

Libraries

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cxxopts

1. Cmake based installation

The cxxopts-2.2.1 directory has a file CMakeLists.txt

```
ls cxxopts-2.2.1
mkdir build
cd build
cmake -D CMAKE_INSTALL_PREFIX:PATH=${HOME}/mylibs/cxxopts \
    ../cxxopts-2.2.1
make
make install
```

This is an 'out-of-source' build. Preferred over in-source.

2. CMake discovery

```
cmake_minimum_required( VERSION 3.20 )
project( ${PROGRAM_NAME} VERSION 1.0 )

add_executable( ${PROGRAM_NAME} ${PROGRAM_NAME}.cpp ${EXTRA_SOURCES} )

##
## Extra package: cxxopts
##
find_package( PkgConfig REQUIRED )
pkg_check_modules( OPTS REQUIRED cxxopts )
target_include_directories(
  ${PROGRAM_NAME} PUBLIC
  ${OPTS_INCLUDE_DIRS}
)

install( TARGETS ${PROGRAM_NAME} DESTINATION . )
```

catch2

3. Compiling toy example

```
icpc -o tdd tdd.cxx \  
-I${TACC_CATCH2_INC} -L${TACC_CATCH2_LIB} \  
-lCatch2Main -lCatch2
```

- Files:

```
icpc -o tdd tdd.cxx
```

- Path to include and library files:

```
-I${TACC_CATCH2_INC} -L${TACC_CATCH2_LIB}
```

- Libraries:

```
-lCatch2Main -lCatch2
```

Make a script file!

4. CMake setup for Catch2

```
find_package( PkgConfig REQUIRED )
pkg_check_modules( CATCH2 REQUIRED catch2-with-main )
target_include_directories(
    ${PROGRAM_NAME} PUBLIC ${CATCH2_INCLUDE_DIRS} )
target_link_directories(
    ${PROGRAM_NAME} PUBLIC ${CATCH2_LIBRARY_DIRS} )
target_link_libraries(
    ${PROGRAM_NAME} PUBLIC ${CATCH2_LIBRARIES} )
```

fmtlib

5. fmtlib: installing

- Ordinary cmake install;
- be sure to set `PKG_CONFIG_PATH`

6. fmtlib: compilation

Compilation on the commandline:

```
g++ -o myprog myprog.cpp \  
    $( pkg-config --cflags fmt ) \  
    $( pkg-config --libs fmt )
```

7. fmtlib: compilation'

Using CMake:

```
find_package( PkgConfig REQUIRED )
pkg_check_modules( FMTLIB REQUIRED fmt )
target_include_directories(
    ${PROGRAM_NAME} PUBLIC ${FMTLIB_INCLUDE_DIRS} )
target_link_directories(
    ${PROGRAM_NAME} PUBLIC ${FMTLIB_LIBRARY_DIRS} )
target_link_libraries(
    ${PROGRAM_NAME} PUBLIC ${FMTLIB_LIBRARIES} )
set_target_properties(
    ${PROGRAM_NAME} PROPERTIES
    BUILD_RPATH "${FMTLIB_LIBRARY_DIRS}"
    INSTALL_RPATH "${FMTLIB_LIBRARY_DIRS}"
)
```

8. fmtlib: use through pkg-config

When you install fmtlib, note the location of the .pc file, then

`export`

`PKG_CONFIG_PATH=/the/location/from/fmtlib:${PKG_CONFIG_PATH}`

in your .bashrc (Mac users: .zshrc)