Synerduino STM Fork of INAV and the Synerduino Target

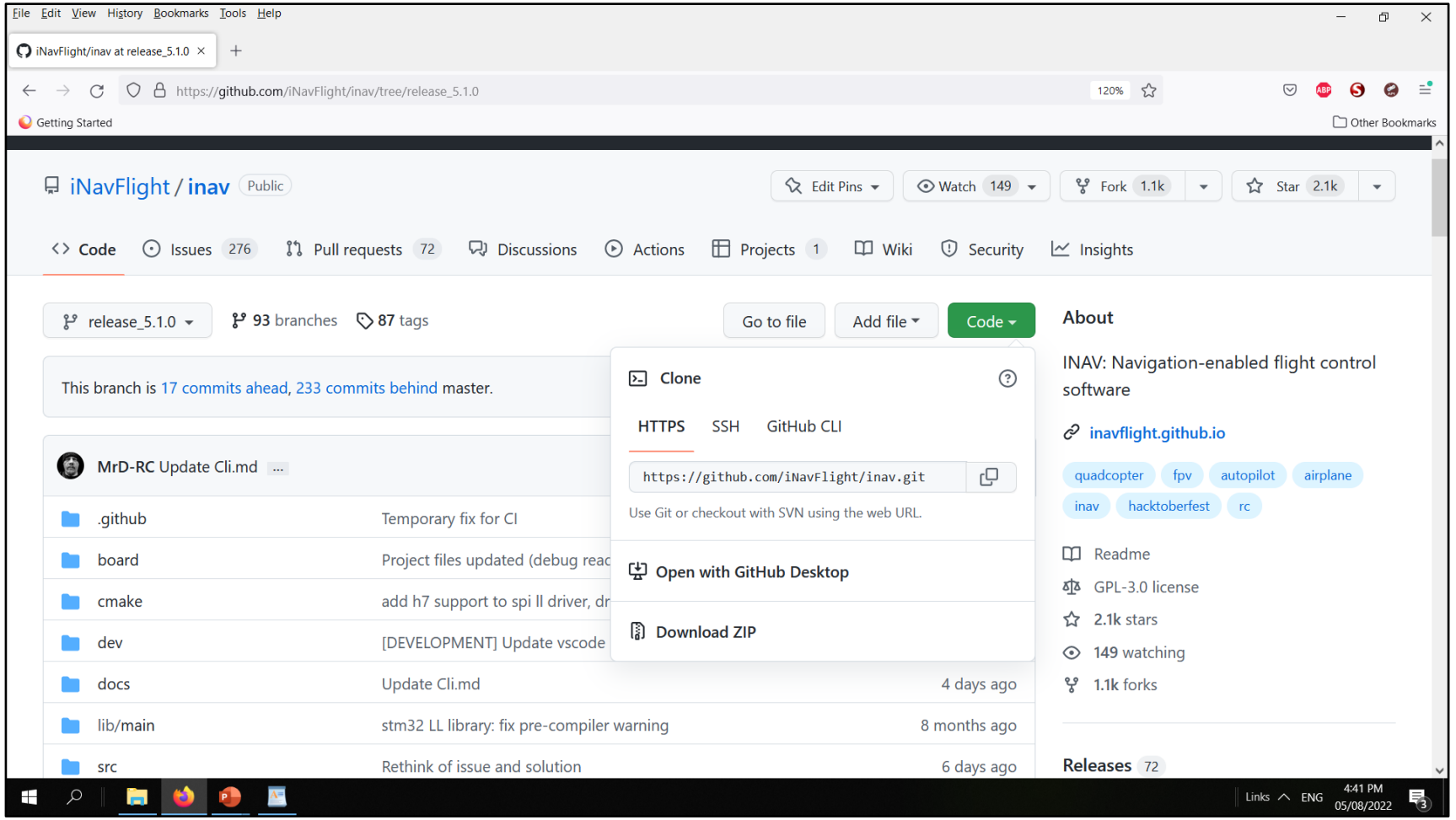
Synerduino STM Target Compilation into Hexfile

Prepare to Build the Hex File

Download the INAV
Release 5.1.0
Release 6.0.0
Release 7.0.0
Release 8.0.0

First you need to download the INAV release version

These are available in the official github page or Synerflight SynerduinoSTM in download tab

