

# DDerl Development Image

---

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

## Table of Contents

- [1. Installed core components](#)
  - [2. Creating a new DDerl development container](#)
  - [3. Working with an existing DDerl development container](#)
  - [4. Best practises](#)
  - [5. Working inside a running DDerl development container](#)
- 

## 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.

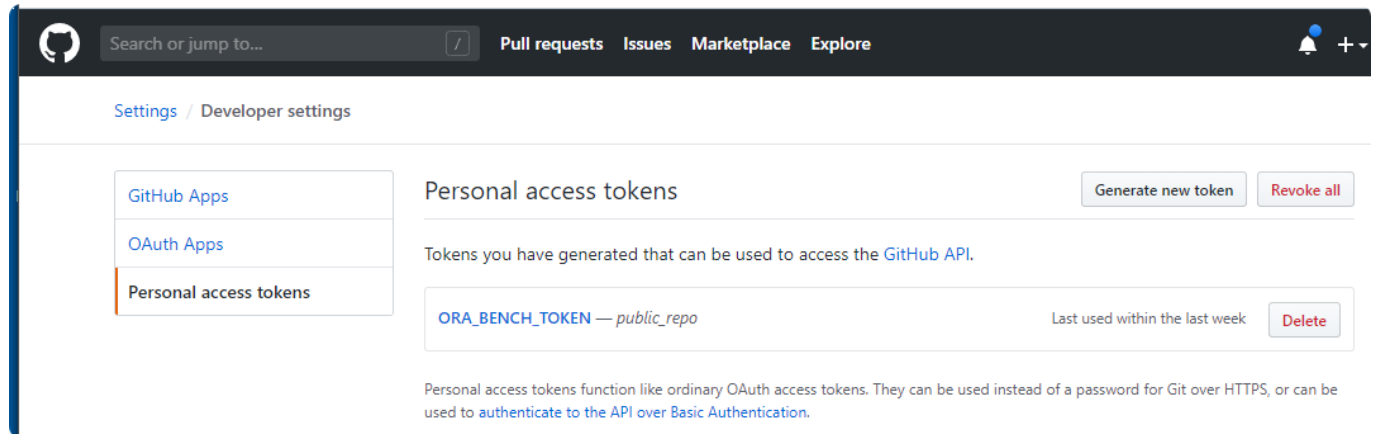
```
>C:\Temp\my_projects>docker run -it --name dderl_dev -v
//C/Temp/my_projects:/projects konnexionsgmbh/dderl_dev:latest
root@35b9310932f1:/# cd projects
root@35b9310932f1:/projects# ls -ll
total 0
drwxrwxrwx 1 root root 4096 May  2 14:05 dderl
```

