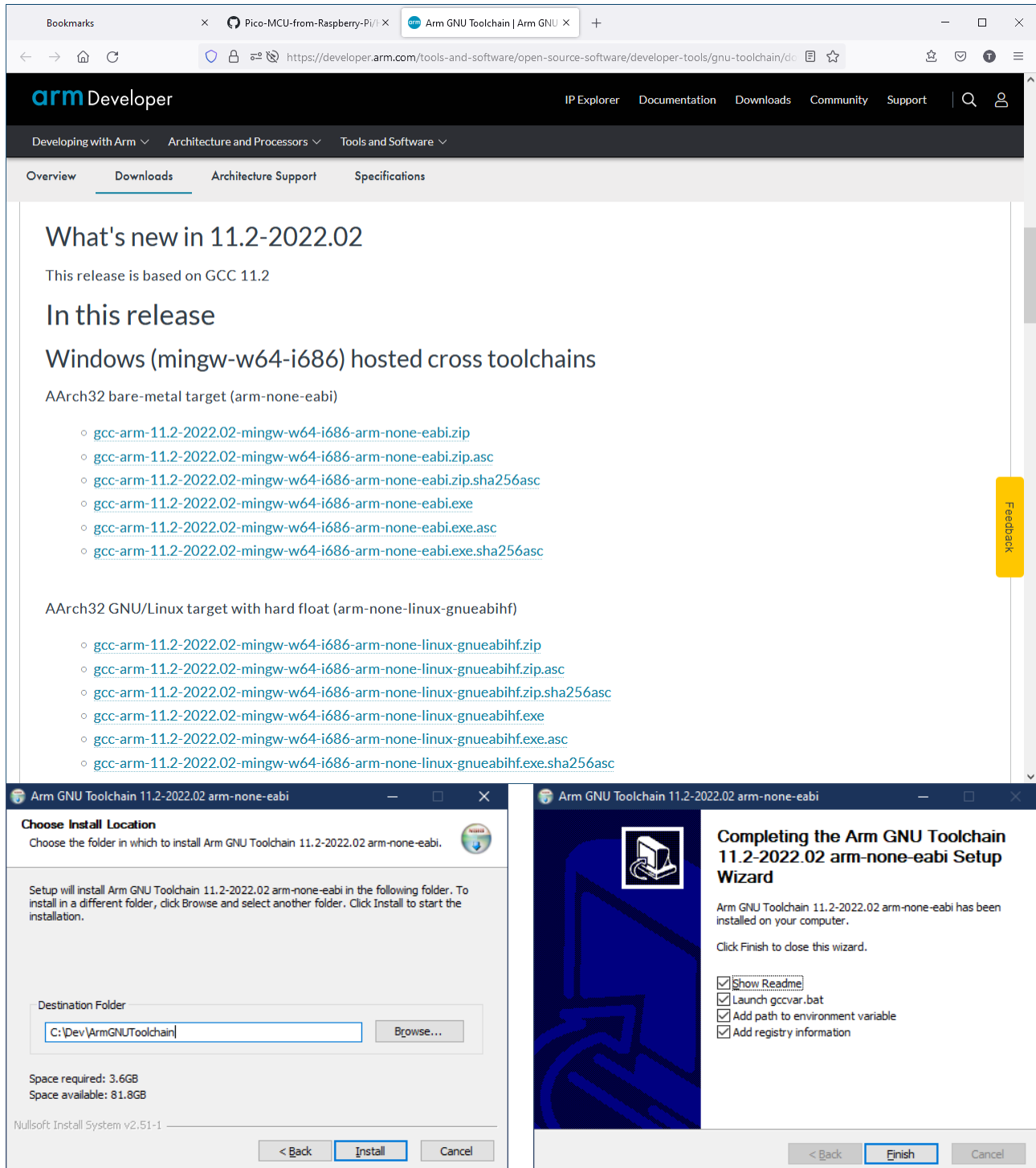


# Install Pico (W) SDK 1.40 in Windows 10x64 July 2022

Partly based on RP2040 Development Setup on Windows <https://len42.github.io/rp2040-dev-setup.html>

1. Make two new folders (such as C:\Dev and W:\Pico). I used another drive for the Pico development folders, because it is then easier to make separate backups of the operating system and user data.
2. Install gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.exe from: <https://developer.arm.com/tools-and-software/open-source-software/developer-tools/gnu-toolchain/downloads> to C:\Dev\ArmGNUToolchain - add path to environment variable during install.  
<https://developer.arm.com/-/media/Files/downloads/gnu/11.2-2022.02/binrel/gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.exe>



The screenshot shows the Arm Developer website's download page for the Arm GNU Toolchain 11.2-2022.02 arm-none-eabi. The page lists various download links for different targets and architectures. Below the website screenshot, two screenshots of the installation wizard are shown: 'Choose Install Location' and 'Completing the Arm GNU Toolchain 11.2-2022.02 arm-none-eabi Setup Wizard'.

**What's new in 11.2-2022.02**  
This release is based on GCC 11.2

**In this release**  
Windows (mingw-w64-i686) hosted cross toolchains

AArch32 bare-metal target (arm-none-eabi)

- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.zip
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.zip.asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.zip.sha256asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.exe
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.exe.asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-eabi.exe.sha256asc

AArch32 GNU/Linux target with hard float (arm-none-linux-gnueabi)

- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.zip
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.zip.asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.zip.sha256asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.exe
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.exe.asc
- gcc-arm-11.2-2022.02-mingw-w64-i686-arm-none-linux-gnueabi.exe.sha256asc

**Choose Install Location**  
Choose the folder in which to install Arm GNU Toolchain 11.2-2022.02 arm-none-eabi.

Setup will install Arm GNU Toolchain 11.2-2022.02 arm-none-eabi in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

Destination Folder  
C:\Dev\ArmGNUToolchain

Space required: 3.6GB  
Space available: 81.8GB

Nullsoft Install System v2.51-1

**Completing the Arm GNU Toolchain 11.2-2022.02 arm-none-eabi Setup Wizard**  
Arm GNU Toolchain 11.2-2022.02 arm-none-eabi has been installed on your computer.  
Click Finish to close this wizard.

- ☒ Show README
- ☒ Launch gccvar.bat
- ☒ Add path to environment variable
- ☒ Add registry information

3. Install cmake-3.23.2-windows-x86\_64.msi from <https://cmake.org/download/> to C:\Dev\CMake\ - add Cmake to the system PATH for all users.

[https://github.com/Kitware/CMake/releases/download/v3.23.2/cmake-3.23.2-windows-x86\\_64.msi](https://github.com/Kitware/CMake/releases/download/v3.23.2/cmake-3.23.2-windows-x86_64.msi)

The screenshot shows the CMake website's download page in a web browser. The page has a navigation bar with links for About, Services, Resources, and Download. A table lists files for download, including a File Table v1, Cryptographic Hashes, and a PGP signature. Below this, the 'Latest Release (3.23.2)' section provides instructions on how to install the release, mentioning that it is packaged with CPack and that .sh files are self-extracting gzipped tar files. It also provides source distributions for Unix/Linux and Windows, and binary distributions for Windows x64, Windows x86, and macOS. Two installation windows are overlaid on the bottom of the browser window. The 'Install Options' window shows options for adding CMake to the system PATH (selected for all users) and creating a desktop icon. The 'CMake Setup' window shows the destination folder set to C:\Dev\CMake\.

Role	Files
File Table v1	<a href="#">cmake-3.24.0-rc2-files-v1.json</a>
Cryptographic Hashes	<a href="#">cmake-3.24.0-rc2-SHA-256.txt</a>
PGP sig by 2D2CEf1034921684	<a href="#">cmake-3.24.0-rc2-SHA-256.txt.asc</a>

Also see instructions on [Download Verification](#).

### Latest Release (3.23.2)

The release was packaged with CPack which is included as part of the release. The .sh files are self extracting gzipped tar files. To install a .sh file, run it with /bin/sh and follow the directions. The OS-machine.tar.gz files are gzipped tar files of the install tree. The OS-machine.tar.Z files are compressed tar files of the install tree. The tar file distributions can be untared in any directory. They are prefixed by the version of CMake. For example, the linux-x86\_64 tar file is all under the directory cmake-linux-x86\_64. This prefix can be removed as long as the share, bin, man and doc directories are moved relative to each other. To build the source distributions, unpack them with zip or tar and follow the instructions in README.rst at the top of the source tree. See also the [CMake 3.23 Release Notes](#).

Source distributions:

Platform	Files
Unix/Linux Source (has \n line feeds)	<a href="#">cmake-3.23.2.tar.gz</a>
Windows Source (has \r\n line feeds)	<a href="#">cmake-3.23.2.zip</a>

Binary distributions:

Platform	Files
Windows x64 Installer	<a href="#">cmake-3.23.2-windows-x86_64.msi</a>
Windows x64 ZIP	<a href="#">cmake-3.23.2-windows-x86_64.zip</a>
Windows i386 Installer	<a href="#">cmake-3.23.2-windows-i386.msi</a>
Windows i386 ZIP	<a href="#">cmake-3.23.2-windows-i386.zip</a>
macOS 10.13 or later	<a href="#">cmake-3.23.2-macos-universal.dmg</a>

**Install Options**

Choose options for installing CMake 3.23.2

By default CMake does not add its directory to the system PATH.

☐ Do not add CMake to the system PATH

☒ Add CMake to the system PATH for all users

☐ Add CMake to the system PATH for the current user

☒ Create CMake Desktop Icon

Back Next Cancel

**CMake Setup**

Destination Folder

Click Next to install to the default folder or click Change to choose another.