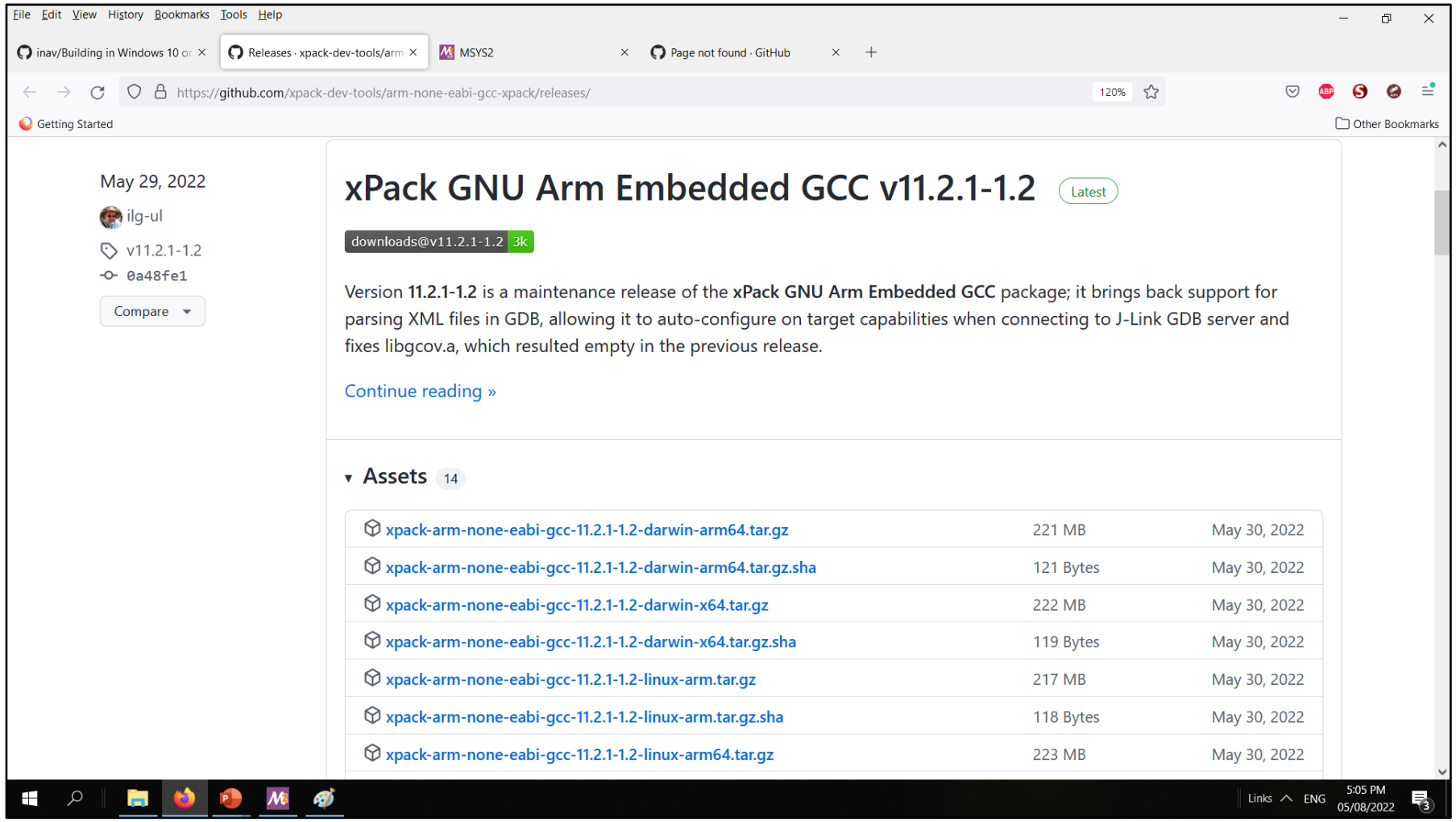


https://github.com/iNavFlight/inav/tree/release_5.1.0
https://github.com/iNavFlight/inav/tree/6.0.0
https://github.com/iNavFlight/inav/tree/7.0.0

