

DDerl Development Image

This image supports the use of a Docker container for the further development of **DDerl** in an Ubuntu environment.

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1. Installed core components

With the following command you can check in detail which software components in which versions are included in the Docker image:

```
apt list --installed
```

Version 4.0.0

Component	Version	Remark	Status
Alien	8.95		base version
asdf	v0.8.1-a1ef92a		
curl	7.68.0		base version
Docker Compose	1.29.2		
Docker Desktop	20.10.8	Docker Image & VM	base version
dos2unix	7.4.0		base version
Erlang/OTP	24.0.5		
G++ & GCC	10.3.0		
Git	2.25.1		base version
GNU Autoconf	2.69		base version
GNU Automake	1.16.1		base version
GNU make	4.2.1		base version
htop	3.0.5		

Component	Version	Remark	Status
Java	11.0.11	openjdk	base version
LCOV	1.14		base version
Node.js [npm]	v14.17.5 [6.14.14]		
ODBC	2.3.7		base version
OpenSSL	1.1.1k		
Oracle Instant Client	21.1.0.0.0		
Python3	3.8.10		base version
rebar3	3.16.1		
tmux	3.2a		
Ubuntu	20.04.2 LTS	focal	base version
Vim	8.2.2269		base version
wget	1.20.3		base version
Yarn	n/a	asdf plugin is faulty	

2. Creating a new DDerl development container

2.1 Getting started

```

> REM Assumptions:
> REM   - you want to map the container port 8443 to the host port 443
> REM   - the name of the Docker container should be: my_dderl_dev
> REM   - the path the host repository is: //C/projects/my_repro
> REM   - the directory name for this repository inside the container should be:
my_repro_dir
> REM   - you want to use the latest version of the **DDerl** development image
> docker run -it -p 443:8443 \
    --name my_dderl_dev \
    -v //C/projects/my_repro:/my_repro_dir \
    konnexionsgmbh/dderl_dev:latest

> REM Stopping the container
> docker stop my_dderl_dev

> REM Restarting the container
> docker start my_dderl_dev

> REM Entering a running container
> docker exec -it my_dderl_dev bash

```

2.2 Detailed syntax

A new container can be created with the **docker run** command.

Syntax:

```
docker run -it
    [-p <port>:8443] \
    [--name <container_name>] \
    [-v <directory_repository>:/dderl] \
    konnexionsgmbh/dderl_dev[:<version>]
    [<cmd>]
```

Parameters:

- **port** - an optional listener port
- **container_name** - an optional container identification
- **directory_repository** - an optional host repository directory - the default value is expecting the repository inside the container
- **version** - an optional version number of the image or the constant **latest**
- **cmd** - an optional command to be executed in the container, default is **bash** for running the **bash** shell

Detailed documentation for the command **docker run** can be found [here](#).

Examples:

1. Creating a new Docker container named **my_dderl_dev** using a repository inside the Docker container:

```
docker run -it --name my_dderl_dev konnexionsgmbh/dderl_dev:latest
```

2. Creating a new Docker container named **my_dderl_dev** using the host repository of a Windows directory **D:\projects\dderl**:

```
docker run -it --name dderl_dev -v //D/projects/dderl:/dderl
konnexionsgmbh/dderl_dev:latest
```

3. Creating a new Docker container named **my_dderl_dev** using the host repository of a Linux directory **/dderl** and mapping port **8443** to port **8000**:

```
docker run -it --name my_dderl_dev -p 8000:8443 -v /dderl:/dderl
konnexionsgmbh/dderl_dev:latest
```

3 Working with an existing DDerl development container

3.1 Starting a stopped container

A previously stopped container can be started with the **docker start** command.

Syntax:

```
docker start <container_name>
```

Parameter:

- **container_name** - the mandatory container identification, that is an UUID long identifier, an UUID short identifier or a previously given name

Detailed documentation for the command **docker start** can be found [here](#).

3.2 Entering a running container

A running container can be entered with the **docker exec** command.