Install CMake to:

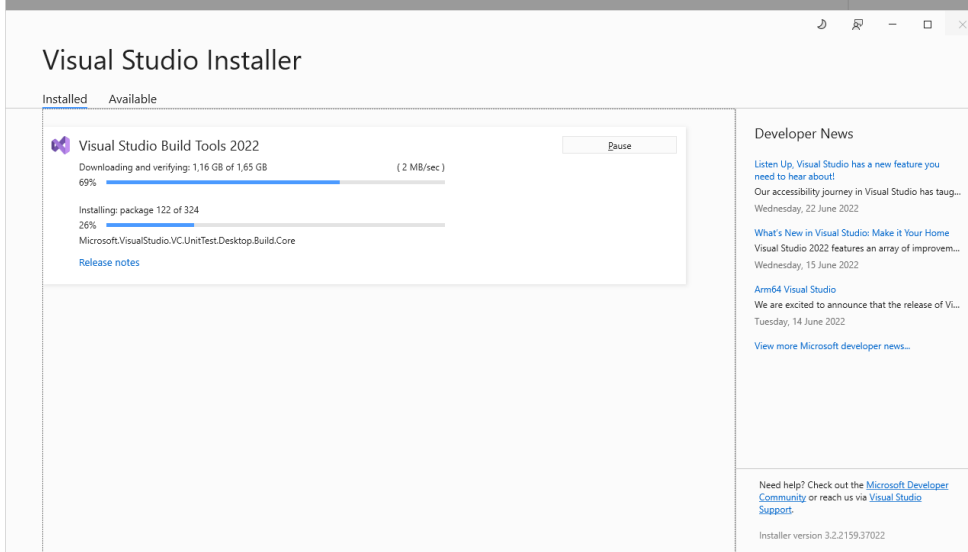
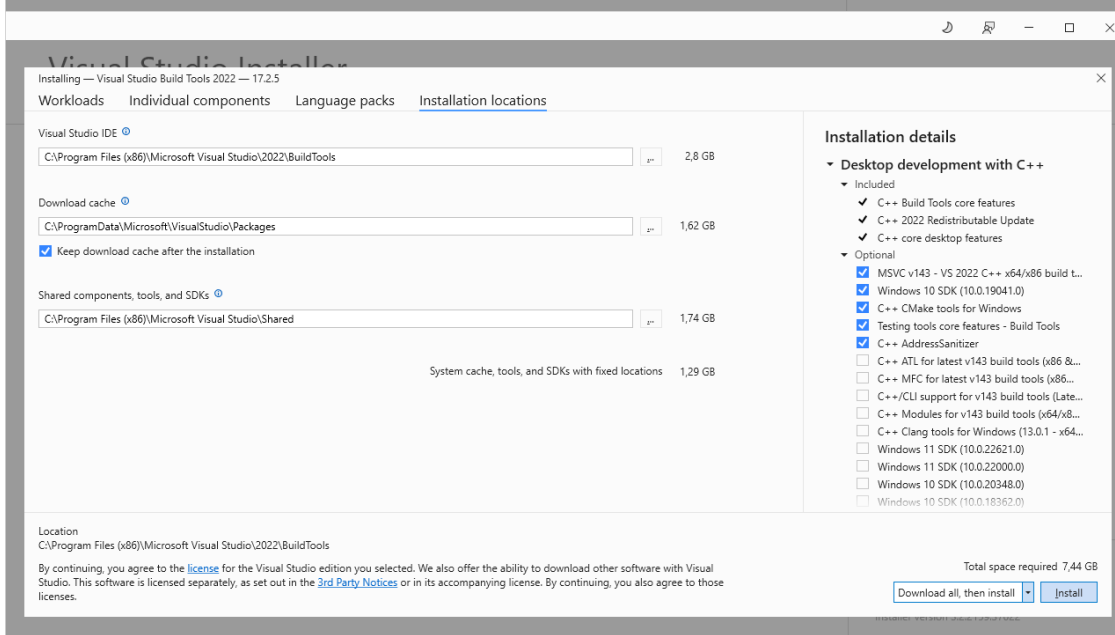
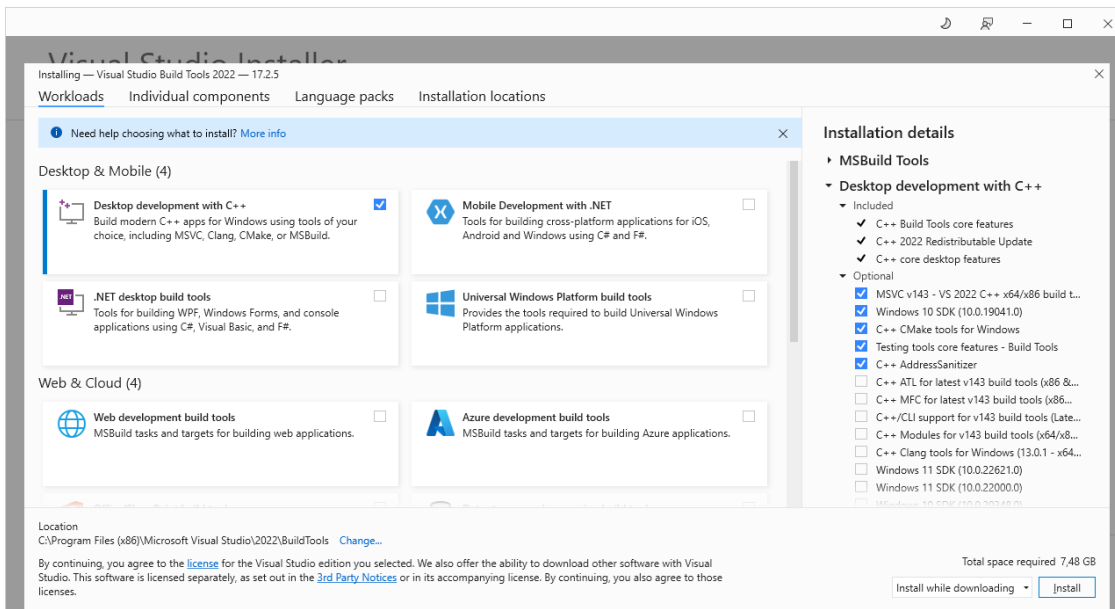
C:\Dev\CMake\

Change...

Back Next Cancel

4. Install vs\_BuildTools.exe from [https://aka.ms/vs/17/release/vs\\_BuildTools.exe](https://aka.ms/vs/17/release/vs_BuildTools.exe) to the default folder - select C++ development tools. It was a 1.65 GB download.

The screenshot shows a web browser window with the URL [https://aka.ms/vs/17/release/vs\\_BuildTools.exe](https://aka.ms/vs/17/release/vs_BuildTools.exe). A download notification is visible in the bottom right corner, showing that 'vs\_BuildTools.exe' has been completed with a size of 1.6 MB. Below the notification is a button labeled 'Show all downloads'.



5. Install python-3.10.5-amd64.exe from <https://www.python.org/downloads/windows/> to C:\Dev\Python310 - select Add Python to PATH and also select to remove the max path length.  
<https://www.python.org/ftp/python/3.10.5/python-3.10.5-amd64.exe>

Python Releases for Windows

- Latest Python 3 Release - Python 3.10.5
- Latest Python 2 Release - Python 2.7.18

### Stable Releases

- Python 3.10.5 - June 6, 2022  
**Note that Python 3.10.5 cannot be used on Windows 7 or earlier.**
  - Download [Windows embeddable package \(32-bit\)](#)
  - Download [Windows embeddable package \(64-bit\)](#)
  - Download [Windows help file](#)
  - Download [Windows installer \(32-bit\)](#)
  - Download [Windows installer \(64-bit\)](#)
- Python 3.9.13 - May 17, 2022  
**Note that Python 3.9.13 cannot be used on Windows 7 or earlier.**
  - Download [Windows embeddable package \(32-bit\)](#)
  - Download [Windows embeddable package \(64-bit\)](#)
  - Download [Windows help file](#)
  - Download [Windows installer \(32-bit\)](#)
  - Download [Windows installer \(64-bit\)](#)

### Pre-releases

- Python 3.11.0b3 - June 1, 2022
  - Download [Windows embeddable package \(32-bit\)](#)
  - Download [Windows embeddable package \(64-bit\)](#)
  - Download [Windows embeddable package \(ARM64\)](#)
  - Download [Windows installer \(32-bit\)](#)
  - Download [Windows installer \(64-bit\)](#)
  - Download [Windows installer \(ARM64\)](#)
- Python 3.11.0b2 - May 31, 2022
  - Download [Windows embeddable package \(32-bit\)](#)
  - Download [Windows embeddable package \(64-bit\)](#)
  - Download [Windows embeddable package \(ARM64\)](#)
  - Download [Windows installer \(32-bit\)](#)
  - Download [Windows installer \(64-bit\)](#)
  - Download [Windows installer \(ARM64\)](#)
- Python 3.11.0b1 - May 8, 2022
  - Download [Windows embeddable package \(32-bit\)](#)

Python 3.10.5 (64-bit) Setup

**Install Python 3.10.5 (64-bit)**  
 Select Install Now to install Python with default settings, or choose Customize to enable or disable features.

☒ **Install Now**  
 C:\Dev\Python310  
 Includes IDLE, pip and documentation  
 Creates shortcuts and file associations

[→ Customize installation](#)  
 Choose location and features

☒ Install launcher for all users (recommended)  
☒ Add Python 3.10 to PATH

Cancel

Setup was successful

New to Python? Start with the [online tutorial](#) and [documentation](#). At your terminal, type "py" to launch Python, or search for Python in your Start menu.

See [what's new](#) in this release, or find more info about [using Python on Windows](#).

☒ **Disable path length limit**  
 Changes your machine configuration to allow programs, including Python, to bypass the 260 character "MAX\_PATH" limitation.