INAV–5.1.0 / INAV-6.0.0
Download the Xpack Release 10.2.1-1.1-Win32-x64

INAV–7.0.0
Download the Xpack Release 10.3.1-2.2-Win32-x64

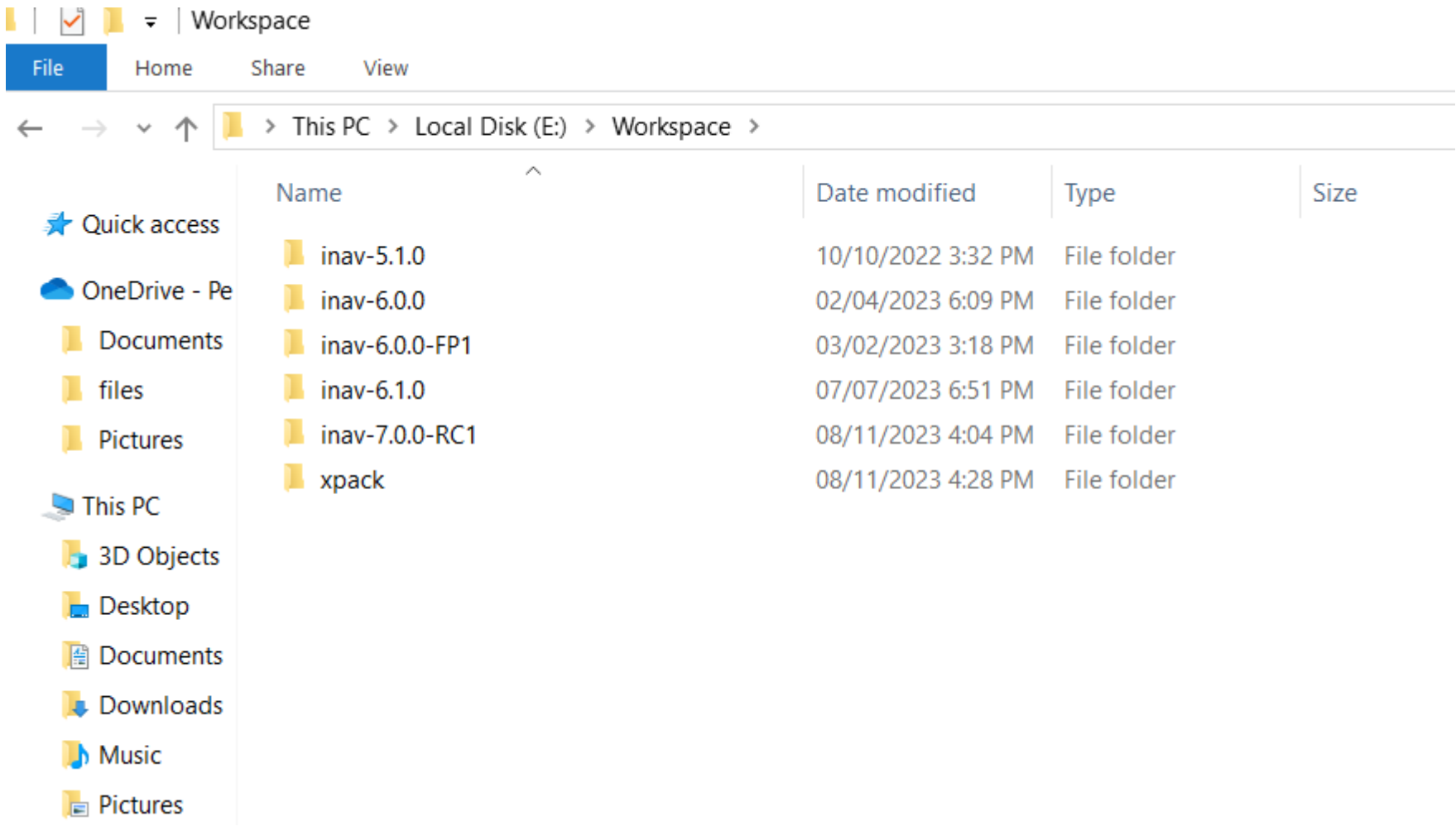
INAV–8.0.0
Download the Xpack Release 12.2.1-1.1-Win32-x64



These are available in the official github page or Synerflight SynerduinoSTM in download tab
https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/

https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v9.2.1-1.1/xpack-arm-none-eabi-gcc-9.2.1-1.1-win32-x64.zip
https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v10.2.1-1.1/xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip
https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v10.3.1-2.2/xpack-arm-none-eabi-gcc-10.3.1-2.2-win32-x64.zip
https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v13.2.1-1.1/xpack-arm-none-eabi-gcc-13.2.1-1.1-win32-x64.zip

After installation Go Create a Workspace folder in your local Drive in my case Drive E , and extract and place the following directories INAV-5.1.0 / INAV-6.0.0 / INAV-7.0.0 /INAV8.0.0 Folder , Xpack folder

