

Building MarsSDK Samples

In this document, you will find the instructions to build the sample programs included with the MarsSDK. There are two different sets of instructions, one for **Windows 7/ 10** (x64), and one for **Linux** (amd x64).

The MarsSDK uses CMake to manage the build process of its samples, and provides a convenient way to integrate the device into new and existing projects. It is highly recommended to use the CMake GUI application, especially on Windows. Depending on the operating system, it also requires Visual Studio (Windows) or Make and GCC (Linux):

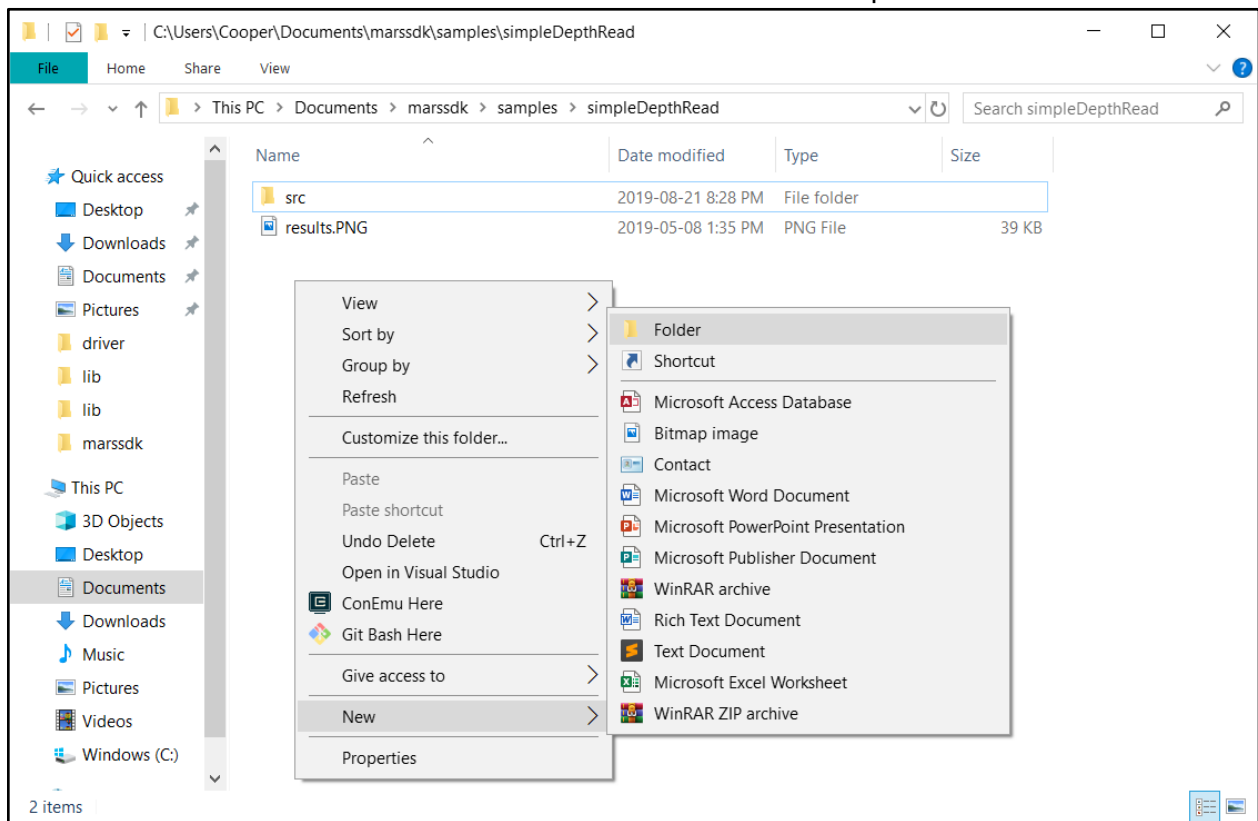
- CMake (<https://cmake.org/>)
- Visual Studio (<https://visualstudio.microsoft.com/>)
- Make (<https://www.gnu.org/software/make/>)
- GCC (<https://gcc.gnu.org/>)

Certain samples show how to use the camera with popular 3rd party libraries. These can be downloaded and installed separately according to the instructions on their websites:

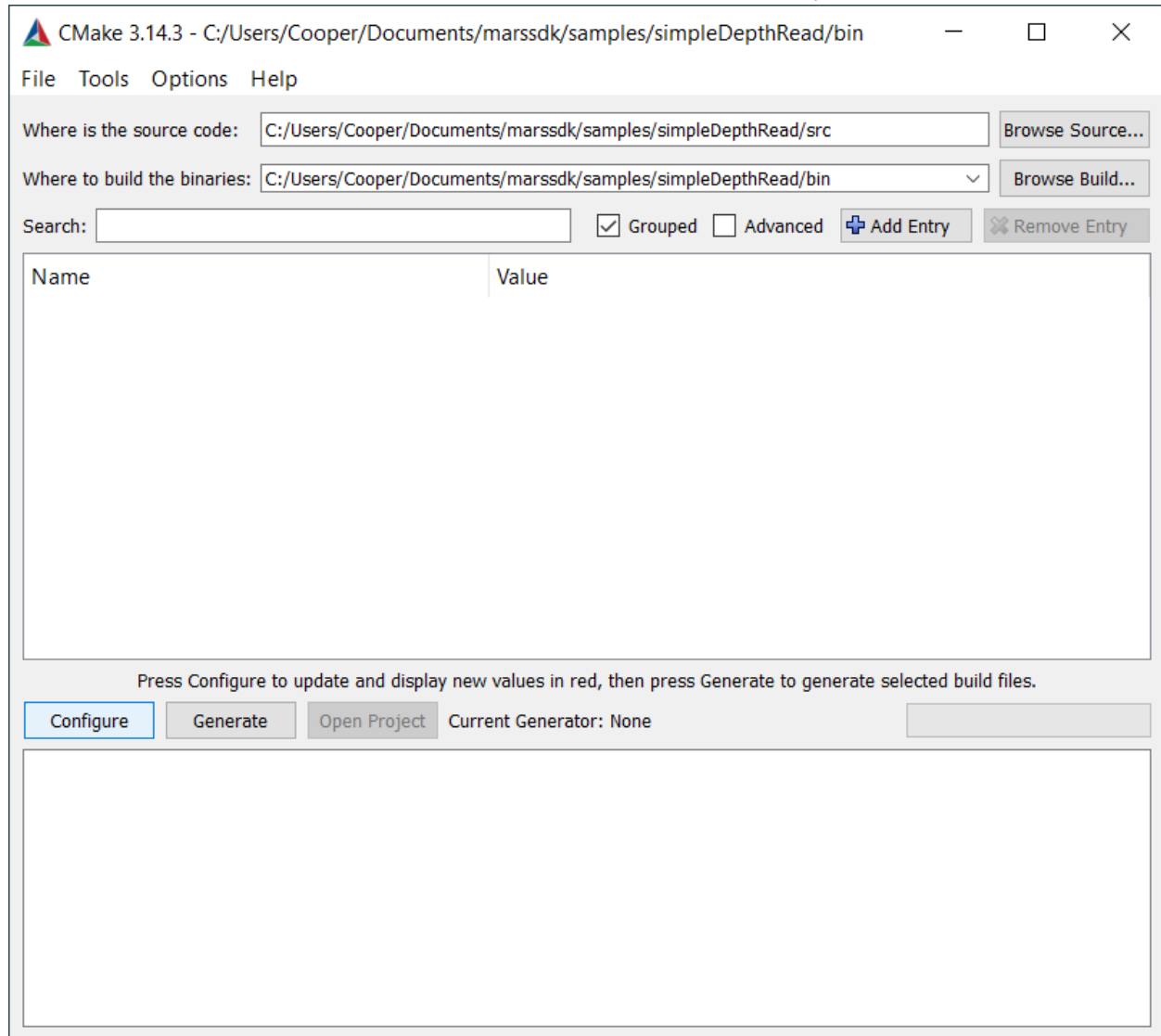
- Point Cloud Library 1.8 (<http://pointclouds.org/>)
- OpenCV 4 (<https://opencv.org/>)

Windows:

Create a new folder to hold the built sample:



Open the CMake GUI, and fill the required fields.
Click **Browse Source...** and choose the sample's **src** folder.
Click **Browse Build...** and choose the new folder you created:



The screenshot shows the CMake 3.14.3 GUI window. The title bar reads "CMake 3.14.3 - C:/Users/Cooper/Documents/marssdk/samples/simpleDepthRead/bin". The menu bar includes "File", "Tools", "Options", and "Help".

Below the menu bar, there are two input fields with "Browse" buttons:

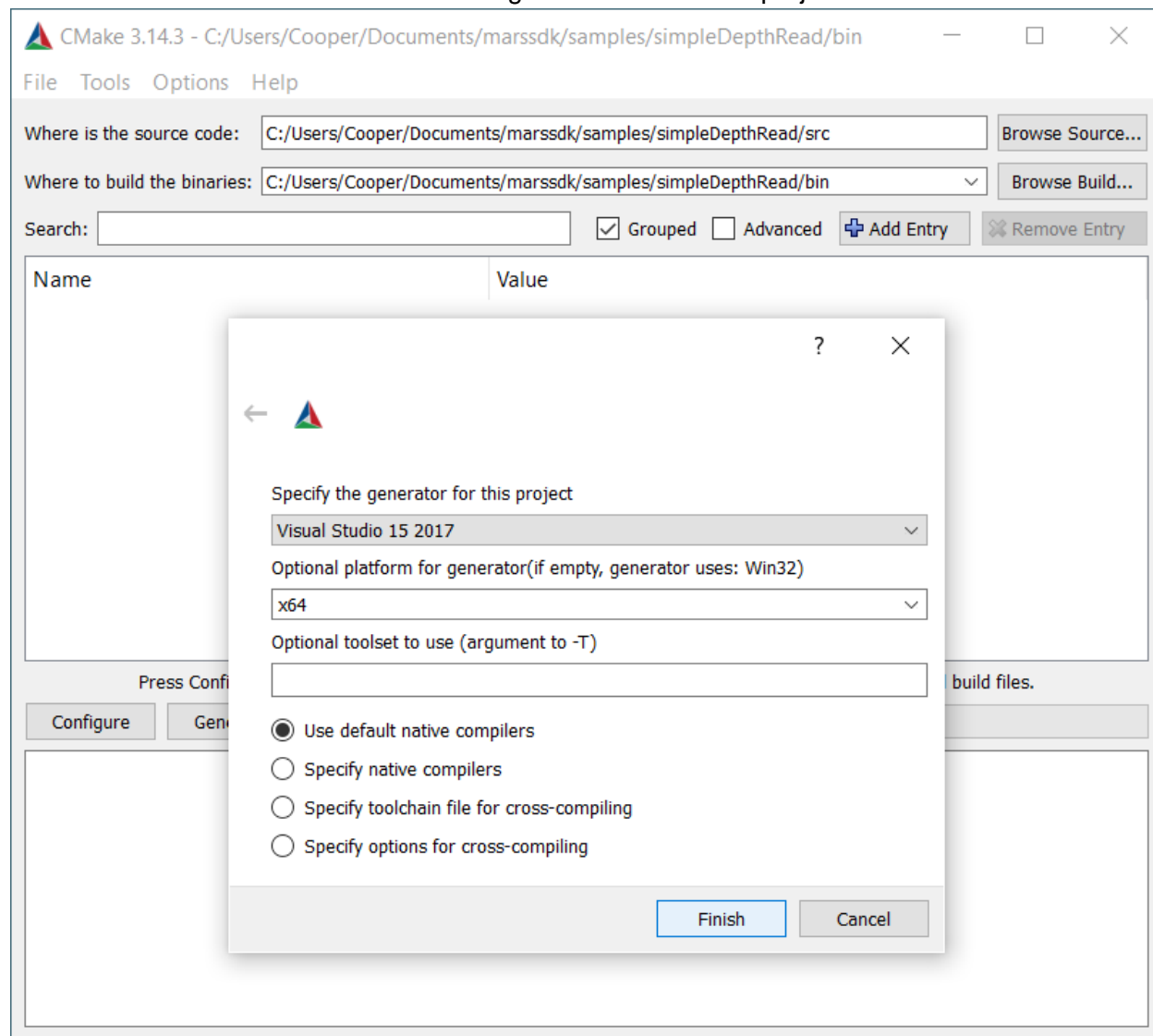
- "Where is the source code:" with the path "C:/Users/Cooper/Documents/marssdk/samples/simpleDepthRead/src" and a "Browse Source..." button.
- "Where to build the binaries:" with the path "C:/Users/Cooper/Documents/marssdk/samples/simpleDepthRead/bin" and a "Browse Build..." button.