Close

6. Install Git-2.36.1-64-bit.exe from <https://git-scm.com/download/win> to C:\Dev\Git - follow the instructions as below (from <https://len42.github.io/rp2040-dev-setup.html> ).

*Destination Location: Default (or not)*

*Select Components: Default*

*Default editor: Select one you like.*

*Name of the initial branch: Let Git decide*

*PATH environment: Git from the command line and also from 3rd-party software*

*SSH executable: Use bundled OpenSSH*

*HTTPS transport backend: Use the OpenSSL library*

*Line ending conversion: Checkout as-is, commit as-is*

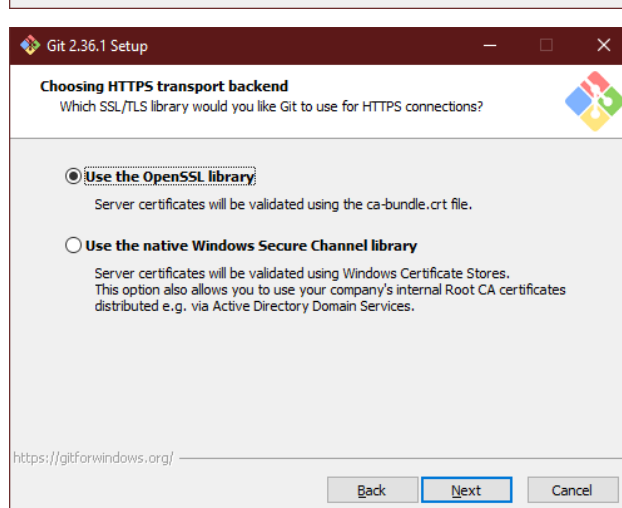
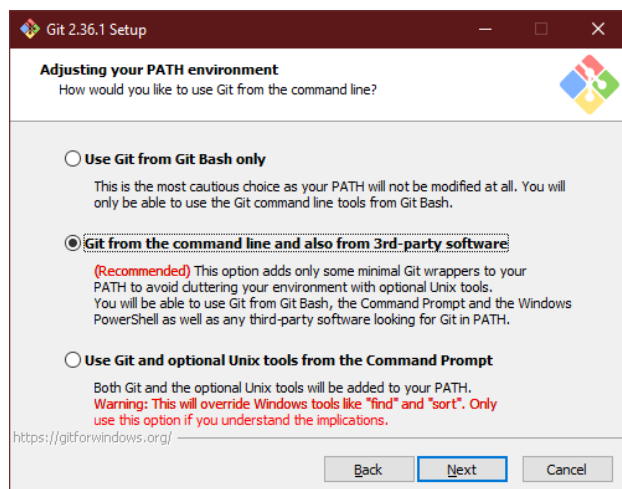
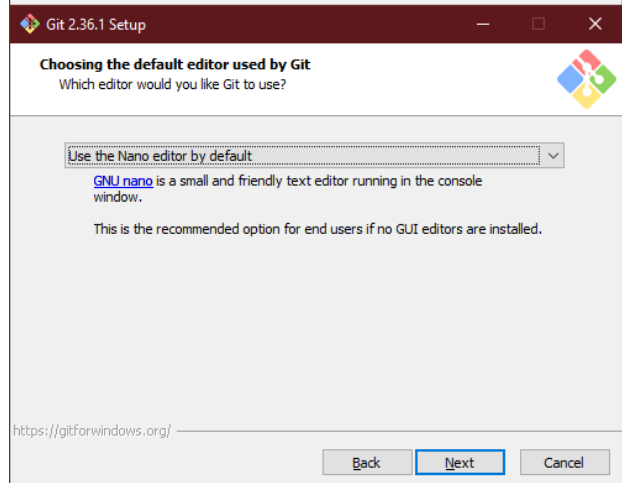
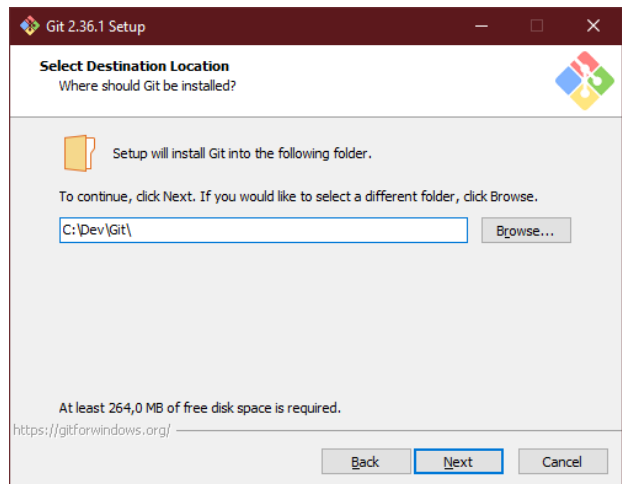
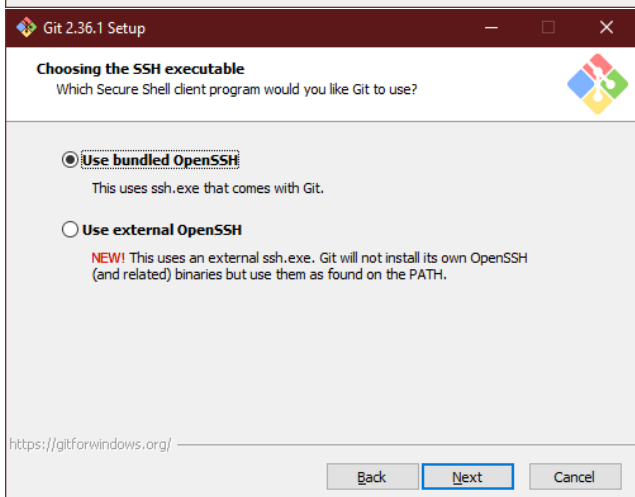
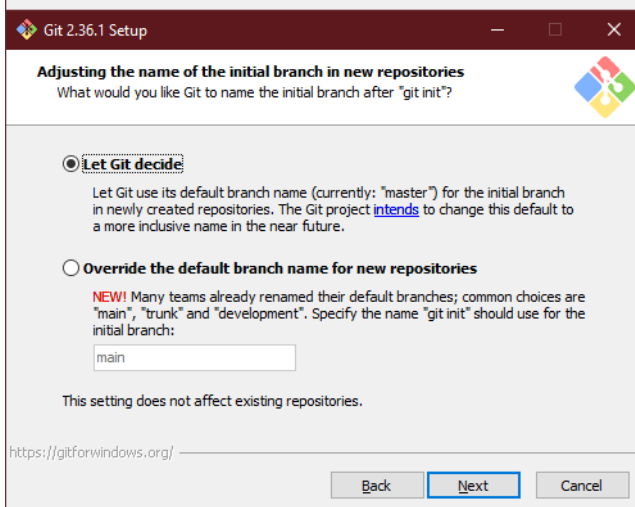
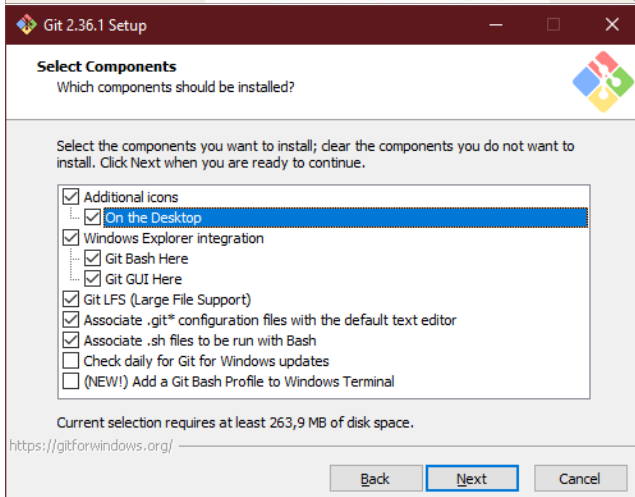
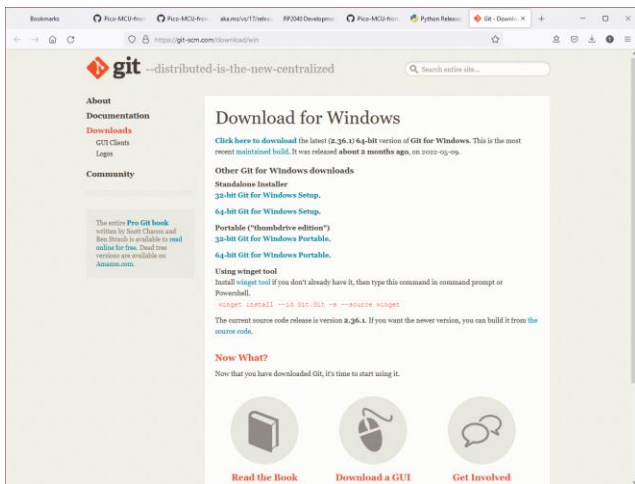
*Terminal emulator for Git Bash: Select either option*

