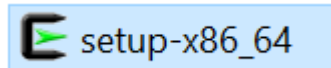


This method is using Makefile to build the project. In term of flexibility, this method is much better.

1. Double click the Cygwin installer to begin the installation. Select location on where to put the cygwin files. In my case, I put in Drive C

<https://cygwin.com/install.html>



This PC > OS (C:) > cygwin64

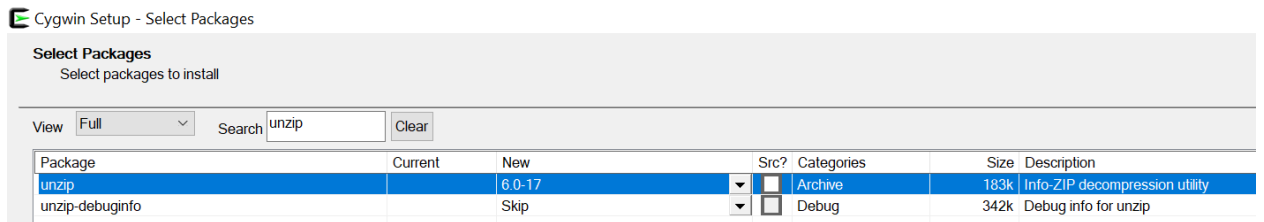
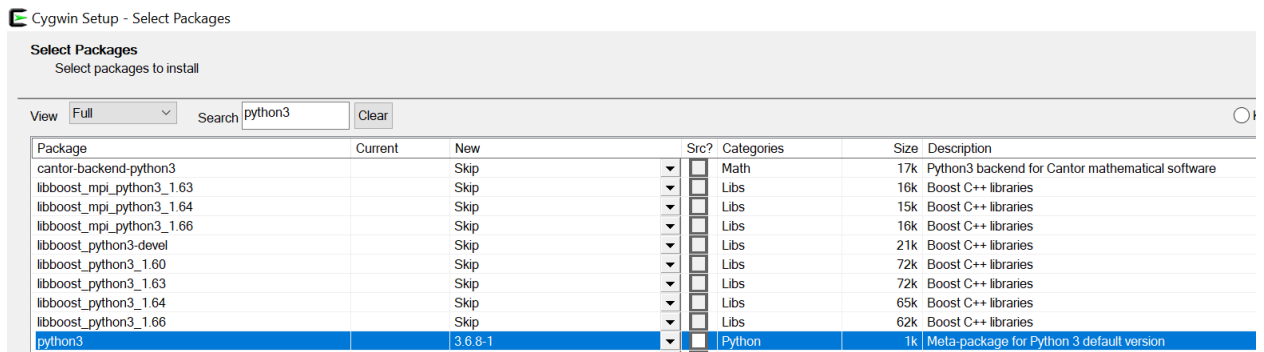
2. Select make, gcc-g++, python3, unzip