### 4.2 Use of private GitHub repositories inside the container

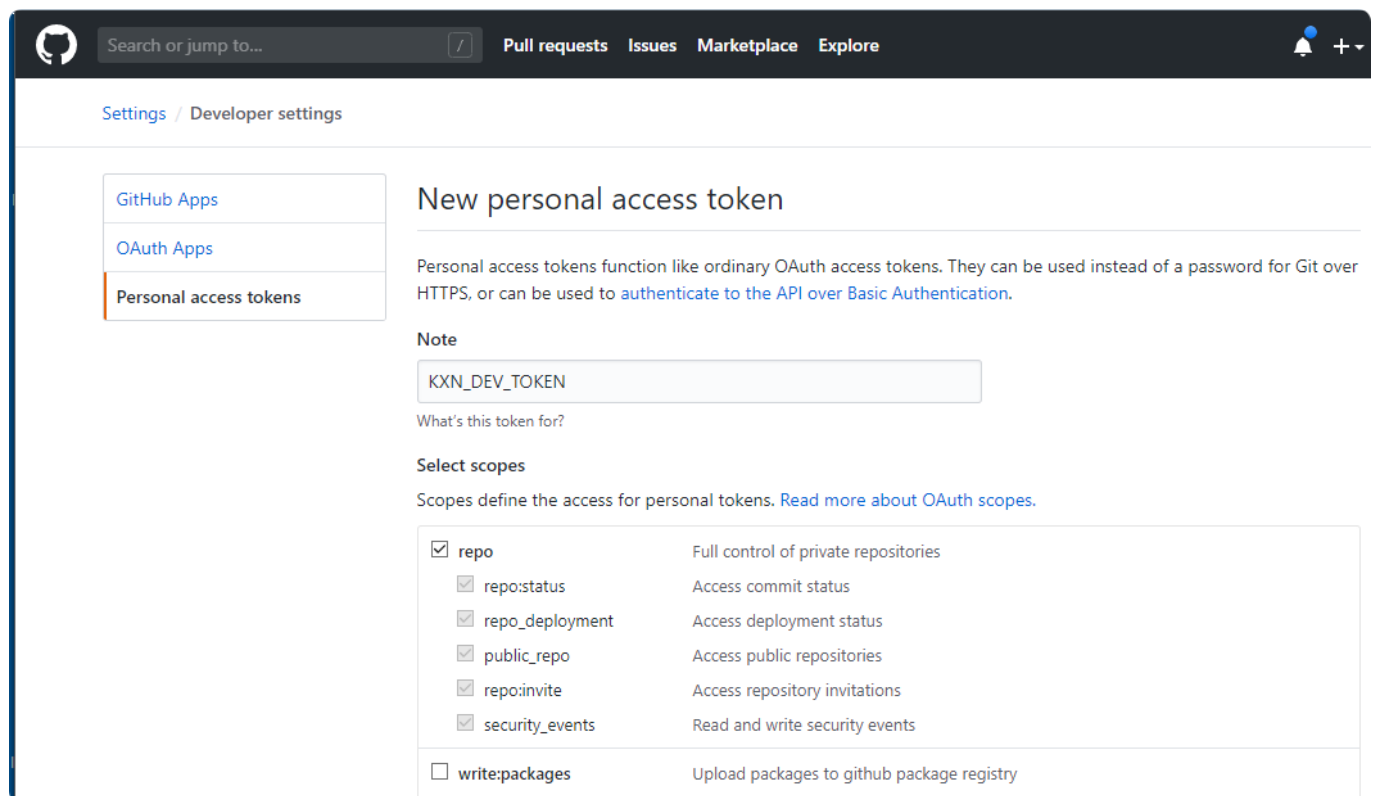
To access private repositories in GitHub, you must first create a new personal access token in GitHub and then add it to your git configuration inside the container.

## 1. Create a new personal access token in GitHub

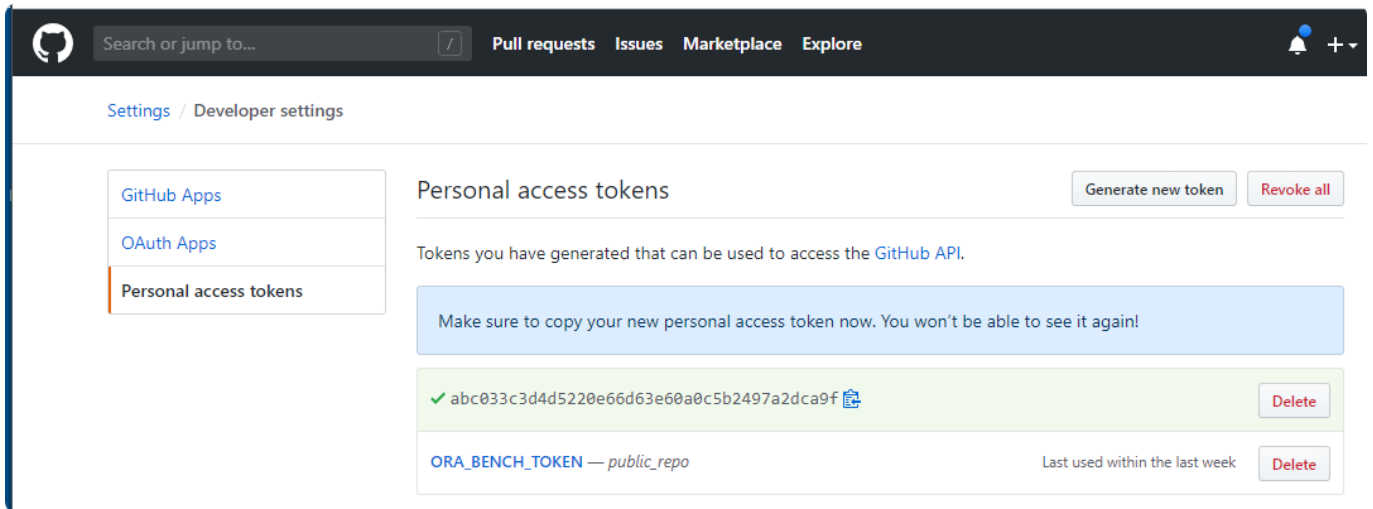
- With the following URL you can create the access token: <https://github.com/settings/tokens>



- 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
```