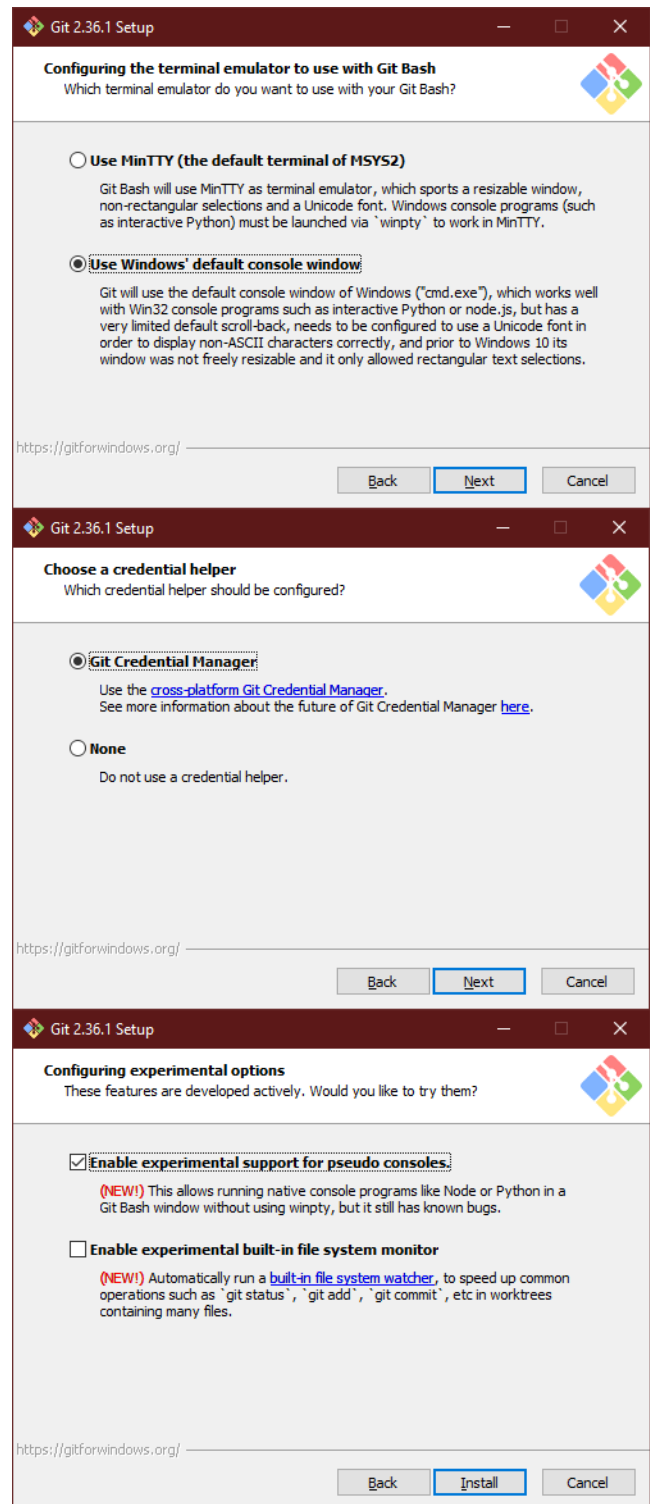
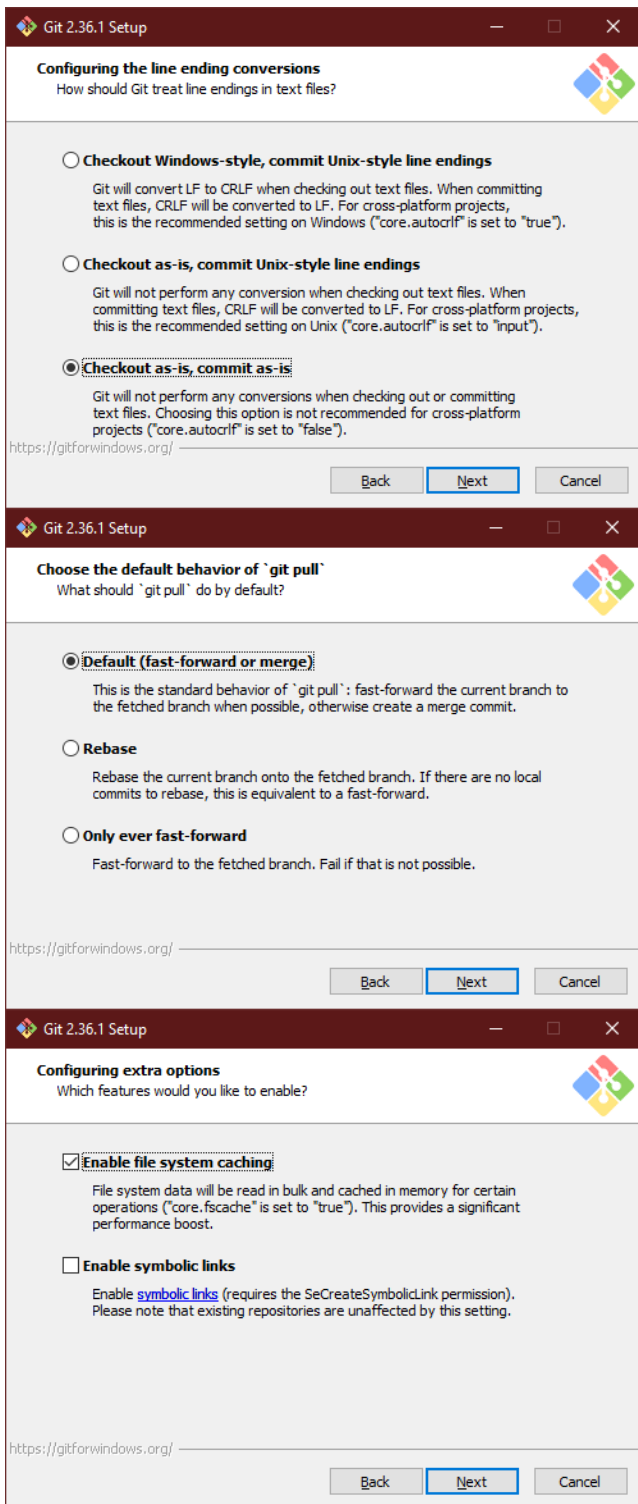
*Default behavior of "git pull": Default (f-f or merge)*

*Credential helper: Default (Git Credential Manager Core)*

*Extra options: Default (Enable file system caching on, Enable symbolic links off)*

*Experimental options: Select "Enable experimental support for pseudo consoles"*





## 7. Use the windows admin cmd prompt to install the Pico SDK

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-sdk.git>

Cloning into 'pico-sdk'...

remote: Enumerating objects: 5331, done.

remote: Counting objects: 100% (390/390), done.

remote: Compressing objects: 100% (260/260), done.

remote: Total 5331 (delta 131), reused 295 (delta 85), pack-reused 4941

Receiving objects: 100% (5331/5331), 2.60 MiB | 1.06 MiB/s, done.

Resolving deltas: 100% (2619/2619), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-examples.git>

Cloning into 'pico-examples'...

remote: Enumerating objects: 2042, done.

remote: Counting objects: 100% (860/860), done.



remote: Compressing objects: 100% (330/330), done.  
remote: Total 2042 (delta 646), reused 566 (delta 530), pack-reused 1182  
Receiving objects: 100% (2042/2042), 7.37 MiB | 1.31 MiB/s, done.  
Resolving deltas: 100% (1094/1094), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-extras.git>

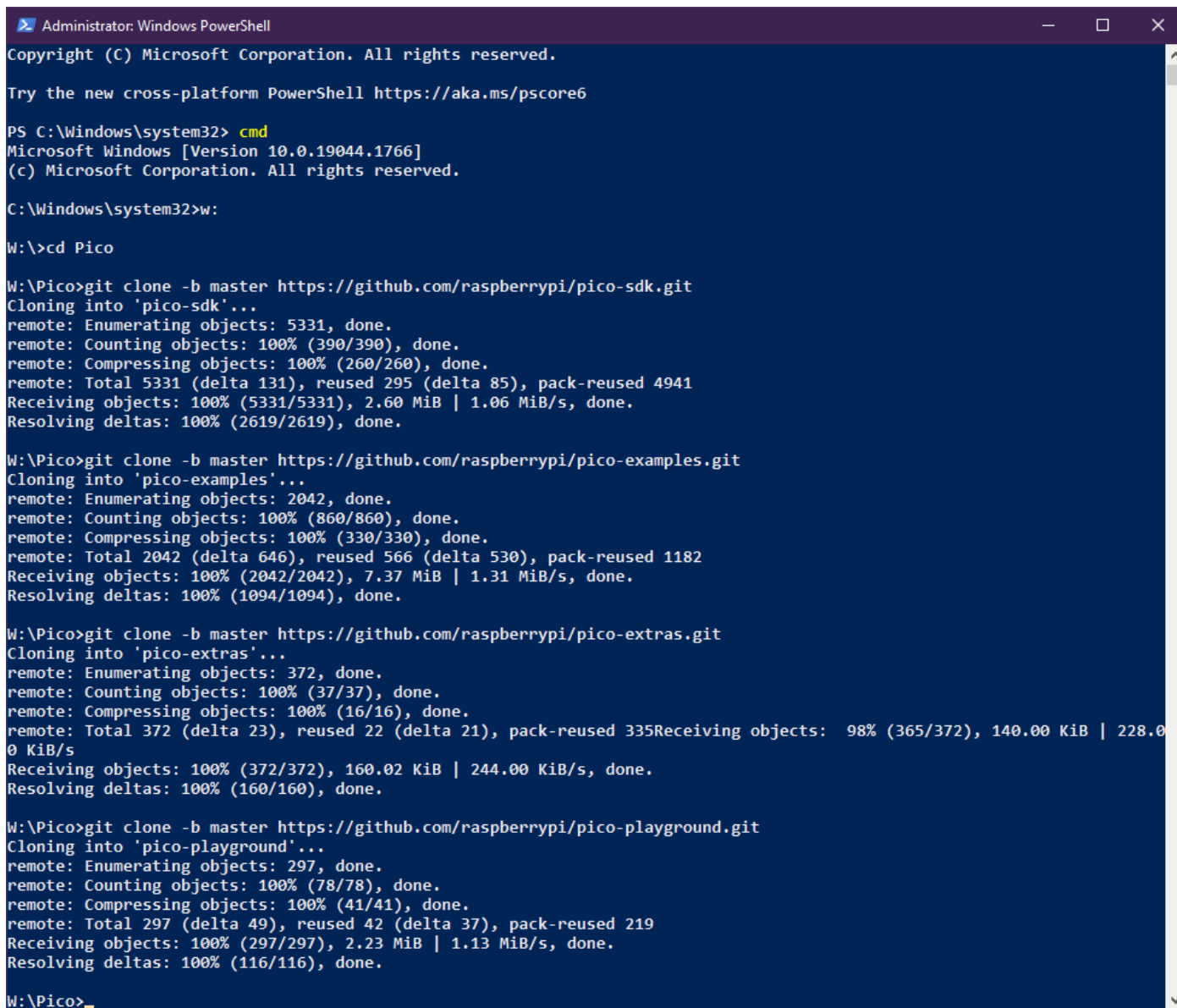
Cloning into 'pico-extras'...