Cygwin Setup - Select Packages

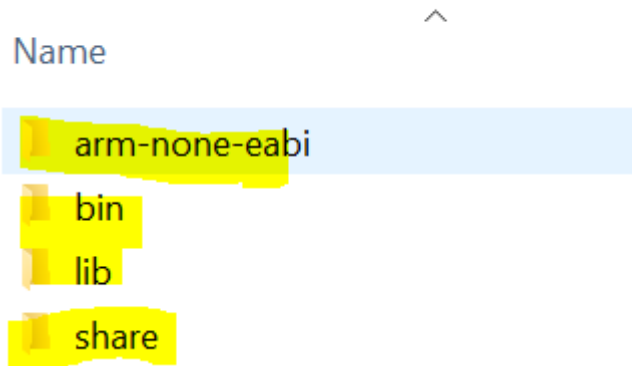
Select Packages						
Select packages to install						
View	Full	Search	make	Clear	Keep	
Package	Current	New	Src?	Categories	Size	Description
emacs-cmake		Skip	<input type="checkbox"/>	Editors	4k	Cross-platform makefile generation system (Emacs mode)
extra-cmake-modules		Skip	<input type="checkbox"/>	Devel	281k	Extra CMake Modules for KDE
gcc-tools-epoch1-automake		Skip	<input type="checkbox"/>	Devel	419k	(gcc-special) a tool for generating GNU-compliant Makefiles
gcc-tools-epoch2-automake		Skip	<input type="checkbox"/>	Devel	589k	(gcc-special) a tool for generating GNU-compliant Makefiles
gcmakedep		Skip	<input type="checkbox"/>	Devel	6k	X Makefile dependency tool for GCC
imake		Skip	<input type="checkbox"/>	Devel	35k	X Imake legacy build system
imake-debuginfo		Skip	<input type="checkbox"/>	Debug	64k	Debug info for imake
libWMaker-devel		Skip	<input type="checkbox"/>	Libs	3k	Window Maker interface library (development)
libWMaker1		Skip	<input type="checkbox"/>	Libs	4k	Window Maker interface library (runtime)
libpagemaker-tools		Skip	<input type="checkbox"/>	Graphics	5k	MS Publisher file converters
libpagemaker0.0-debuginfo		Skip	<input type="checkbox"/>	Debug	591k	Debug info for libpagemaker0.0
libpagemaker0.0-devel		Skip	<input type="checkbox"/>	Libs	2k	Adobe PageMaker import filter library (development)
libpagemaker0.0-doc		Skip	<input type="checkbox"/>	Libs	109k	Adobe PageMaker import filter library (API documentation)
libpagemaker0.0_0		Skip	<input type="checkbox"/>	Libs	65k	Adobe PageMaker import filter library (runtime)
make		4.3-1	<input checked="" type="checkbox"/>	Devel	503k	The GNU version of the 'make' utility
make-debuginfo		Skip	<input type="checkbox"/>	Debug	441k	Debug info for make
makedepend		Skip	<input type="checkbox"/>	Devel	29k	X Makefile dependency tool
makedepend-debuginfo		Skip	<input type="checkbox"/>	Debug	75k	Debug info for makedepend
makepasswd		Skip	<input type="checkbox"/>	Perl, Utils	14k	Generate and encrypt passwords
makeself		Skip	<input type="checkbox"/>	Archive	26k	Utility to generate self-extractable archives
mingw64-i686-libpagemaker0.0		Skip	<input type="checkbox"/>	Libs	76k	Adobe PageMaker import filter library for Win32 toolchain
mingw64-i686-qt4-qmake		Skip	<input type="checkbox"/>	Devel	7,326k	Qt4 development tools for Win32 toolchain
mingw64-i686-qt4-qmake-debuginfo		Skip	<input type="checkbox"/>	Debug	79,179k	Debug info for mingw64-i686-qt4-qmake
mingw64-x86_64-libpagemaker0.0		Skip	<input type="checkbox"/>	Libs	74k	Adobe PageMaker import filter library for Win64 toolchain
mingw64-x86_64-qt4-qmake		Skip	<input type="checkbox"/>	Devel	7,330k	Qt4 development tools for Win64 toolchain
mingw64-x86_64-qt4-qmake-debuginfo		Skip	<input type="checkbox"/>	Debug	79,182k	Debug info for mingw64-x86_64-qt4-qmake
perl-ExtUtils-MakeMaker		Skip	<input type="checkbox"/>	Perl	281k	Perl distribution ExtUtils-MakeMaker
psl-make-dafsa		Skip	<input type="checkbox"/>	Devel	8k	Generates optimized DAFSA from Public Suffix List

Cygwin Setup - Select Packages

Select Packages						
Select packages to install						
View	Full	Search	gcc	Clear	Keep	
Package	Current	New	Src?	Categories	Size	Description
djgpp-gcc-debuginfo		Skip	<input type="checkbox"/>	Debug	169,469k	Debug info for djgpp-gcc
djgpp-gcc-fortran		Skip	<input type="checkbox"/>	Devel	6,296k	GCC for DJGPP toolchain (Fortran)
djgpp-gcc-g++		Skip	<input type="checkbox"/>	Devel	8,279k	GCC for DJGPP toolchain (C++)
djgpp-gcc-objc		Skip	<input type="checkbox"/>	Devel	5,087k	GCC for DJGPP toolchain (Objective-C)
djgpp-gcc-objc++		Skip	<input type="checkbox"/>	Devel	5,349k	GCC for DJGPP toolchain (Objective-C++)
gcc-core		Skip	<input type="checkbox"/>	Devel	28,238k	GNU Compiler Collection (C, OpenMP)
gcc-debuginfo		Skip	<input type="checkbox"/>	Debug	23,393k	Debug info for gcc
gcc-fortran		Skip	<input type="checkbox"/>	Devel	9,962k	GNU Compiler Collection (Fortran)
gcc-g++		10.2.0-1	<input checked="" type="checkbox"/>	Devel	16,229k	GNU Compiler Collection (C++)
gcc-objc		Skip	<input type="checkbox"/>	Devel	7,216k	GNU Compiler Collection (Objective-C)
gcc-objc++		Skip	<input type="checkbox"/>	Devel	7,611k	GNU Compiler Collection (Objective-C++)