Below these fields is a "Search:" input field, followed by checkboxes for "Grouped" (checked) and "Advanced" (unchecked), and buttons for "Add Entry" and "Remove Entry".

The main area of the GUI is a table with two columns: "Name" and "Value". The table is currently empty.

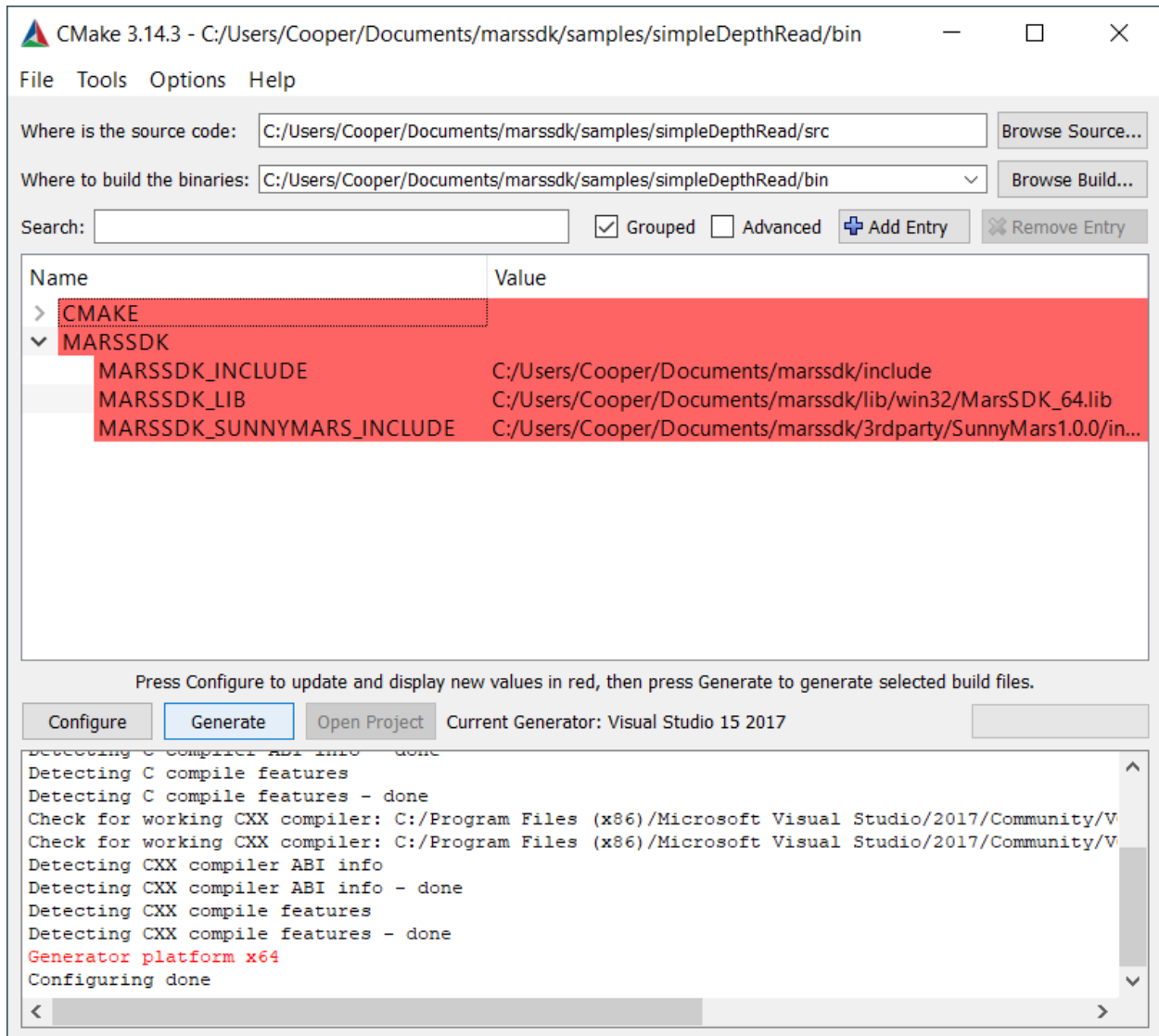
At the bottom of the GUI, there is a message: "Press Configure to update and display new values in red, then press Generate to generate selected build files." Below this message are four buttons: "Configure", "Generate", "Open Project", and "Current Generator: None".