remote: Enumerating objects: 372, done.  
remote: Counting objects: 100% (37/37), done.  
remote: Compressing objects: 100% (16/16), done.  
remote: Total 372 (delta 23), reused 22 (delta 21), pack-reused 335Receiving objects: 98% (365/372), 140.00 KiB | 228.00 KiB/s  
Receiving objects: 100% (372/372), 160.02 KiB | 244.00 KiB/s, done.  
Resolving deltas: 100% (160/160), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-playground.git>

Cloning into 'pico-playground'...

remote: Enumerating objects: 297, done.  
remote: Counting objects: 100% (78/78), done.  
remote: Compressing objects: 100% (41/41), done.  
remote: Total 297 (delta 49), reused 42 (delta 37), pack-reused 219  
Receiving objects: 100% (297/297), 2.23 MiB | 1.13 MiB/s, done.  
Resolving deltas: 100% (116/116), done.



Administrator: Windows PowerShell

Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Windows\system32> cmd

Microsoft Windows [Version 10.0.19044.1766]  
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>w:

W:\>cd Pico

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-sdk.git>

Cloning into 'pico-sdk'...

remote: Enumerating objects: 5331, done.  
remote: Counting objects: 100% (390/390), done.  
remote: Compressing objects: 100% (260/260), done.  
remote: Total 5331 (delta 131), reused 295 (delta 85), pack-reused 4941  
Receiving objects: 100% (5331/5331), 2.60 MiB | 1.06 MiB/s, done.  
Resolving deltas: 100% (2619/2619), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-examples.git>

Cloning into 'pico-examples'...

remote: Enumerating objects: 2042, done.  
remote: Counting objects: 100% (860/860), done.  
remote: Compressing objects: 100% (330/330), done.  
remote: Total 2042 (delta 646), reused 566 (delta 530), pack-reused 1182  
Receiving objects: 100% (2042/2042), 7.37 MiB | 1.31 MiB/s, done.  
Resolving deltas: 100% (1094/1094), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-extras.git>

Cloning into 'pico-extras'...

remote: Enumerating objects: 372, done.  
remote: Counting objects: 100% (37/37), done.  
remote: Compressing objects: 100% (16/16), done.  
remote: Total 372 (delta 23), reused 22 (delta 21), pack-reused 335Receiving objects: 98% (365/372), 140.00 KiB | 228.00 KiB/s  
Receiving objects: 100% (372/372), 160.02 KiB | 244.00 KiB/s, done.  
Resolving deltas: 100% (160/160), done.

W:\Pico>git clone -b master <https://github.com/raspberrypi/pico-playground.git>

Cloning into 'pico-playground'...

remote: Enumerating objects: 297, done.  
remote: Counting objects: 100% (78/78), done.  
remote: Compressing objects: 100% (41/41), done.  
remote: Total 297 (delta 49), reused 42 (delta 37), pack-reused 219  
Receiving objects: 100% (297/297), 2.23 MiB | 1.13 MiB/s, done.  
Resolving deltas: 100% (116/116), done.

W:\Pico>

```
W:\Pico>cd pico-extras
```

```
W:\Pico\pico-extras>git submodule update --init
```

```
Submodule 'lwip' (https://git.savannah.nongnu.org/git/lwip.git) registered for path 'lib/lwip'  
Cloning into 'W:/Pico/pico-extras/lib/lwip'...  
Submodule path 'lib/lwip': checked out 'c385f31076b27efb8ee37f00cb5568783a58f299'
```

```
W:\Pico\pico-extras>cd ..
```

```
W:\Pico>cd pico-sdk
```

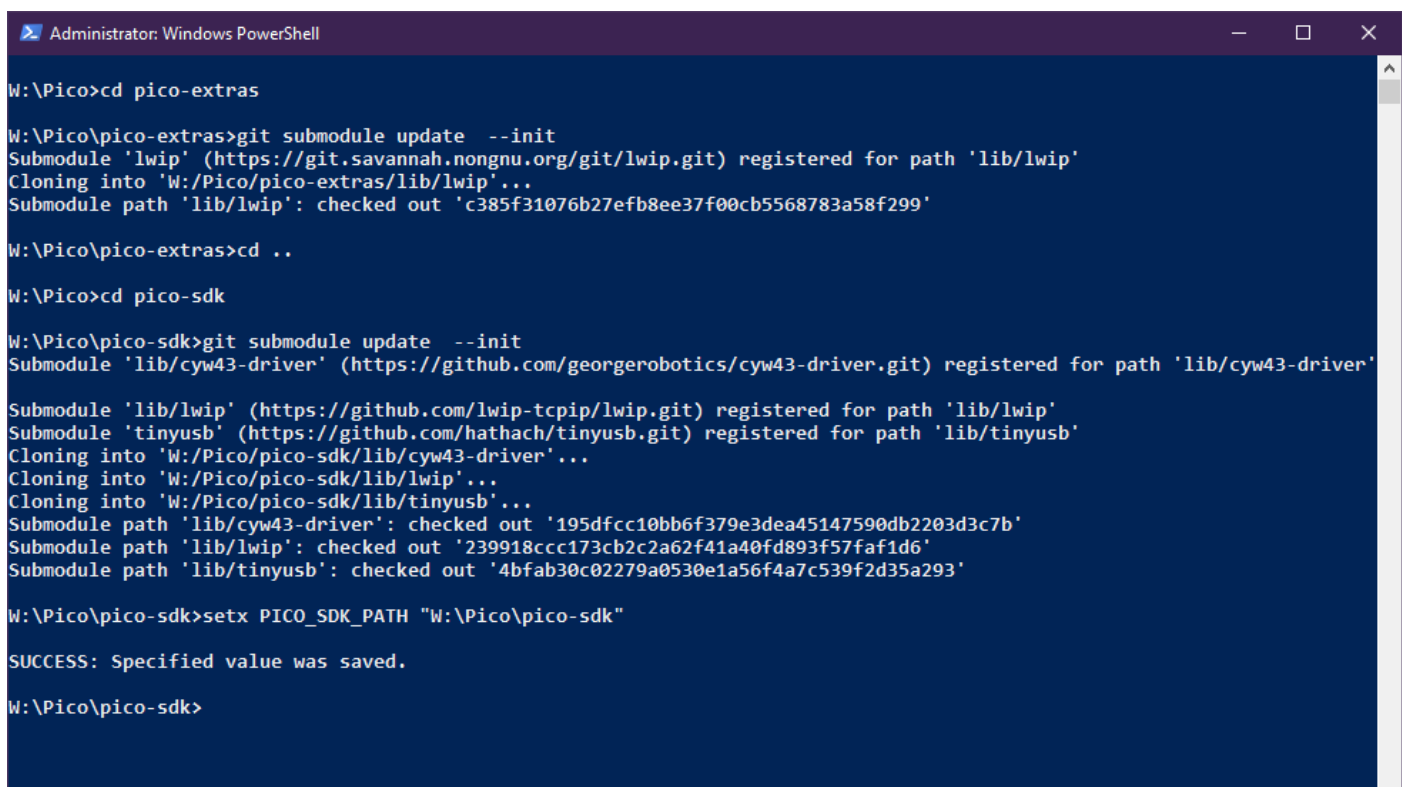
```
W:\Pico\pico-sdk>git submodule update --init
```

```
Submodule 'lib/cyw43-driver' (https://github.com/georgerobotics/cyw43-driver.git) registered for path 'lib/cyw43-driver'  
Submodule 'lib/lwip' (https://github.com/lwip-tcpip/lwip.git) registered for path 'lib/lwip'  
Submodule 'tinysub' (https://github.com/hathach/tinysub.git) registered for path 'lib/tinysub'  
Cloning into 'W:/Pico/pico-sdk/lib/cyw43-driver'...  
Cloning into 'W:/Pico/pico-sdk/lib/lwip'...  
Cloning into 'W:/Pico/pico-sdk/lib/tinysub'...  
Submodule path 'lib/cyw43-driver': checked out '195dfcc10bb6f379e3dea45147590db2203d3c7b'  
Submodule path 'lib/lwip': checked out '239918ccc173cb2c2a62f41a40fd893f57faf1d6'  
Submodule path 'lib/tinysub': checked out '4bfab30c02279a0530e1a56f4a7c539f2d35a293'
```

```
W:\Pico\pico-sdk>setx PICO_SDK_PATH "W:\Pico\pico-sdk"
```