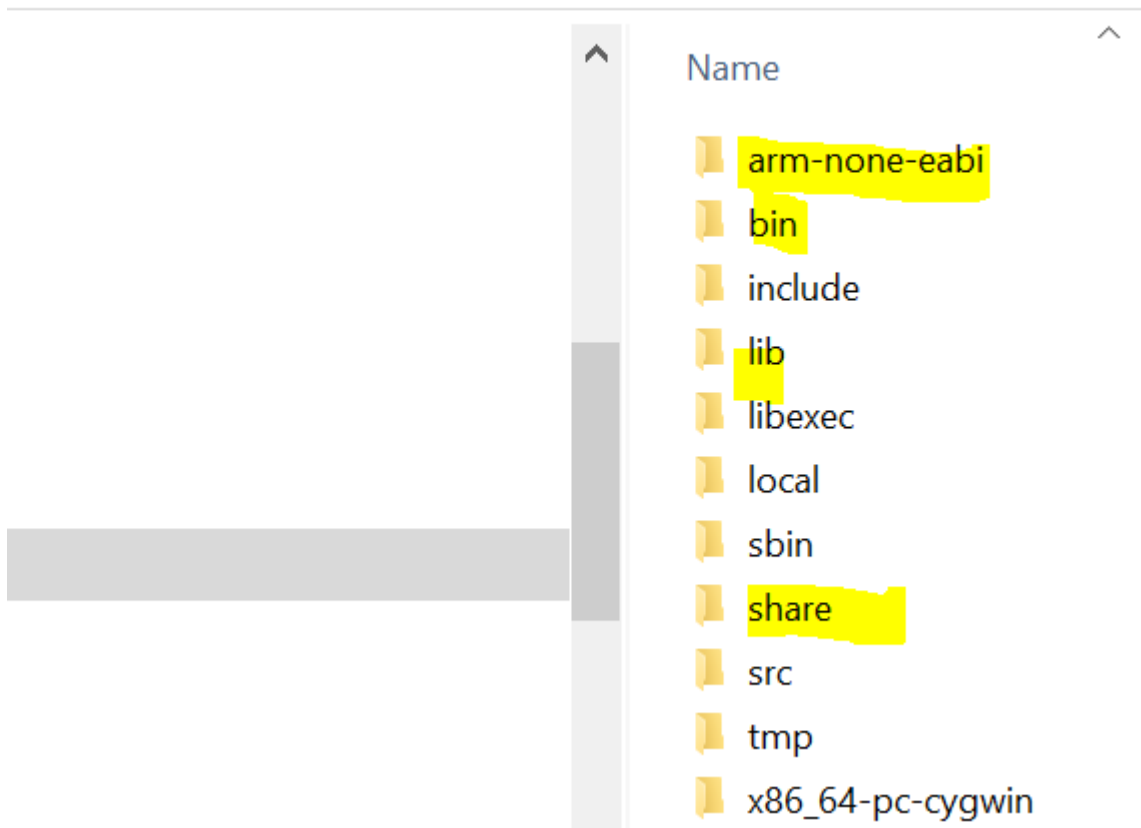


- Click Next and wait until installation is completed.
- Download the gcc-arm-none-eabi (e.g. [gcc-arm-none-eabi-10-2020-q4-major-win32.zip](https://developer.arm.com/tools-and-software/open-source-software/developer-tools/gnu-toolchain/gnu-rm/downloads))
- Extract the downloaded gcc-arm-none-eabi
gcc-arm-none-eabi-10-2020-q4-major



6. Copy and paste the extracted file inside C:/cygwin64/usr

‣ This PC ‣ OS (C:) ‣ cygwin64 ‣ usr



I copy them in “usr” because on my Ubuntu the gcc-arm is also inside “usr” folder.

7. Compile the project. Make sure inside “main.mak” update the path as follows
TOOLCHAIN_ROOT := **c:/cygwin64/usr**

```
/cygdrive/c/Rudy/mc_sw
User@DESKTOP-ESERESB /cygdrive/c/Rudy/mc_sw
$ make -j8 BUILDSET="bs_4wd"
[CC] main.c
[CC] system_stm32f4xx.c
[CC] syscalls.c
[CC] port.c
[CC] queue.c
[CC] list.c
[CC] croutine.c
[CC] tasks.c
```

```
/cygdrive/c/Rudy/mc_sw  
[CC] stm32f4xx_ltdc.c  
[CC] stm32f4xx_qspi.c  
[CC] stm32f4xx_rng.c  
[CC] stm32f4xx_rng.c  
[CC] stm32f4xx_sdio.c  
[CC] stm32f4xx_tim.c  
[CC] stm32f4xx_usart.c  
[CC] stm32f4xx_spdifrx.c  
[CC] stm32f4xx_sdio.c  
[CC] stm32f4xx_wwdg.c  
[CC] stm32f4xx_spi.c  
[CC] stm32f4xx_syscfg.c  
[CC] stm32f4xx_syscfg.c  
[CC] SEGGER_SYSVIEW_Config_FreeRTOS.c  
[CC] SEGGER_SYSVIEW_FreeRTOS.c  
[CC] SEGGER_RTT.c  
[CC] SEGGER_SYSVIEW.c  
[AS] startup_stm32.s  
[LD] mambabot_4wd.elf  
[HEX] mambabot_4wd.hex  
[BIN] mambabot_4wd.bin
```

To clean-up the generated objects and binaries

```
/cygdrive/c/Rudy/mc_sw  
  
User@DESKTOP-ESERESB /cygdrive/c/Rudy/mc_sw  
$ make clean  
[RM] OBJ  
[RM] BIN
```