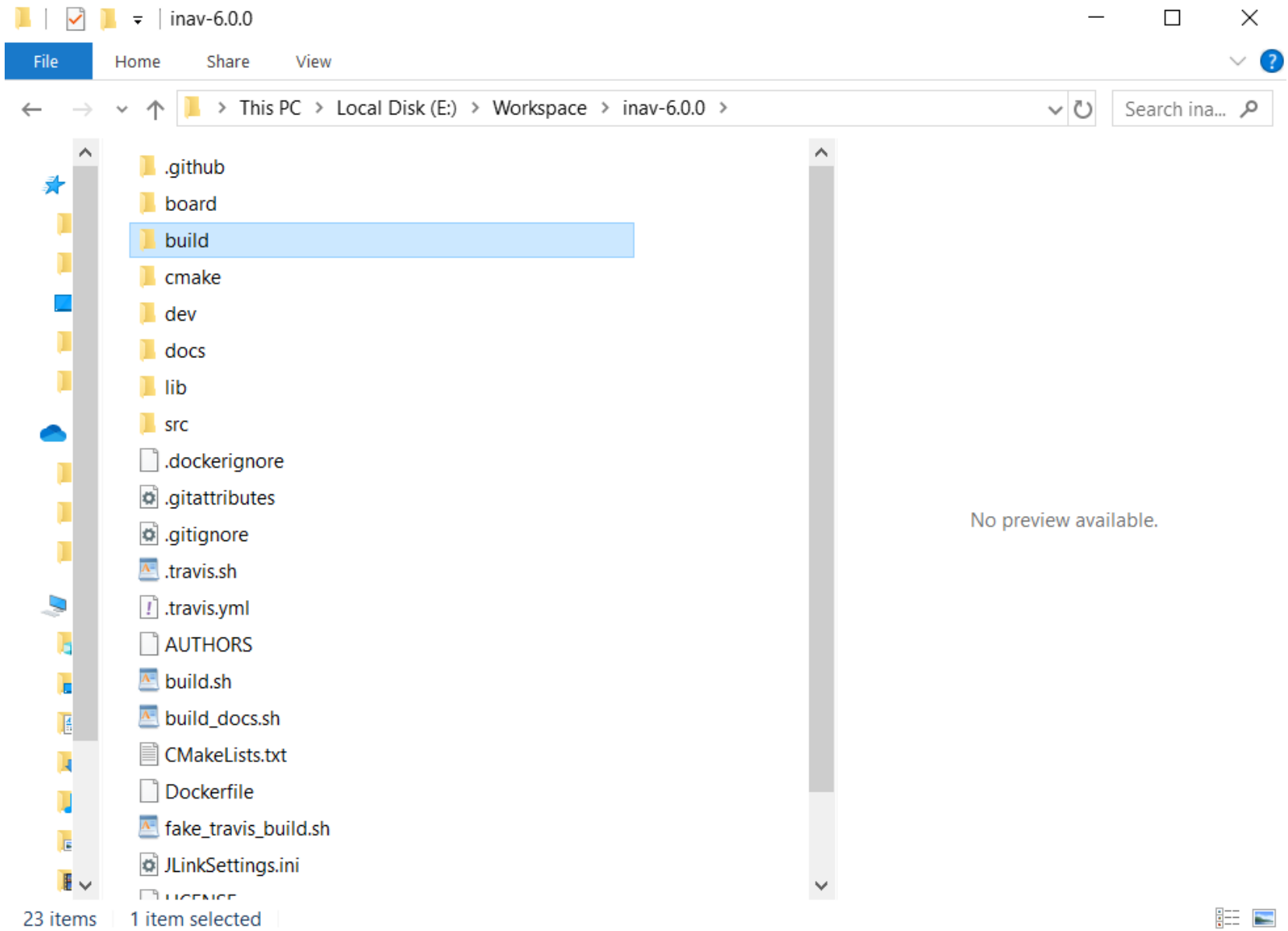


Note: I place my Workspace Folder on Drive E: as I was using SSD on my Drive C so not to fill it up

