ttroy50 / **cmake-examples**

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ttroy50 update some examples to require cmake v3 Latest commit `9001357` on 17 Aug 2016

..		
CMakeLists.txt	update some examples to require cmake v3	a year ago
README.adoc	link files from intro	2 years ago
main.cpp	example for using clang and ninja	2 years ago
pre_test.sh	added docker files to allow testing with different cmake versions for #8	a year ago
run_test.sh	fix tests	2 years ago

README.adoc

Compiling with clang

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Introduction

When building with CMake it is possible to set the C and C++ compiler. This example is the same as the hello-cmake example except that it shows the most basic method of changing the compiler from the default gcc to clang.

The files in this tutorial are below:

```
$ tree
.
├── CMakeLists.txt
├── main.cpp
```

- CMakeLists.txt - Contains the CMake commands you wish to run
- main.cpp - A simple "Hello World" cpp file.

Concepts

Compiler Option

CMake exposes options to control the programs used to compile and link your code. These programs include:

- CMAKE_C_COMPILER - The program used to compile c code.
- CMAKE_CXX_COMPILER - The program used to compile c++ code.
- CMAKE_LINKER - The program used to link your binary.

Note	In this example clang-3.6 is installed via the command `sudo apt-get install clang-3.6`

Note	This is the most basic and easiest way to invoke clang. Future examples will show better ways to invoke the compiler.

Setting Flags

As described in the Build Type example, you can set CMake options using either a cmake gui or by passing from the command line.

Below is an example of passing the compiler via the command line.

```
cmake .. -DCMAKE_C_COMPILER=clang-3.6 -DCMAKE_CXX_COMPILER=clang++-3.6
```

After setting these options when your run `make` clang will be used to compile your binary. This can be seen from the following lines in the make output.

```
/usr/bin/clang++-3.6     -o CMakeFiles/hello_cmake.dir/main.cpp.o -c /home/matrim/workspace/cmake-examples/
Linking CXX executable hello_cmake
/usr/bin/cmake -E cmake_link_script CMakeFiles/hello_cmake.dir/link.txt --verbose=1
/usr/bin/clang++-3.6       CMakeFiles/hello_cmake.dir/main.cpp.o  -o hello_cmake -rdynamic
```

Building the Examples

Below is sample output from building this example.

```
$ mkdir build.clang

$ cd build.clang/
```

```
$ cmake .. -DCMAKE_C_COMPILER=clang-3.6 -DCMAKE_CXX_COMPILER=clang++-3.6
-- The C compiler identification is Clang 3.6.0
-- The CXX compiler identification is Clang 3.6.0
-- Check for working C compiler: /usr/bin/clang-3.6
-- Check for working C compiler: /usr/bin/clang-3.6 -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working CXX compiler: /usr/bin/clang++-3.6
-- Check for working CXX compiler: /usr/bin/clang++-3.6 -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/

$ make VERBOSE=1
/usr/bin/cmake -H/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang -B/home/matrim/works
/usr/bin/cmake -E cmake_progress_start /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clan
make -f CMakeFiles/Makefile2 all
make[1]: Entering directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cl
make -f CMakeFiles/hello_cmake.dir/build.make CMakeFiles/hello_cmake.dir/depend
make[2]: Entering directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cl
cd /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.clang && /usr/bin/cmake -E c
Dependee "/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.clang/CMakeFiles/hell
Dependee "/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.clang/CMakeFiles/CMak
Scanning dependencies of target hello_cmake
make[2]: Leaving directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cla
make -f CMakeFiles/hello_cmake.dir/build.make CMakeFiles/hello_cmake.dir/build
make[2]: Entering directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cl
/usr/bin/cmake -E cmake_progress_report /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-cla
[100%] Building CXX object CMakeFiles/hello_cmake.dir/main.cpp.o
/usr/bin/clang++-3.6     -o CMakeFiles/hello_cmake.dir/main.cpp.o -c /home/matrim/workspace/cmake-examples/
Linking CXX executable hello_cmake
/usr/bin/cmake -E cmake_link_script CMakeFiles/hello_cmake.dir/link.txt --verbose=1
/usr/bin/clang++-3.6       CMakeFiles/hello_cmake.dir/main.cpp.o  -o hello_cmake -rdynamic
make[2]: Leaving directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cla
```

```
/usr/bin/cmake -E cmake_progress_report /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-cla
[100%] Built target hello_cmake
make[1]: Leaving directory `/home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clang/build.cla
/usr/bin/cmake -E cmake_progress_start /home/matrim/workspace/cmake-examples/01-basic/I-compiling-with-clan

$ ./hello_cmake
Hello CMake!
```