Syntax:

```
docker exec -it <container_name> <cmd>
```

Parameter:

- **container_name** - the mandatory container identification, that is an UUID long identifier, an UUID short identifier or a previously given name
- **cmd** - the command to be executed in the container, e.g. **bash** for running the **bash** shell

Detailed documentation for the command **docker exec** can be found [here](#).

4 Best practices

4.1 Use of a root repository directory on the host computer

If all relevant repositories are located within a common parent directory, then development work in all these repositories can be done within a single **DDerl** development container.

Example:

In the following example we assume that the host directory is named **C:\Temp\my_projects** and should be mapped to the **projects** directory in the container.

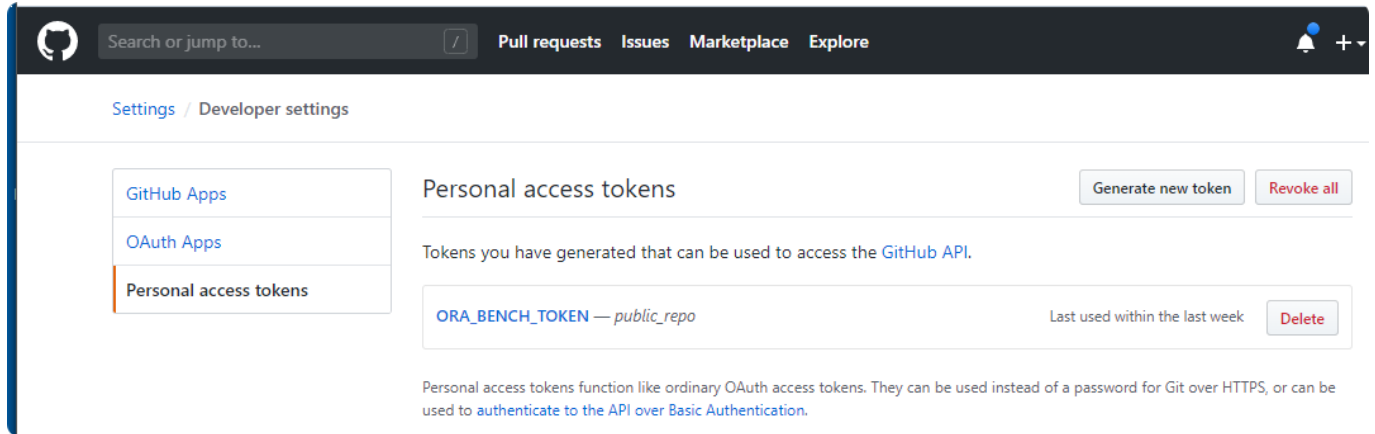
```
>C:\Temp\my_projects>docker run -it --name dderl_dev -v
//C/Temp/my_projects:/projects konnexionsgmbh/dderl_dev:latest
root@35b9310932f1:/# cd projects
root@35b9310932f1:/projects# ls -ll
total 0
drwxrwxrwx 1 root root 4096 May  2 14:05 dderl
```