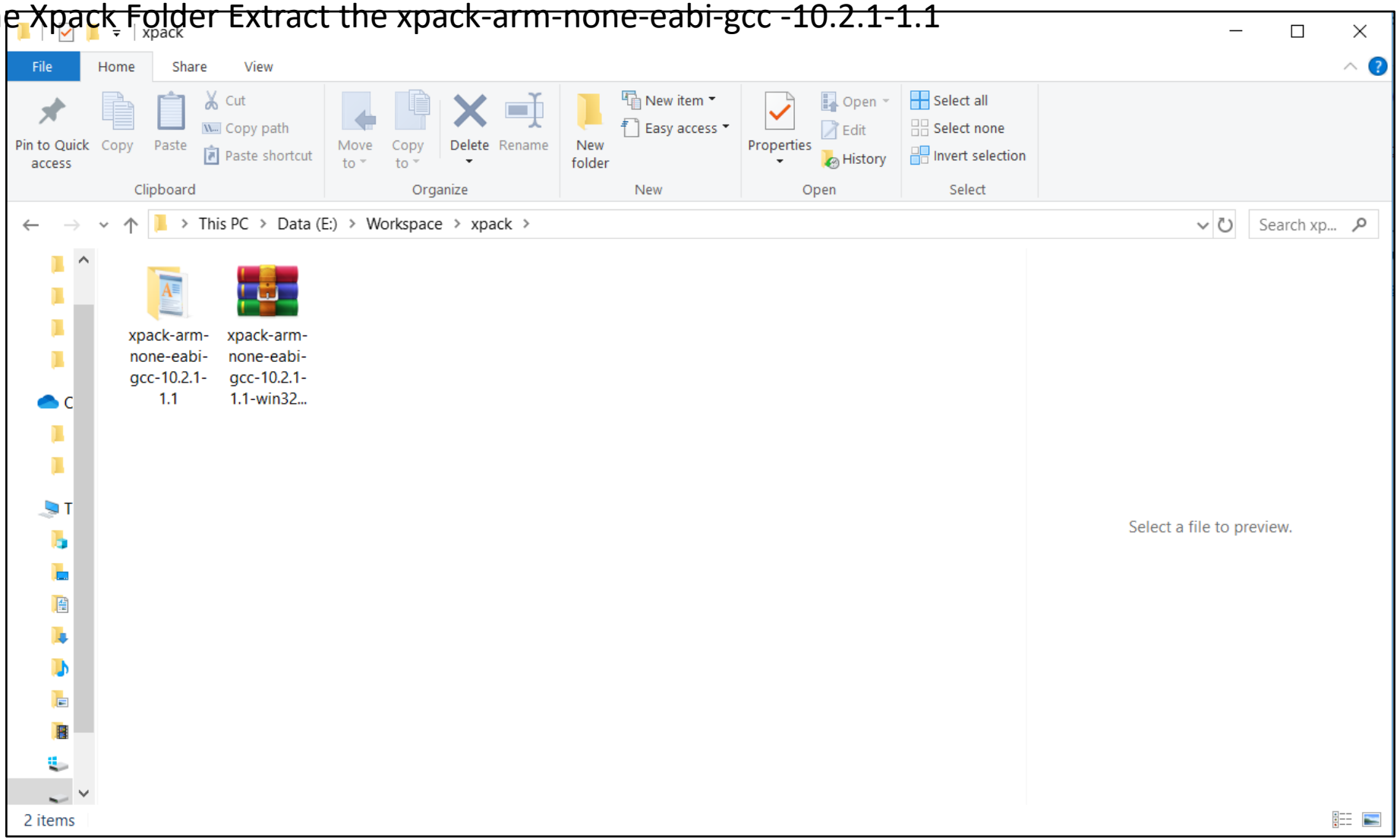
Create new folder inside

INAV 5.1.0
INAV 6.0.0
INAV 7.0.0
INAV 8.0.0

Directory and Name it **build**



Inside the Xpack Folder Extract the xpack-arm-none-eabi-gcc -10.2.1-1.1



Create an xplack folder in Workspace folder and place it in there

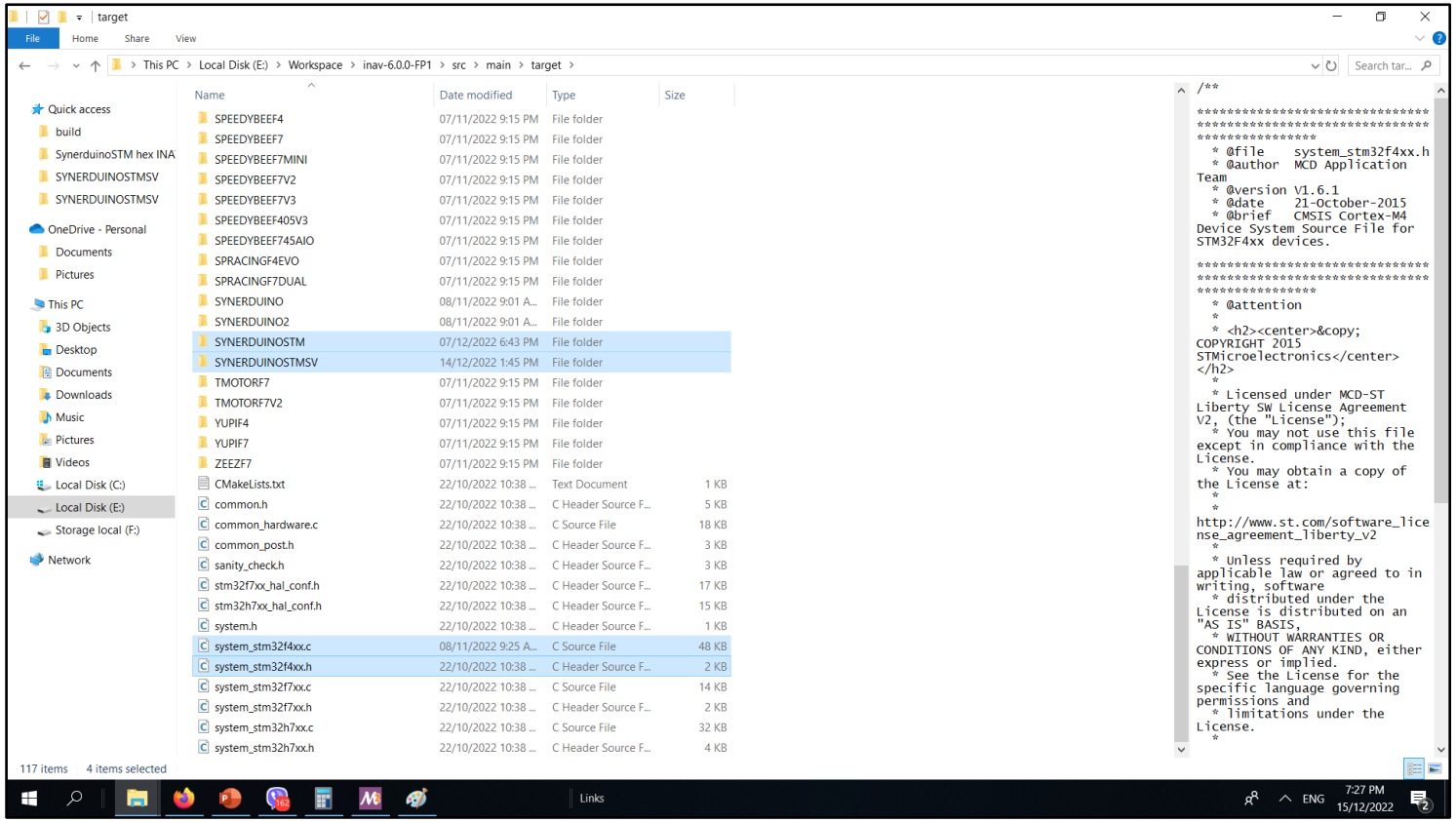
INAV 5.1.0 INAV 6.0.0 xpack-arm-none-eabi-gcc-10.2.1-1.1 is extracted to the Xpack folder

