-backend Menk$
```

docker volume ls

```
iMac:dimdim-backend Menk$ docker volume ls
```

DRIVER	VOLUME NAME
--------	-------------

```
iMac:dimdim-backend Menk$
```

docker inspect dimdim-php-app

```
dimdim-backend — -bash — 98x24
/docker/overlay2/8c2f7e81229788bd60c7eb5421ca745d13f53696f0420be6da7c2bbe28d897d8/diff",
    "MergedDir": "/var/lib/docker/overlay2/af1a91318b8a7cc6b48daaa31c3ac38818404b3161551d61d5f0f317fd2b1cba/merged",
    "UpperDir": "/var/lib/docker/overlay2/af1a91318b8a7cc6b48daaa31c3ac38818404b3161551d61d5f0f317fd2b1cba/diff",
    "WorkDir": "/var/lib/docker/overlay2/af1a91318b8a7cc6b48daaa31c3ac38818404b3161551d61d5f0f317fd2b1cba/work"
  },
  "Name": "overlay2"
},
"Mounts": [
  {
    "Type": "bind",
    "Source": "/Users/Menk/dimdim-backend",
    "Destination": "/var/www/html",
    "Mode": "",
    "RW": true,
    "Propagation": "rprivate"
  }
],
"Config": {
  "Hostname": "028ec4be206c",
  "Domainname": "",
  "User": "",
```

```
docker stop dimdim-mysql dimdim-phpmyadmin dimdim-php-app
```

```
docker rm dimdim-mysql dimdim-phpmyadmin dimdim-php-app
```

```
docker network rm dimdim-network
```

```
docker system prune -a -f --volumes
```



Copyright © 2025 Prof. João Carlos Menk

Todos direitos reservados. Reprodução ou divulgação total ou parcial deste documento é expressamente proibido sem o consentimento formal, por escrito, do Professor (autor).