4.2 Use of private GitHub repositories inside the container

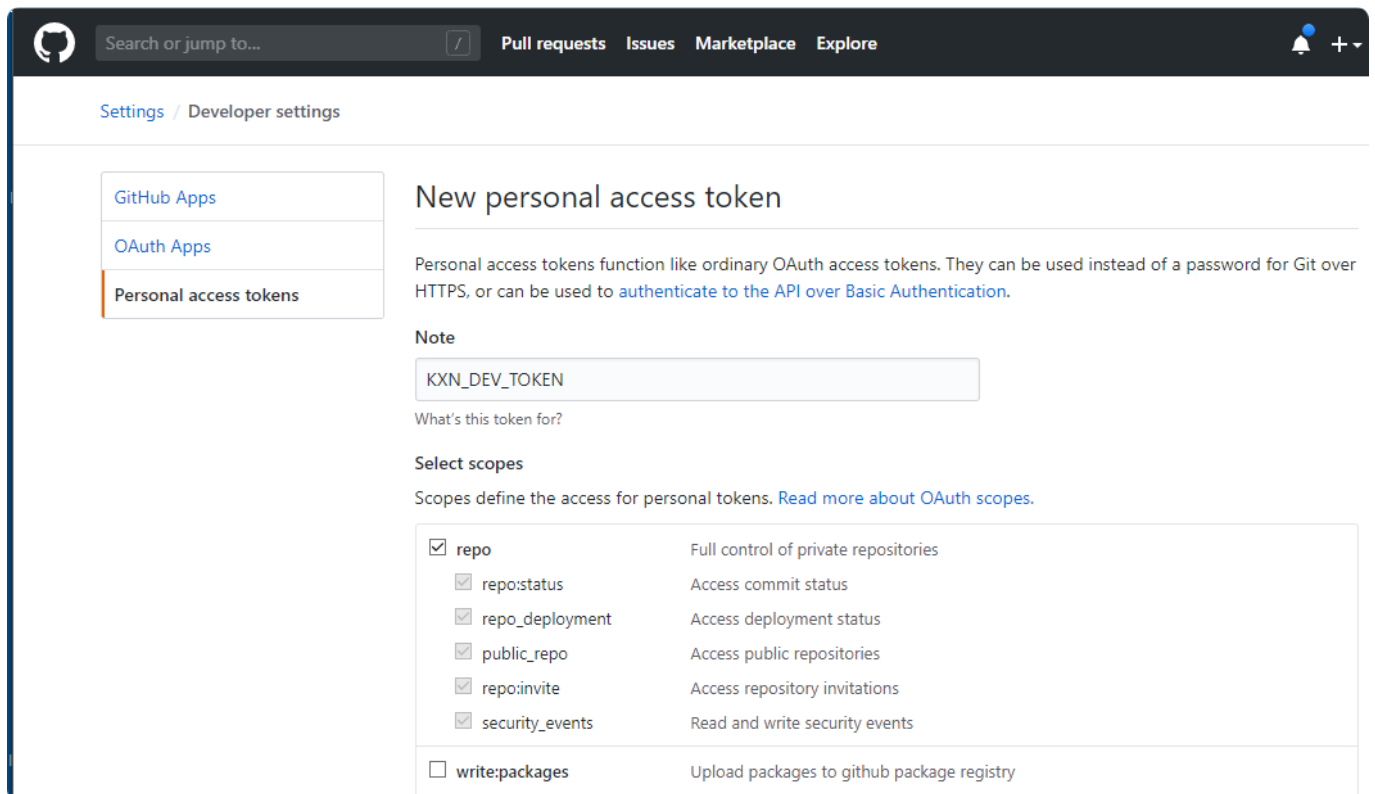
To access private repositories in GitHub, you must first create a new personal access token in GitHub and then add it to your git configuration inside the container.