INAV 7.0.0 xpack-arm-none-eabi-gcc-10.3.1-2.2 is extracted to the Xpack folder

INAV 8.0.0 xpack-arm-none-eabi-gcc-13.2.1-1.1 is extracted to the Xpack folder

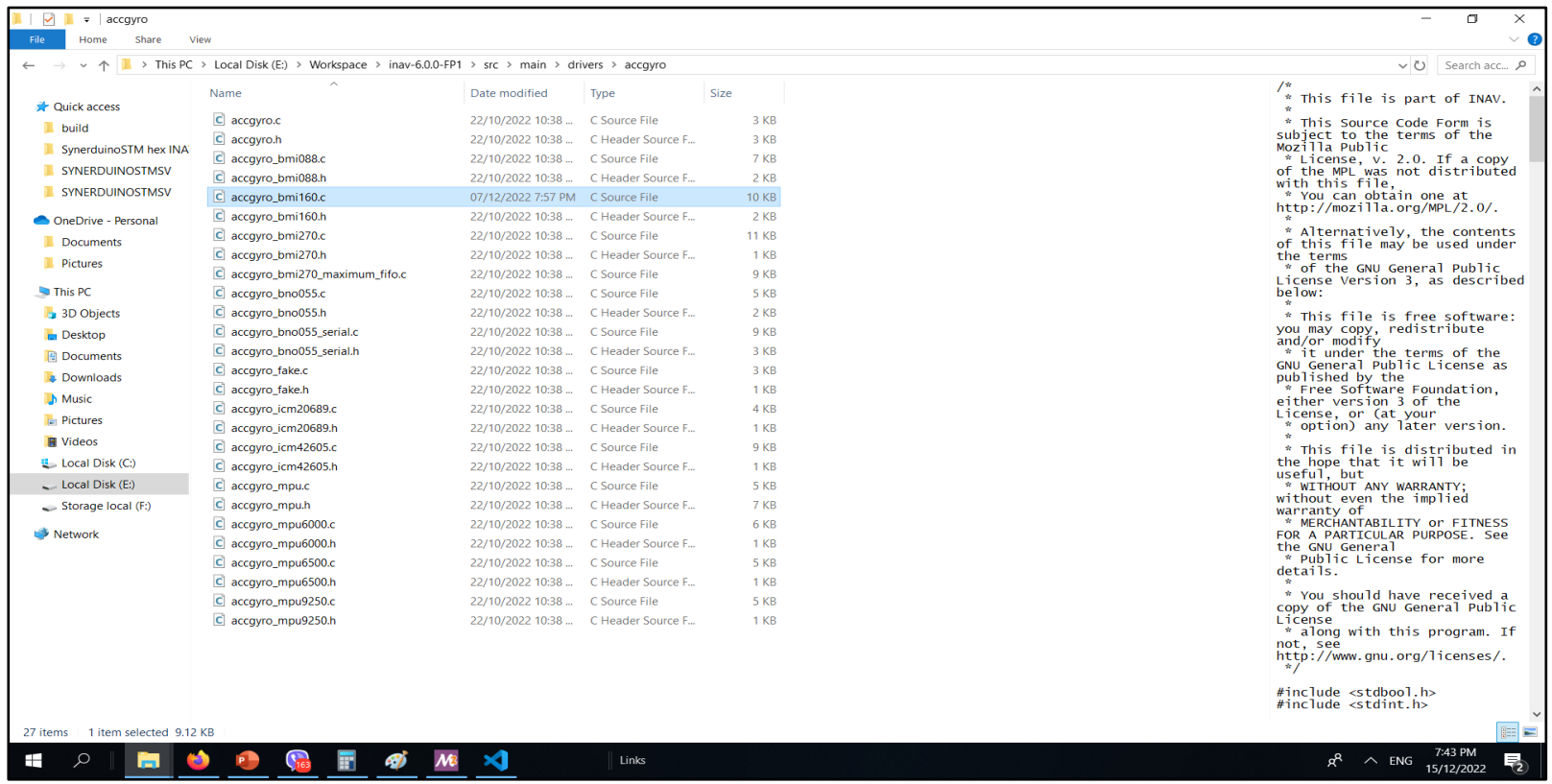
Download the Synerduino Target Folder and Extract to Local drive and place it in the following
(E/Workspace/inav-5.1.0/scr/main/target)
(E/Workspace/inav-6.0.0/scr/main/target)
(E/Workspace/inav-7.0.0/scr/main/target)
(E/Workspace/inav-8.0.0/scr/main/target)