Click **Configure**, and choose the installed version of Visual Studio to use (recommended 2017).
Choose **x64** under **Optional platform for generator** (32 bit platforms are not supported).
Click **Finish** to generate the CMake project:

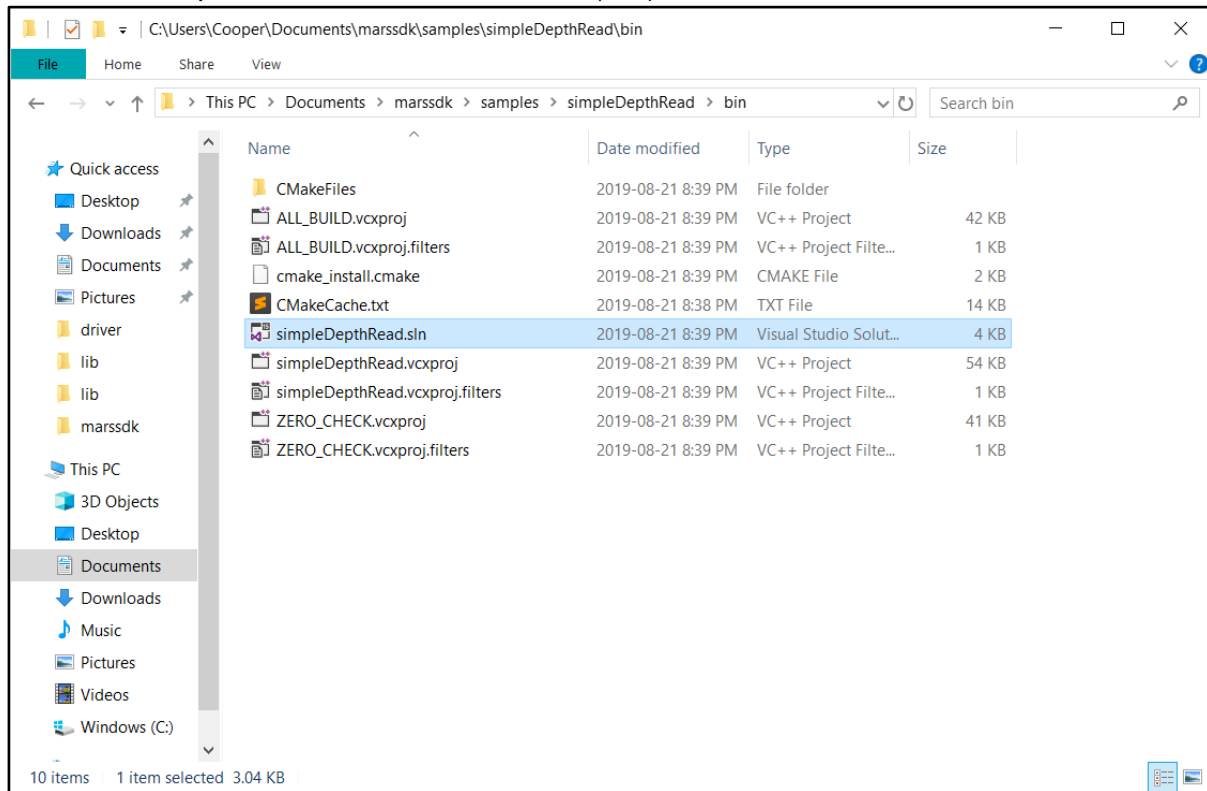


The core MarsSDK CMake cache entries are configured to point within the MarsSDK structure.

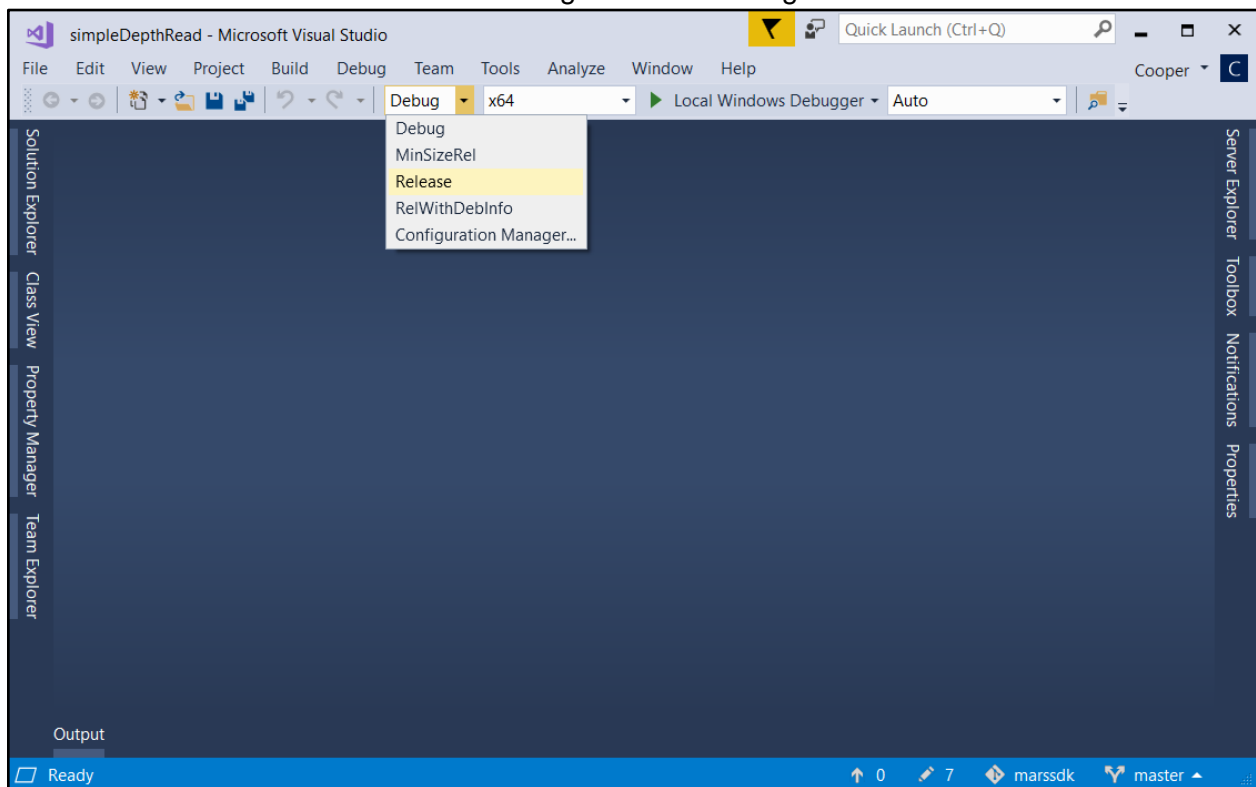
Any cache entries for third party libraries must be modified to point to their location on your computer. Click **Generate** to populate the specified build folder with the necessary Visual Studio solution:



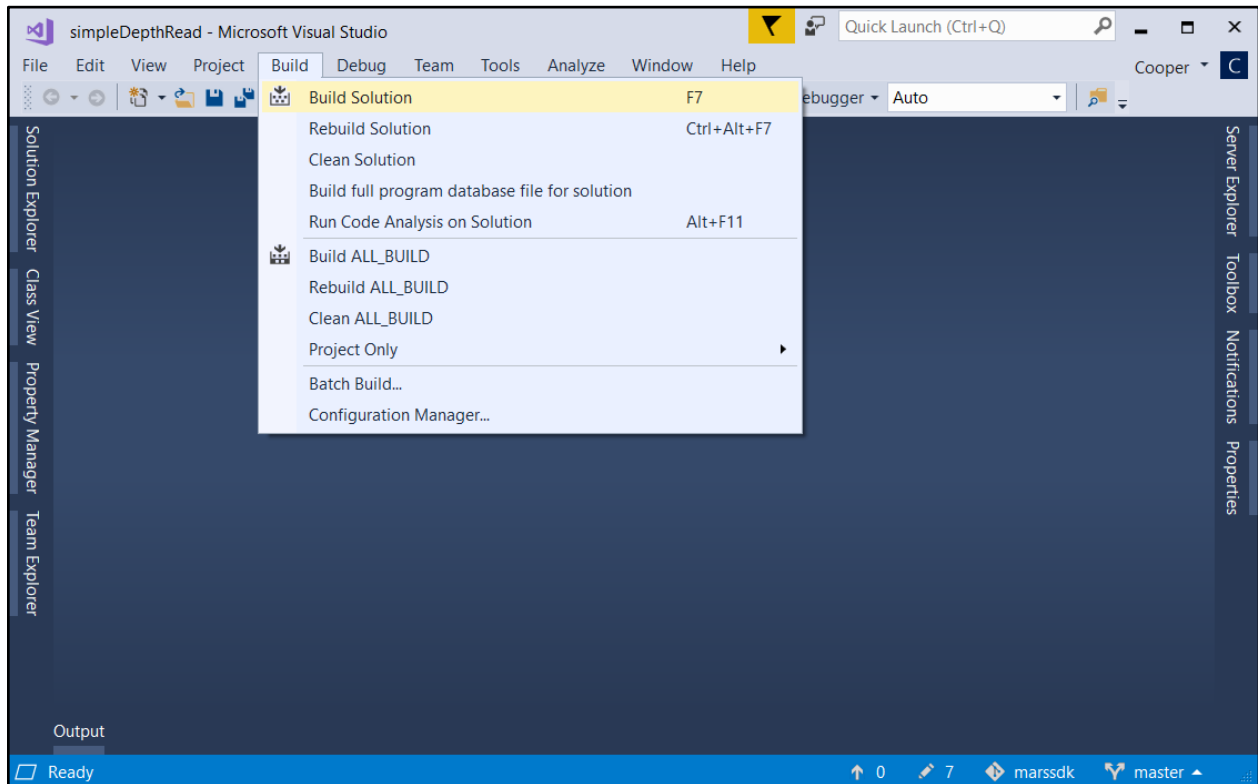
Open the Visual Studio solution (.sln) file in the created build folder:



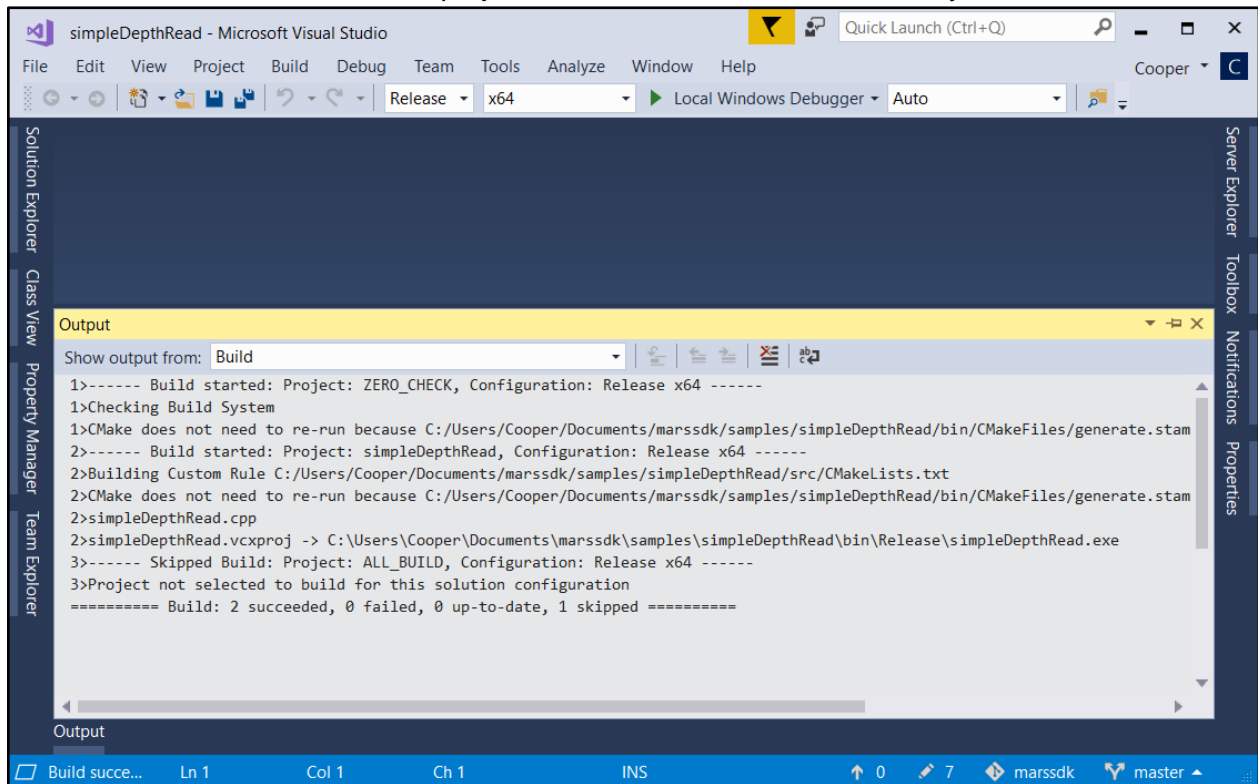
It is recommended to change the build configuration to **Release**:



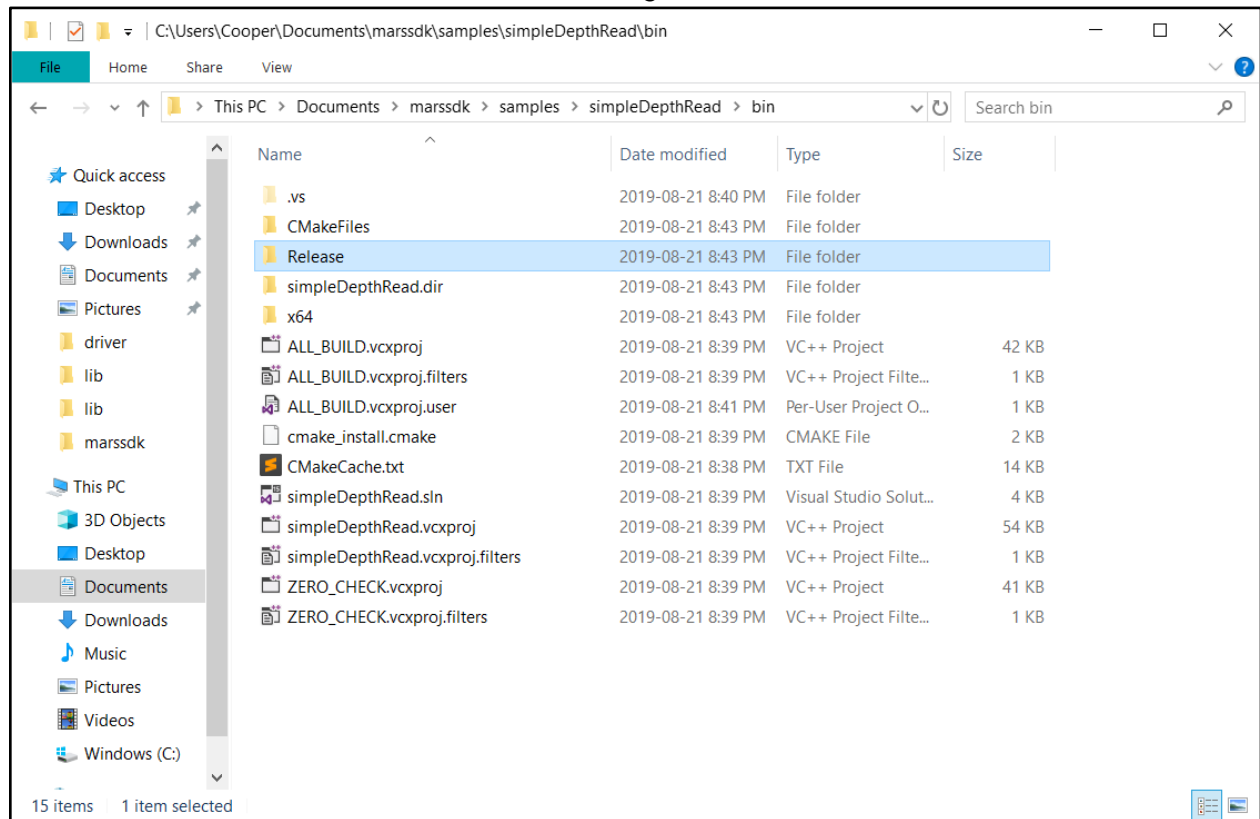
Under the **Build** menu, click **Build Solution**:



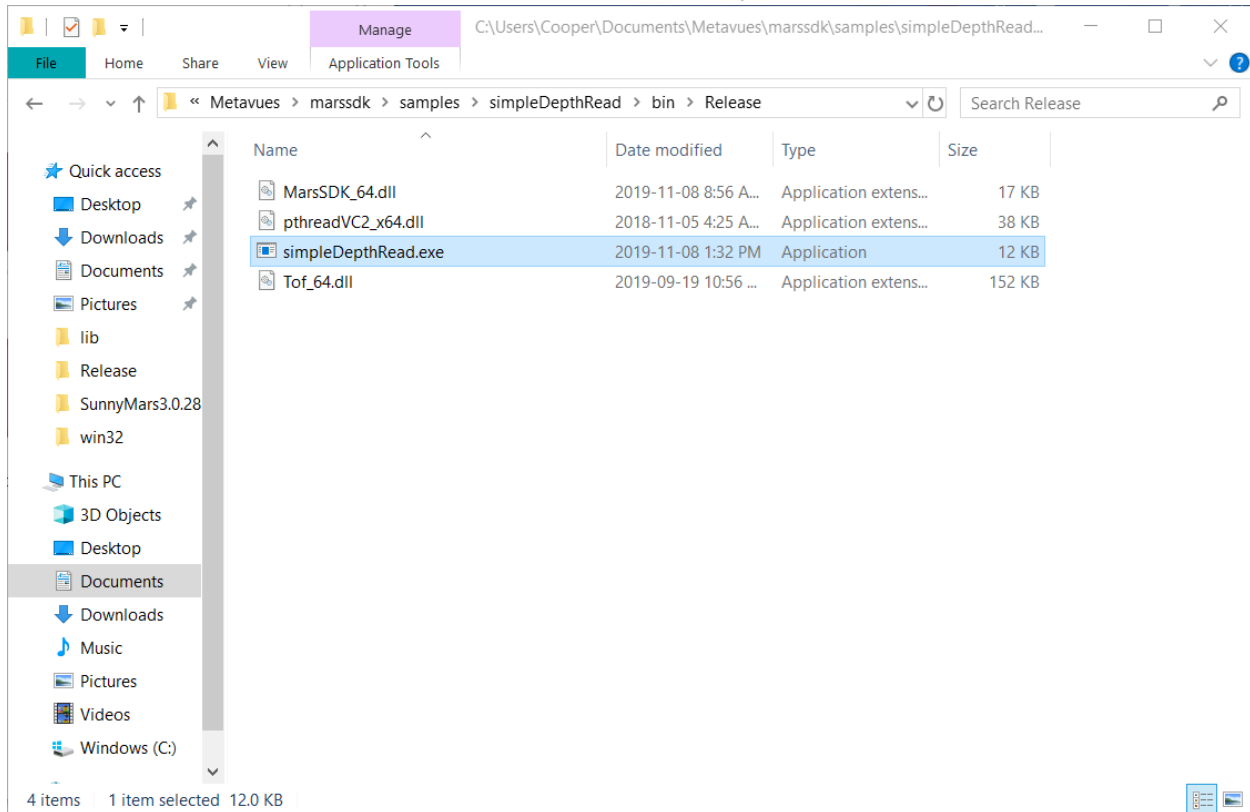
Ensure the projects in the solution are built correctly:



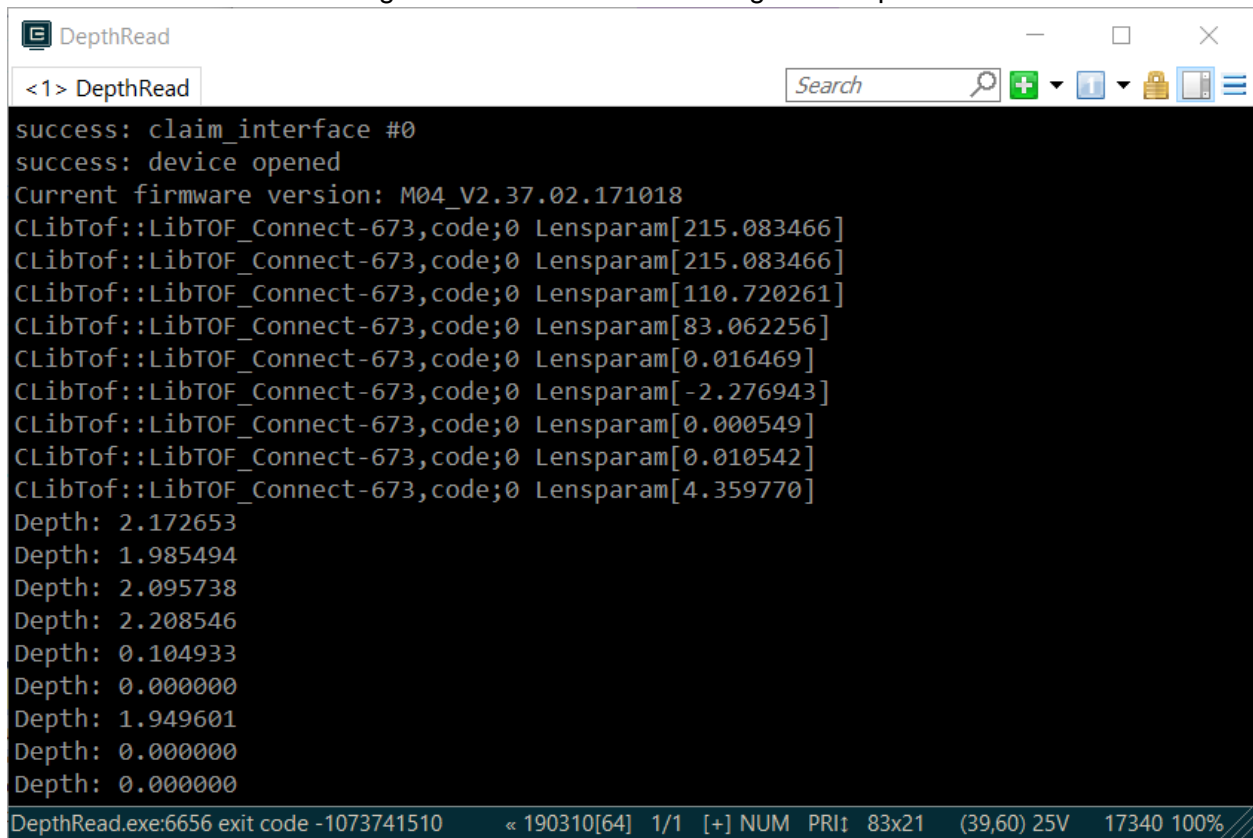
The compiled executable (.exe) can be found in the **Release** or **Debug** folder, depending on the build configuration:



In order to run the executable, the provided dynamic libraries (.dll) must be in the same folder. They can be found under **lib/win32** and **3rdparty/SunnyMars1.0.13/lib**, with **_64** indicating the versions built for 64-bit systems:



Plug in the device before running the sample:



The screenshot shows a Windows application window titled "DepthRead". The window has a standard Windows interface with a title bar, a menu bar (containing "<1> DepthRead"), a search bar, and several icons (a green plus sign, a blue square with a white 'T', a yellow padlock, and a blue square with a white 'E'). The main area of the window is a black terminal with white text. The text shows the successful connection to a device and the retrieval of lens parameters and depth data. The status bar at the bottom of the window displays the following information: "DepthRead.exe:6656 exit code -1073741510", a CPU usage indicator "« 190310[64]", a memory usage indicator "1/1", a status indicator "[+]", a power indicator "NUM PRI: 83x21", a voltage indicator "(39,60) 25V", and a battery level indicator "17340 100%".

```
success: claim_interface #0
success: device opened
Current firmware version: M04_V2.37.02.171018
CLibTof::LibTOF_Connect-673,code;0 Lensparam[215.083466]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[215.083466]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[110.720261]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[83.062256]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[0.016469]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[-2.276943]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[0.000549]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[0.010542]
CLibTof::LibTOF_Connect-673,code;0 Lensparam[4.359770]
Depth: 2.172653
Depth: 1.985494
Depth: 2.095738
Depth: 2.208546
Depth: 0.104933
Depth: 0.000000
Depth: 1.949601
Depth: 0.000000
Depth: 0.000000
DepthRead.exe:6656 exit code -1073741510 « 190310[64] 1/1 [+] NUM PRI: 83x21 (39,60) 25V 17340 100%
```

Linux:

Create a new folder to hold the build files using **mkdir bin**, and move into it with **cd bin**:

```
File Edit View Search Terminal Help
cooper@laptop:~/marssdk/samples/simpleDepthRead$ mkdir bin
cooper@laptop:~/marssdk/samples/simpleDepthRead$ cd bin
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ |
```

Run CMake, pointing to the location of the source using **cmake ../src**:

```
File Edit View Search Terminal Help
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ cmake ../src
-- The C compiler identification is GNU 7.4.0
-- The CXX compiler identification is GNU 7.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/cooper/marssdk/samples/simpleDepthRead/bin
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ |
```

Once CMake has generated the build files, you can edit the cache entries using

vim CMakeCache.txt:

```
File Edit View Search Terminal Help
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ vim CMakeCache.txt |
```

The MarsSDK CMake cache entries are configured to point within the MarsSDK structure. Any cache entries for third party libraries must be modified to point to their location on your computer:

```
File Edit View Search Terminal Help

//MarsSDK headers
MARSSDK_INCLUDE:PATH=/home/cooper/marssdk/include

//MarsSDK libs
MARSSDK_LIB:PATH=/home/cooper/marssdk/lib/linux/libMarsSDK.so

//LibUSB include path
MARSSDK_LIBUSB_INCLUDE:PATH=/home/cooper/marssdk/3rdparty/libusb-1.0.21/include

//Sunny Mars API headers
MARSSDK_SUNNYMARS_INCLUDE:PATH=/home/cooper/marssdk/3rdparty/SunnyMars1.0.1/include

//Value Computed by CMake
simpleDepthRead_BINARY_DIR:STATIC=/home/cooper/marssdk/samples/simpleDepthRead/bin

//Value Computed by CMake
simpleDepthRead_SOURCE_DIR:STATIC=/home/cooper/marssdk/samples/simpleDepthRead/src

188,1 56%
```

Build the executable using **make**:

```
File Edit View Search Terminal Help
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ make
Scanning dependencies of target simpleDepthRead
[ 50%] Building CXX object CMakeFiles/simpleDepthRead.dir/simpleDepthRead.cpp.o
[100%] Linking CXX executable simpleDepthRead
[100%] Built target simpleDepthRead
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ |
```

Plug in the device, and run the sample using **sudo ./simpleDepthRead**:

```
File Edit View Search Terminal Help
cooper@laptop:~/marssdk/samples/simpleDepthRead/bin$ sudo ./simpleDepthRead
[sudo] password for cooper:
Current VID: 23dd, PID: 1
Matching the VID: 40e, PID: 4d35
Current VID: 23dd, PID: 1
Matching the VID: 40e, PID: 4d36
Current VID: 23dd, PID: 1
Matching the VID: 23dd, PID: 1
Device Opened
Current firmware version: M04_V2.43.01.180307
LibTOF_Connect-761,code;0 Lensparam[215.713120]
LibTOF_Connect-761,code;0 Lensparam[215.713120]
LibTOF_Connect-761,code;0 Lensparam[110.511856]
LibTOF_Connect-761,code;0 Lensparam[83.585907]
LibTOF_Connect-761,code;0 Lensparam[-0.005873]
LibTOF_Connect-761,code;0 Lensparam[-2.204679]
LibTOF_Connect-761,code;0 Lensparam[0.000288]
LibTOF_Connect-761,code;0 Lensparam[0.009335]
LibTOF_Connect-761,code;0 Lensparam[4.290608]
Current firmware version: M04_V2.43.01.180307
Depth: 0.000000
Depth: 0.000000
Depth: 1.982979
Depth: 1.991769
```