CMake - HowTo

- Is a build system like Make, Scons …
- Supports many features: Hierarchy, Libraries, Cross-plattform compilation ...
- Used by many industrial project
- Introduction: https://cmake.org/cmake-tutorial/

Building with CMake

- The build process is separated in two step
  - Step 1: First, standard build files(e.g. make) are created from configuration files
  - Step 2: Then the platform's native build tools are used for the actual building
- Configuration files:
  - Each build project contains a CMakeLists.txt file in every directory that controls the build process
  - CmakeLists.txt contain all information on the build process as exectuables, libraries, include directories, …

Build: Best practice

- After configuring the build project with the configuration files, the actual build files are build
- Usually a project has the following structure
  - root_folder/
    - src/
    - doc/
    - build/
- Everything is contained in the root_folder, here VDSProject
- src/ contains all src files
- doc/ contains all documentation
- build/ here the build files are stored

Build: Best practice

- In order to build the project we need to invoke cmake, this can either be done by an IDE, e.G. CLion or by command line
- Commandline: cd(change directory) to build/
- Run: cmake ../ this command will search for the CmakeLists.txt in the root_folder
- If found: generate all build files in build/
- It would be possible to run cmake from the the root or any other folder, that implies that all build files are created at this location
- We dont want buildfiles in our root folder or in our src folder. This pollutes our project, e.g. we don't want to commit the files to git

Build: Best practice

- If the generation of the files was successful the project can be build by using make
- After building the project the executable can be found in the build folder
- Cmake also offers the possibility to add options, for example one could add an option test and specify how to build the project with tests
- Running make test will build the project with tests