Readme file is also available in the download
System_stm32f4xx.c – is modify to suit the Synerduino STM
INAV 7.0.0 when F411 BP became official)
INAV 8.0.0 F411 discontinued due to size limitation



Other Download of the Synerduino Target Folder is the sensor driver this is also Extract to Local drive and place it in the following
(E/Workspace/inav-5.1.0/scr/main/drivers/accgyro) ,
(E/Workspace/inav-6.0.0/scr/main/drivers/accgyro) ,
(E/Workspace/inav-7.0.0/scr/main/drivers/accgyro)
(E/Workspace/inav-7.1.0/scr/main/drivers/accgyro)
(E/Workspace/inav-8.0.0/scr/main/drivers/accgyro)

Readme file is also available in the download (accgyro_BMI160) is also modify to use with the SynerduinoSTM shield



General Info

This is a guide on how to use Windows MSYS2 distribution and building platform to build iNav firmware. This environment is very simple to manage and does not require installing docker for Windows which may get in the way of VMWare or any other virtualization software you already have running for other reasons. Another benefit of this approach is that the compiler runs natively on Windows, so performance is much better than compiling in a virtual environment or a container.

Download Arm Embedded GCC toolkit from The xPack Project

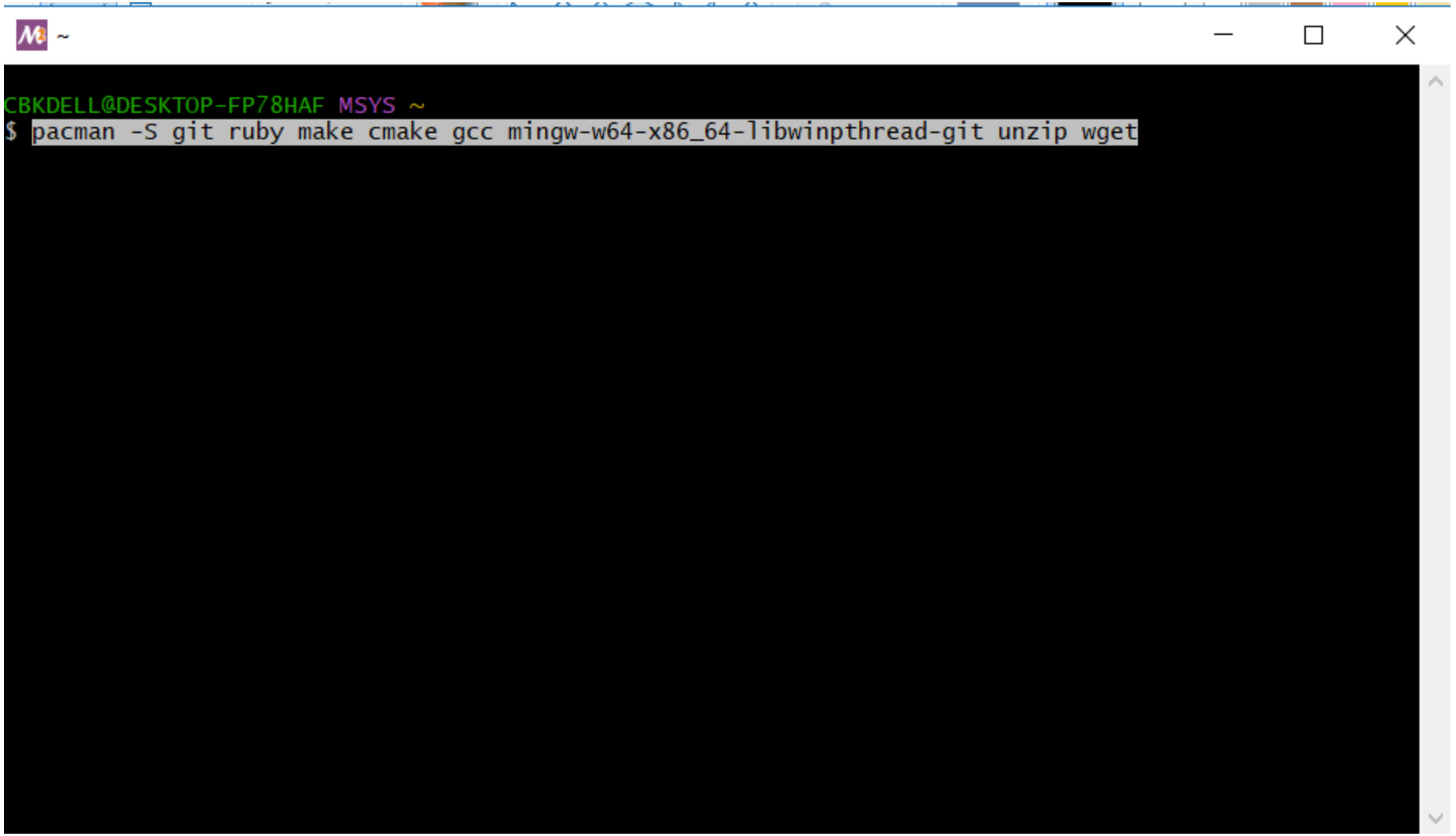
https://xpack.github.io/arm-none-eabi-gcc/