1. Create a new personal access token in GitHub

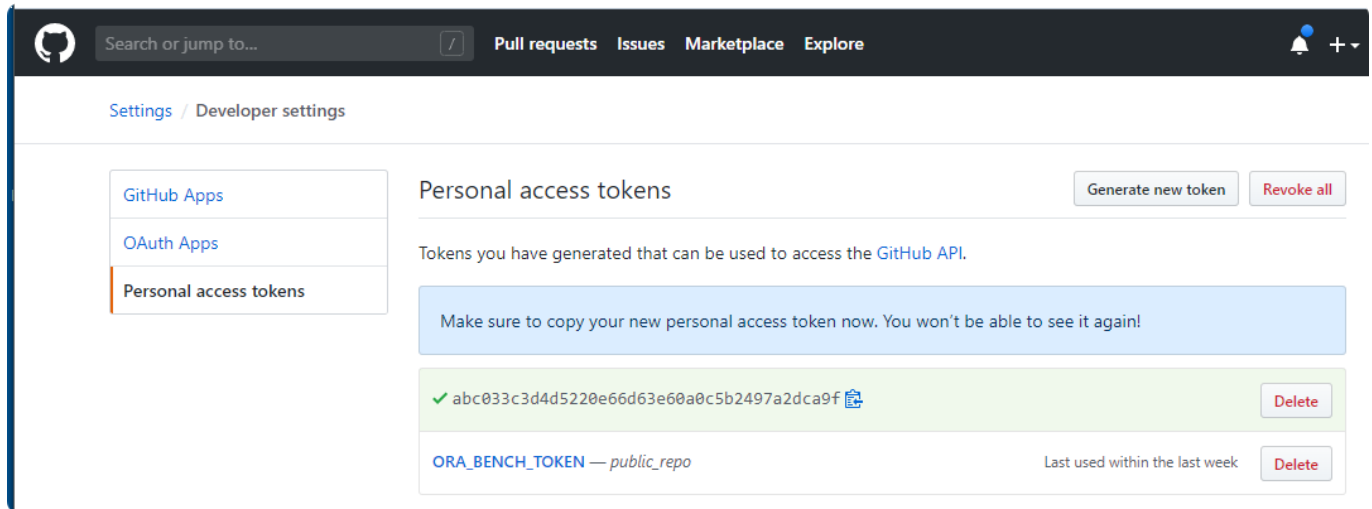
- With the following URL you can create the access token: <https://github.com/settings/tokens>



- Press the button **Generate new token**



- Name the new token, select the scopes and press the button **Generate token**



- Write down the secret code and keep it in a safe place

2. Setting up the Docker container on the host machine

In the following example we assume that the host directory is named `C:\Temp\my_projects` and should be mapped to the `projects` directory in the container.

```
C:\Temp\my_projects\dderl>docker run -it --name dderl_dev -v
//C:/Temp/my_projects:/projects konnexionsgmbh/dderl_dev:latest
Unable to find image 'konnexionsgmbh/dderl_dev:latest' locally
latest: Pulling from konnexionsgmbh/dderl_dev
d51af753c3d3: Pull complete
...
a6bb30d1a5cf: Pull complete
Digest: sha256:5f6d6afc566ef9142d2d85b85dd331c0558eafaaf286179fd0ae787988c1b89b
Status: Downloaded newer image for konnexionsgmbh/dderl_dev:latest
```

3. Initial configuration of git in the container

```
root@332206c300f1:/# export XDG_CONFIG_HOME=/projects
root@332206c300f1:/# mkdir -p $XDG_CONFIG_HOME/git/
root@332206c300f1:/# touch $XDG_CONFIG_HOME/git/config
root@332206c300f1:/# touch $XDG_CONFIG_HOME/git/credentials
root@332206c300f1:/# git config --file=$XDG_CONFIG_HOME/git/config
credential.helper 'store --file=/projects/git/credentials'
root@332206c300f1:/# git config --file=$XDG_CONFIG_HOME/git/config user.name "John
Doe"
root@332206c300f1:/# git config --file=$XDG_CONFIG_HOME/git/config user.email
"john.doe@company.com"
root@332206c300f1:/# git config --list --show-origin
file:/projects/git/config credential.helper=store --
file=/projects/git/credentials
file:/projects/git/config user.name=John Doe
file:/projects/git/config user.email=john.doe@company.com
```

4. Verification of the settings

```
root@332206c300f1:/# cat /projects/git/config
[credential]
    helper = store --file=/projects/git/credentials
[user]
    name = John Doe
[user]
    email = john.doe@company.com
```

5. Clone a repository for the first time

When prompted provide your github user name and the new personal access token from (1).

```
root@332206c300f1:/# cd projects
root@332206c300f1:~# git clone https://github.com/KonnexionsGmbH/docker_images
Cloning into 'docker_images'...
Username for 'https://github.com': John Doe
Password for 'https://john.doe@company.com':
abc033c3d4d5220e66d63e60a0c5b2497a2dca9f
remote: Enumerating objects: 78, done.
remote: Counting objects: 100% (78/78), done.
remote: Compressing objects: 100% (49/49), done.
remote: Total 78 (delta 33), reused 68 (delta 23), pack-reused 0
Receiving objects: 100% (78/78), 167.83 KiB | 867.00 KiB/s, done.
Resolving deltas: 100% (33/33), done.
```

