Rubius
Academy

Курс-интенсив

Программирование на С++

CMake

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CMake

CMake (от англ. cross-platform make) — это кросс-платформенная система автоматизации сборки ПО из исходного кода.
https://cmake.org/

CMakeLists.txt

```
PROJECT(MyApplication)
ADD_EXECUTABLE(${PROJECT_NAME} main.cpp)
```

Сборка:

```
mkdir build && cd build
cmake ..
cmake --build . --target all
```

Сборка приложения

```
ADD_EXECUTABLE(${PROJECT_NAME} ${SOURCES})

TARGET_INCLUDE_DIRECTORIES(${PROJECT_NAME}
    PRIVATE
        ${CMAKE_SOURCE_DIR}/src
)

TARGET_LINK_LIBRARIES(${PROJECT_NAME}
    PRIVATE
        ${MY_LIBRARIES}
        ${MY_OTHER_LIBRARIES}
)

INSTALL(TARGETS ${PROJECT_NAME} DESTINATION bin)
```

Сборка библиотек

```
ADD_LIBRARY(${PROJECT_NAME} SHARED ${SOURCES})

TARGET_INCLUDE_DIRECTORIES(${PROJECT_NAME}
    PRIVATE
        ${CMAKE_SOURCE_DIR}/src
)


TARGET_LINK_LIBRARIES(${PROJECT_NAME}
    PUBLIC
        ${MY_PUBLIC_LIBRARIES}
    PRIVATE
        ${MY_PRIVATE_LIBRARIES}
)

INSTALL(TARGETS ${PROJECT_NAME} DESTINATION lib)
INSTALL(FILES ${HEADERS} DESTINATION include/MyLib)
```

Поиск зависимостей

```
FIND_PACKAGE(Qt5Core 5.1.0 REQUIRED)
FIND_PACKAGE(LibXml2 REQUIRED)

FIND_PACKAGE(Qt5 5.3.0 REQUIRED Core DBus Network)
FIND_PACKAGE(MyProjectLibraries REQUIRED Core Network)

TARGET_LINK_LIBRARIES(${PROJECT_NAME}
    PRIVATE
        Qt5::Core
        Qt5::DBus
        Qt5::Network
        ${MY_PROJECT_LIBRARIES}
)
```

Компонент не умеет CMake?

```cmake
INCLUDE(FindPackageHandleStandardArgs)

IF(QWT_LIBRARIES AND QWT_INCLUDE_DIRS)
    SET(QWT_FOUND TRUE)
ELSE()
    FIND_PATH(QWT_INCLUDE_DIRS
        NAMES qwt/qwt.h
        PATHS /usr/include
              /usr/local/include
              ${CMAKE_INSTALL_PREFIX}/include
    )

    FIND_LIBRARY(QWT_LIBRARIES
        NAMES qwt-qt5
        PATHS /usr/lib
              /usr/local/lib
              ${CMAKE_INSTALL_PREFIX}/lib
    )

    FIND_PACKAGE_HANDLE_STANDARD_ARGS(Qwt
        "Qwt library not found"
        QWT_LIBRARIES
        QWT_INCLUDE_DIRS
    )
ENDIF()
```

А если свой компонент?

```
GET_FILENAME_COMPONENT(MY_PROJECT_LIBRARIES_CMAKE_DIR "${CMAKE_CURRENT_LIST_FILE}" PATH)
SET(MY_PROJECT_LIBRARIES_INCLUDE_DIRS "@CONFIG_INCLUDE_DIRS@")

INCLUDE("${MY_PROJECT_LIBRARIES_CMAKE_DIR}/MyProjectLibrariesTargets.cmake")

IF(MyProjectLibraries_FIND_COMPONENTS)
    FOREACH(_COMPONENT ${MyProjectLibraries_FIND_COMPONENTS})
        SET(LIBRARY_NAME ${_COMPONENT})
        FIND_LIBRARY(${_COMPONENT}_LIBRARY NAMES ${LIBRARY_NAME})

        IF(${LIBRARY_NAME}_LIBRARY)
            MESSAGE(STATUS "Found ${LIBRARY_NAME}: ${${LIBRARY_NAME}_LIBRARY}")
            SET(MY_PROJECT_LIBRARIES ${MY_PROJECT_LIBRARIES} ${LIBRARY_NAME})
        ELSE()
            MESSAGE(SEND_ERROR "MyProjcetLibraries: ${LIBRARY_NAME} component not found")
        ENDIF()
    ENDFOREACH()
ENDIF()

INCLUDE("${MY_PROJECT_LIBRARIES_CMAKE_DIR}/Macro.cmake")
INCLUDE("${MY_PROJECT_LIBRARIES_CMAKE_DIR}/CPackConfig.cmake")
```

Куда копать дальше?

https://cmake.org/cmake/help/latest/

Менеджер пакетов?

https://conan.io/

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