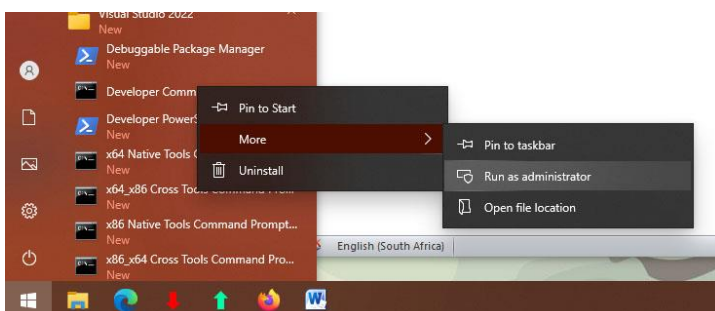
```
SUCCESS: Specified value was saved.
```

```
W:\Pico\pico-sdk>
```



```
Administrator: Windows PowerShell  
W:\Pico>cd pico-extras  
W:\Pico\pico-extras>git submodule update --init  
Submodule 'lwip' (https://git.savannah.nongnu.org/git/lwip.git) registered for path 'lib/lwip'  
Cloning into 'W:/Pico/pico-extras/lib/lwip'...  
Submodule path 'lib/lwip': checked out 'c385f31076b27efb8ee37f00cb5568783a58f299'  
W:\Pico\pico-extras>cd ..  
W:\Pico>cd pico-sdk  
W:\Pico\pico-sdk>git submodule update --init  
Submodule 'lib/cyw43-driver' (https://github.com/georgerobotics/cyw43-driver.git) registered for path 'lib/cyw43-driver'  
Submodule 'lib/lwip' (https://github.com/lwip-tcpip/lwip.git) registered for path 'lib/lwip'  
Submodule 'tinysub' (https://github.com/hathach/tinysub.git) registered for path 'lib/tinysub'  
Cloning into 'W:/Pico/pico-sdk/lib/cyw43-driver'...  
Cloning into 'W:/Pico/pico-sdk/lib/lwip'...  
Cloning into 'W:/Pico/pico-sdk/lib/tinysub'...  
Submodule path 'lib/cyw43-driver': checked out '195dfcc10bb6f379e3dea45147590db2203d3c7b'  
Submodule path 'lib/lwip': checked out '239918ccc173cb2c2a62f41a40fd893f57faf1d6'  
Submodule path 'lib/tinysub': checked out '4bfab30c02279a0530e1a56f4a7c539f2d35a293'  
W:\Pico\pico-sdk>setx PICO_SDK_PATH "W:\Pico\pico-sdk"  
SUCCESS: Specified value was saved.  
W:\Pico\pico-sdk>
```

9. Close the cmd window and run the VS Developer Command Prompt as admin to start the build on all (non-W) the examples in pico-examples.





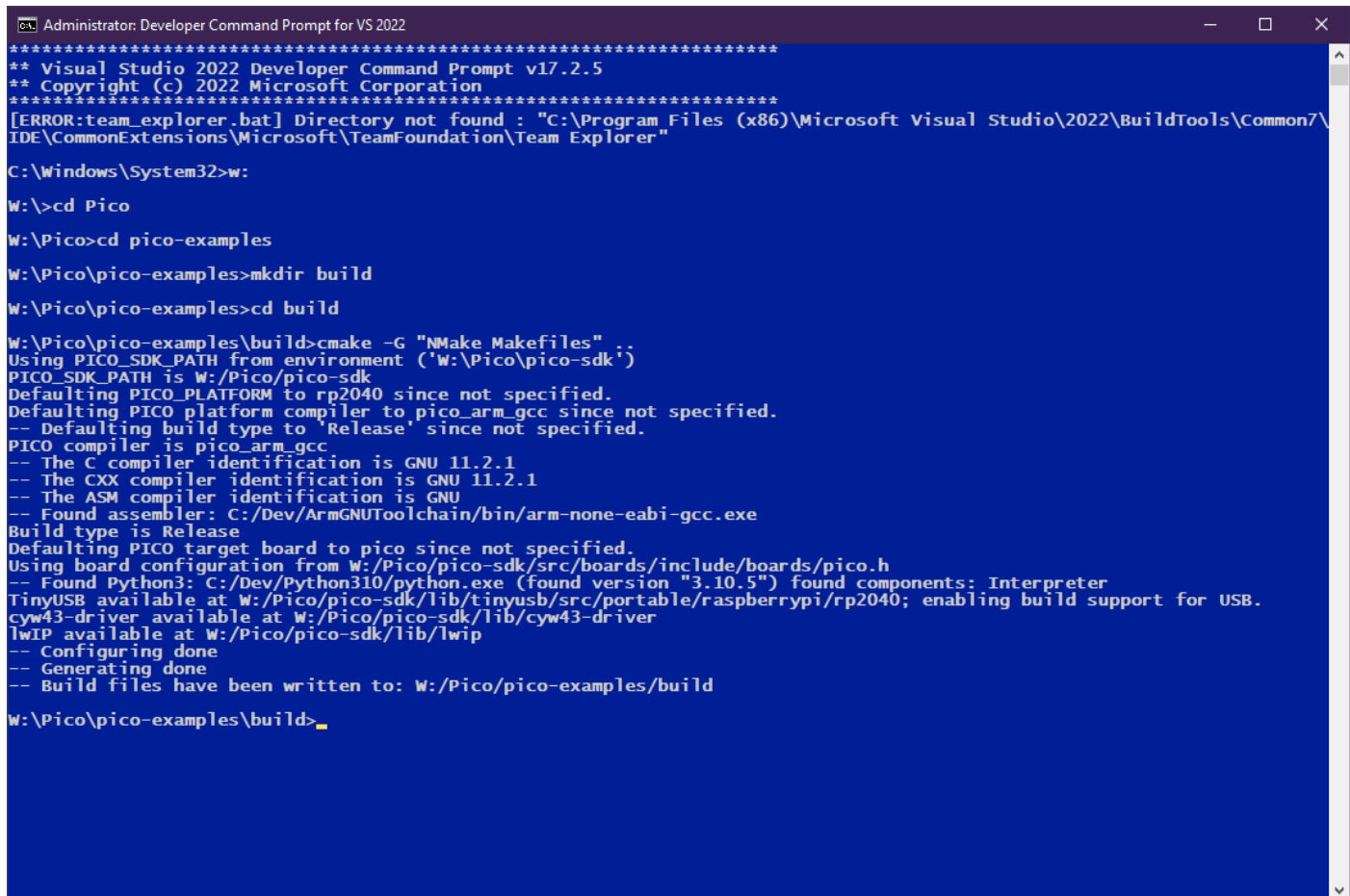
```
W:\Pico>cd pico-examples
```

```
W:\Pico\pico-examples>mkdir build
```

```
W:\Pico\pico-examples>cd build
```

```
W:\Pico\pico-examples\build>cmake -G "NMake Makefiles" ..
Using PICO_SDK_PATH from environment ('W:\Pico\pico-sdk')
PICO_SDK_PATH is W:/Pico/pico-sdk
Defaulting PICO_PLATFORM to rp2040 since not specified.
Defaulting PICO platform compiler to pico_arm_gcc since not specified.
-- Defaulting build type to 'Release' since not specified.
PICO compiler is pico_arm_gcc
-- The C compiler identification is GNU 11.2.1
-- The CXX compiler identification is GNU 11.2.1
-- The ASM compiler identification is GNU
-- Found assembler: C:/Dev/ArmGNUToolchain/bin/arm-none-eabi-gcc.exe
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-examples/build
```

```
W:\Pico\pico-examples\build>nmake
```



```
Administrator: Developer Command Prompt for VS 2022
*****
** Visual Studio 2022 Developer Command Prompt v17.2.5
** Copyright (c) 2022 Microsoft Corporation
*****
[ERROR:team_explorer.bat] Directory not found : "C:\Program Files (x86)\Microsoft Visual Studio\2022\BuildTools\Common7\IDE\CommonExtensions\Microsoft\TeamFoundation\Team Explorer"

C:\Windows\System32>w:

W:\>cd Pico

W:\Pico>cd pico-examples

W:\Pico\pico-examples>mkdir build

W:\Pico\pico-examples>cd build

W:\Pico\pico-examples\build>cmake -G "NMake Makefiles" .;
Using PICO_SDK_PATH from environment ('W:\Pico\pico-sdk;')
PICO_SDK_PATH is W:/Pico/pico-sdk
Defaulting PICO_PLATFORM to rp2040 since not specified.
Defaulting PICO platform compiler to pico_arm_gcc since not specified.
-- Defaulting build type to 'Release' since not specified.
PICO compiler is pico_arm_gcc
-- The C compiler identification is GNU 11.2.1
-- The CXX compiler identification is GNU 11.2.1
-- The ASM compiler identification is GNU
-- Found assembler: C:/Dev/ArmGNUToolchain/bin/arm-none-eabi-gcc.exe
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-examples/build

W:\Pico\pico-examples\build>
```

```

Administrator: Developer Command Prompt for VS 2022 - nmake
PICO compiler is pico_arm_gcc
-- The C compiler identification is GNU 11.2.1
-- The CXX compiler identification is GNU 11.2.1
-- The ASM compiler identification is GNU
-- Found assembler: C:/Dev/ArmGNUToolchain/bin/arm-none-eabi-gcc.exe
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-examples/build

W:\Pico\pico-examples\build>nmake

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Scanning dependencies of target bs2_default
[ 0%] Building ASM object pico-sdk/src/rp2_common/boot_stage2/CMakeFiles/bs2_default.dir/compile_time_choice.S.obj
[ 0%] Linking ASM executable bs2_default.elf
[ 0%] Built target bs2_default
[ 0%] Creating directories for 'PioasmBuild'
[ 0%] No download step for 'PioasmBuild'
[ 0%] No update step for 'PioasmBuild'
[ 0%] No patch step for 'PioasmBuild'
[ 0%] Performing configure step for 'PioasmBuild'
Loading initial cache file W:/Pico/pico-examples/build/pico-sdk/src/rp2_common/cyw43_driver/pioasm/tmp/PioasmBuild-cache
--Release.cmake
-- The CXX compiler identification is MSVC 19.32.31332.0
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: C:/Program Files (x86)/Microsoft Visual Studio/2022/BuildTools/VC/Tools/MSVC/14.32.31332/bin/Hostx86/x86/cl.exe - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-examples/build/pioasm
[ 0%] Performing build step for 'PioasmBuild'

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[ 10%] Building CXX object CMakeFiles/pioasm.dir/main.cpp.obj
main.cpp