6. Verify if the clone completed with success

```
root@332206c300f1:~# cat /projects/git/credentials
https://John Doe:abc033c3d4d5220e66d63e60a0c5b2497a2dca9f@github.com
```

7. Verification after a restart of the Docker container

```
C:\Temp\my_projects\dderl>docker start dderl_dev
dderl_dev
C:\Temp\my_projects\dderl>docker exec -it dderl_dev bash
root@332206c300f1:/# export XDG_CONFIG_HOME=/projects
root@332206c300f1:/# git config --list --show-origin
file:/projects/git/config credential.helper=store --
file=/projects/git/credentials
file:/projects/git/config user.name=John Doe
file:/projects/git/config user.email=john.doe@company.com
```

8. Verification after the removal of the Docker container

- Deleting the Docker container and image

```
C:\Temp\my_projects\dderl>docker stop dderl_dev
dderl_dev

C:\Temp\my_projects\dderl>docker rm dderl_dev
dderl_dev

C:\Temp\my_projects\dderl>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
konnexionsgmbh/dderl_dev   latest             51757b5e414e       6 hours ago
3.71GB

C:\Temp\my_projects\dderl>docker rmi 51757b5e414e
Untagged: konnexionsgmbh/dderl_dev:latest
Untagged:
konnexionsgmbh/dderl_dev@sha256:5f6d6afc566ef9142d2d85b85dd331c0558eafaaf286179fd0
ae787988c1b89b
Deleted: sha256:51757b5e414e5333ace7b163484c06e4685c29312ad09d5d7d648c6936011a60
...
Deleted: sha256:7789f1a3d4e9258fbc5469a8d657deb6aba168d86967063e9b80ac3e1154333f
```

- Recreating the Docker container (and image)

```
C:\Temp\my_projects\dderl>docker run -it --name dderl_dev -v
//C:/Temp/my_projects:/projects konnexionsgmbh/dderl_dev:latest
Unable to find image 'konnexionsgmbh/dderl_dev:latest' locally
latest: Pulling from konnexionsgmbh/dderl_dev
d51af753c3d3: Pull complete
...
a6bb30d1a5cf: Pull complete
Digest: sha256:5f6d6afc566ef9142d2d85b85dd331c0558eafaaf286179fd0ae787988c1b89b
Status: Downloaded newer image for konnexionsgmbh/dderl_dev:latest
root@ad1f036bbc44:/# export XDG_CONFIG_HOME=/projects
root@ad1f036bbc44:/# git clone https://github.com/KonnexionsGmbH/docker_images
Cloning into 'docker_images'...
remote: Enumerating objects: 78, done.
remote: Counting objects: 100% (78/78), done.
remote: Compressing objects: 100% (49/49), done.
remote: Total 78 (delta 33), reused 68 (delta 23), pack-reused 0
Receiving objects: 100% (78/78), 167.83 KiB | 895.00 KiB/s, done.
Resolving deltas: 100% (33/33), done.
```

- If we use the same path - where `git/config` and `git/credentials` exist - as in Step 3, `git` access (clone/push/pull) doesn't ask for username/password anymore.

5 Working inside a running DD Erl development container

5.1 DD Erl development

Inside the Docker container you can either clone a **DD Erl** repository or switch to an existing **DD Erl** repository. If a Docker container with an Oracle database is located on the host computer it can be accessed by using the IP address of the host computer. Any **DD Erl** script can be executed inside the Docker container, for example:

```
rebar3 compile
rebar3 as prod release
./start.sh
```

The following port numbers are exposed and can be mapped if necessary:

```
1236
7000-7020
8125
8443
9443
```