```

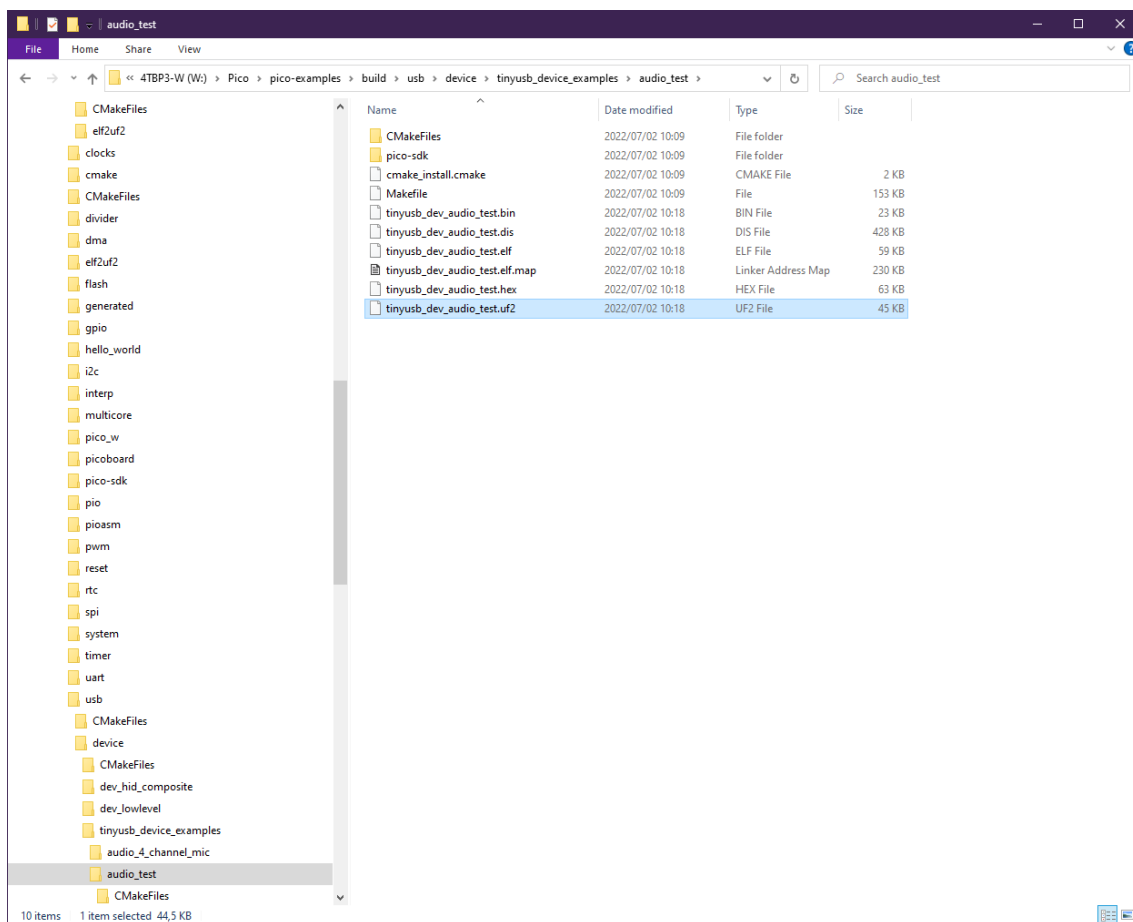
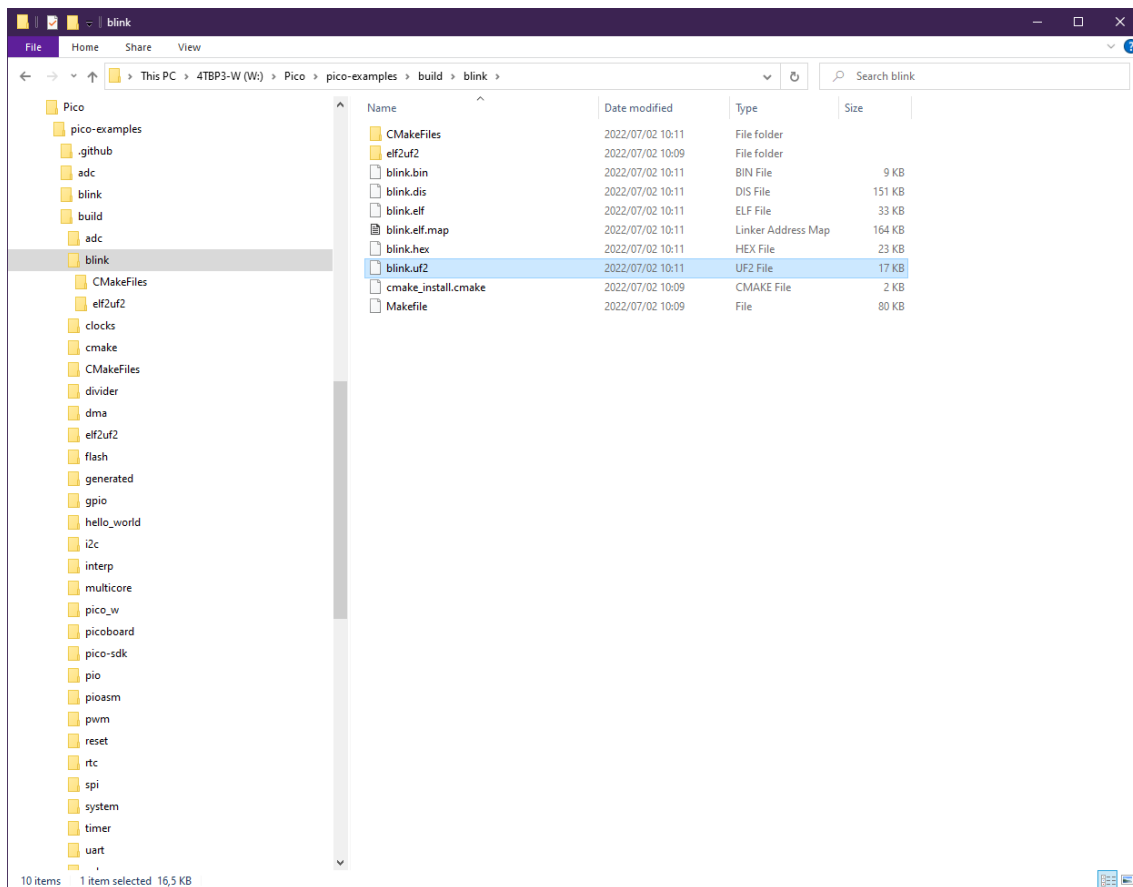
```

Administrator: Developer Command Prompt for VS 2022
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/hardware_vreg/vreg.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/hardware_watchdog/watchdog.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/hardware_xosc/xosc.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_printf/printf.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_bit_ops/bit_ops_aeabi.S.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_bootrom/bootrom.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_divider/divider.S.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_aeabi.S.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_init_rom.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_math.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_vl_rom_shim.S.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_int64_ops/pico_int64_ops_aeabi.S.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_aeabi.S.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_init_rom.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_math.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_vl_rom_shim.S.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_malloc/pico_malloc.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_memory_ops/mem_ops_aeabi.S.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/crt0.S.obj
[100%] Building CXX object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/new_delete.cpp.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/binary_info.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_stdio/stdio.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W_/Pico/pico-sdk/src/rp2_common/pico_stdio_uart/stdio_uart.c.obj
[100%] Linking CXX executable hello_watchdog.elf
[100%] Built target hello_watchdog

W:\Pico\pico-examples\build>

```

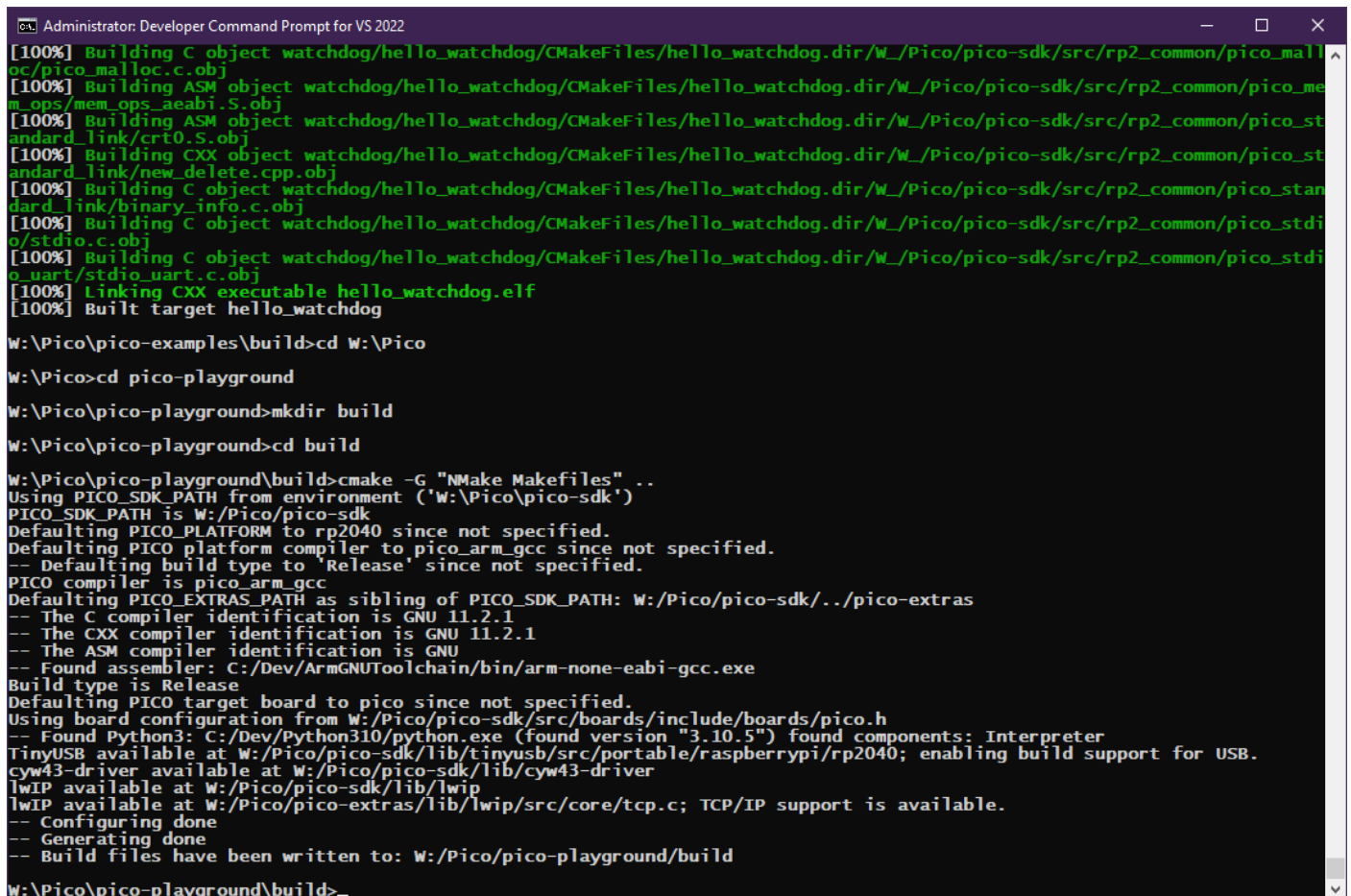
The uf2 files are in the pico-examples\build\sub-folders – including the tinyusb examples.



Building the usb\_sound\_card only:

```
W:\Pico\pico-examples\build>cd W:\Pico
W:\Pico>cd pico-playground
W:\Pico\pico-playground>mkdir build
W:\Pico\pico-playground>cd build
W:\Pico\pico-playground\build>cmake -G "NMake Makefiles" ..
Using PICO_SDK_PATH from environment ('W:\Pico\pico-sdk')
PICO_SDK_PATH is W:/Pico/pico-sdk
Defaulting PICO_PLATFORM to rp2040 since not specified.
Defaulting PICO platform compiler to pico_arm_gcc since not specified.
-- Defaulting build type to 'Release' since not specified.
PICO compiler is pico_arm_gcc
Defaulting PICO_EXTRAS_PATH as sibling of PICO_SDK_PATH: W:/Pico/pico-sdk/./pico-extras
-- The C compiler identification is GNU 11.2.1
-- The CXX compiler identification is GNU 11.2.1
-- The ASM compiler identification is GNU
-- Found assembler: C:/Dev/ArmGNUToolchain/bin/arm-none-eabi-gcc.exe
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
lwIP available at W:/Pico/pico-extras/lib/lwip/src/core/tcp.c; TCP/IP support is available.
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-playground/build
```

```
W:\Pico\pico-playground\build>cd apps\usb_sound_card
W:\Pico\pico-playground\build\apps\usb_sound_card>nmake
```



```
Administrator: Developer Command Prompt for VS 2022

[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_mall
oc/pico_malloc.c.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_me
m_ops/mem_ops_aeabi.S.obj
[100%] Building ASM object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_st
andard_link/crt0.S.obj
[100%] Building CXX object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_st
andard_link/new_delete.cpp.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_stan
dard_link/binary_info.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_stdli
o/stdio.c.obj
[100%] Building C object watchdog/hello_watchdog/CMakeFiles/hello_watchdog.dir/W:/Pico/pico-sdk/src/rp2_common/pico_stdli
o/uart/stdio_uart.c.obj
[100%] Linking CXX executable hello_watchdog.elf
[100%] Built target hello_watchdog

W:\Pico\pico-examples\build>cd W:\Pico
W:\Pico>cd pico-playground
W:\Pico\pico-playground>mkdir build
W:\Pico\pico-playground>cd build
W:\Pico\pico-playground\build>cmake -G "NMake Makefiles" ..
Using PICO_SDK_PATH from environment ('W:\Pico\pico-sdk')
PICO_SDK_PATH is W:/Pico/pico-sdk
Defaulting PICO_PLATFORM to rp2040 since not specified.
Defaulting PICO platform compiler to pico_arm_gcc since not specified.
-- Defaulting build type to 'Release' since not specified.
PICO compiler is pico_arm_gcc
Defaulting PICO_EXTRAS_PATH as sibling of PICO_SDK_PATH: W:/Pico/pico-sdk/./pico-extras
-- The C compiler identification is GNU 11.2.1
-- The CXX compiler identification is GNU 11.2.1
-- The ASM compiler identification is GNU
-- Found assembler: C:/Dev/ArmGNUToolchain/bin/arm-none-eabi-gcc.exe
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
lwIP available at W:/Pico/pico-extras/lib/lwip/src/core/tcp.c; TCP/IP support is available.
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-playground/build

W:\Pico\pico-playground\build>
```

```

Administrator: Developer Command Prompt for VS 2022 - nmake
Build type is Release
Defaulting PICO target board to pico since not specified.
Using board configuration from W:/Pico/pico-sdk/src/boards/include/boards/pico.h
-- Found Python3: C:/Dev/Python310/python.exe (found version "3.10.5") found components: Interpreter
TinyUSB available at W:/Pico/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.
cyw43-driver available at W:/Pico/pico-sdk/lib/cyw43-driver
lwIP available at W:/Pico/pico-sdk/lib/lwip
lwIP available at W:/Pico/pico-extras/lib/lwip/src/core/tcp.c; TCP/IP support is available.
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-playground/build

W:/Pico/pico-playground/build>cd apps\usb_sound_card

W:/Pico/pico-playground/build/apps\usb_sound_card>nmake

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Scanning dependencies of target bs2_default
[ 0%] Building ASM object pico-sdk/src/rp2_common/boot_stage2/CMakeFiles/bs2_default.dir/compile_time_choice.S.obj
[ 0%] Linking ASM executable bs2_default.elf
[ 0%] Built target bs2_default
[ 0%] Generating bs2_default.bin
[12%] Generating bs2_default_padded_checksummed.S
[12%] Built target bs2_default_padded_checksummed_asm
[12%] Creating directories for 'PioasmBuild'
[12%] No download step for 'PioasmBuild'
[12%] No update step for 'PioasmBuild'
[12%] No patch step for 'PioasmBuild'
[12%] Performing configure step for 'PioasmBuild'
loading initial cache file W:/Pico/pico-playground/build/pico-sdk/src/rp2_common/cyw43_driver/pioasm/tmp/PioasmBuild-cache-Release.cmake
-- The CXX compiler identification is MSVC 19.32.31332.0
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: C:/Program Files (x86)/Microsoft Visual Studio/2022/BuildTools/VC/Tools/MSVC/14.32.31326/bin/Hostx86/x86/cl.exe - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: W:/Pico/pico-playground/build/pioasm
[ 25%] Performing build step for 'PioasmBuild'

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[ 10%] Building CXX object CMakeFiles/pioasm.dir/main.cpp.obj
main.cpp
[ 20%] Building CXX object CMakeFiles/pioasm.dir/pio_assembler.cpp.obj
pio_assembler.cpp

```

```

Administrator: Developer Command Prompt for VS 2022
double_init_rom.c.obj
[ 62%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_math.c.obj
[ 62%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_double/double_vl_rom_shim.S.obj
[ 62%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_int64_ops/pico_int64_ops_aeabi.S.obj
[ 62%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_aeabi.S.obj
[ 62%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_init_rom.c.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_math.c.obj
[ 75%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_float/float_vl_rom_shim.S.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_malloc/pico_malloc.c.obj
[ 75%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_mem_ops/mem_ops_aeabi.S.obj
[ 75%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/crt0.S.obj
[ 75%] Building CXX object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/new_delete.cpp.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_standard_link/binary_info.c.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_stdio/stdio.c.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_stdio_uart/rt_stdio_uart.c.obj
[ 75%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/rp2_common/usb_device/usb_device.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/rp2_common/usb_device/usb_stream_helper.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/hardware_dma/dma.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/hardware_pio/pio.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_fix/rp2040_usb_device_enumeration/rp2040_usb_device_enumeration.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/rp2_common/pico_audio_i2s/audio_i2s.c.obj
[ 87%] Building CXX object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/common/pico_audio/audio.cpp.obj
[ 87%] Building ASM object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/common/pico_audio/audio_utils.S.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-extras/src/common/pico_util/buffer/buffer.c.obj
[ 87%] Building C object apps/usb_sound_card/CMakeFiles/usb_sound_card.dir/W_/Pico/pico-sdk/src/rp2_common/pico_multicore/multicore.c.obj
[100%] Linking CXX executable usb_sound_card.elf
[100%] Built target usb_sound_card

W:/Pico/pico-playground/build/apps\usb_sound_card>

```