Download MSYS2 for your architecture (most likely 64-bit)

https://www.msys2.org/wiki/MSYS2-installation/

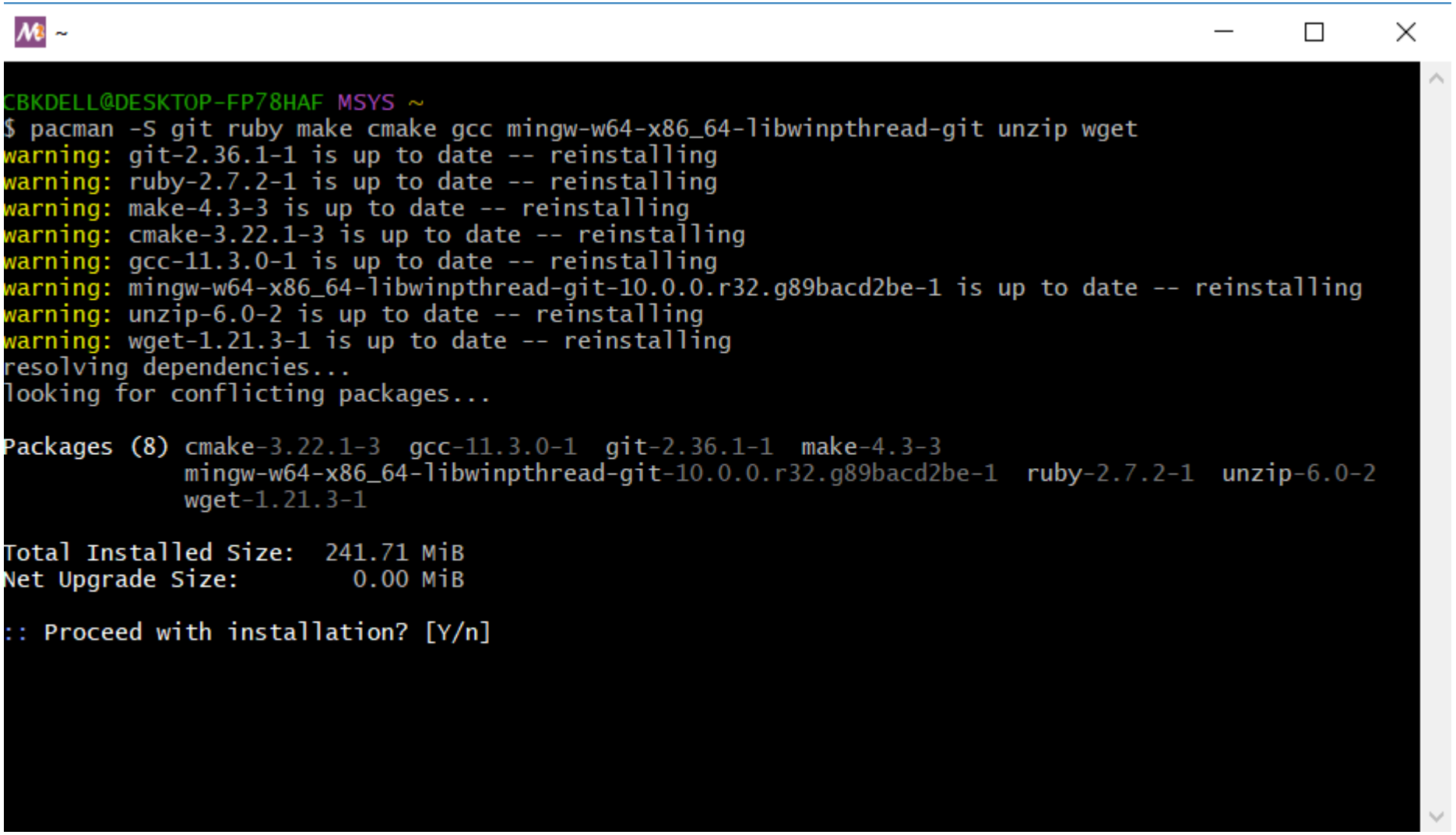
Install and Run msys2-x86

Copy and paste this script to install Ruby ,Cmake , Make and Gcc



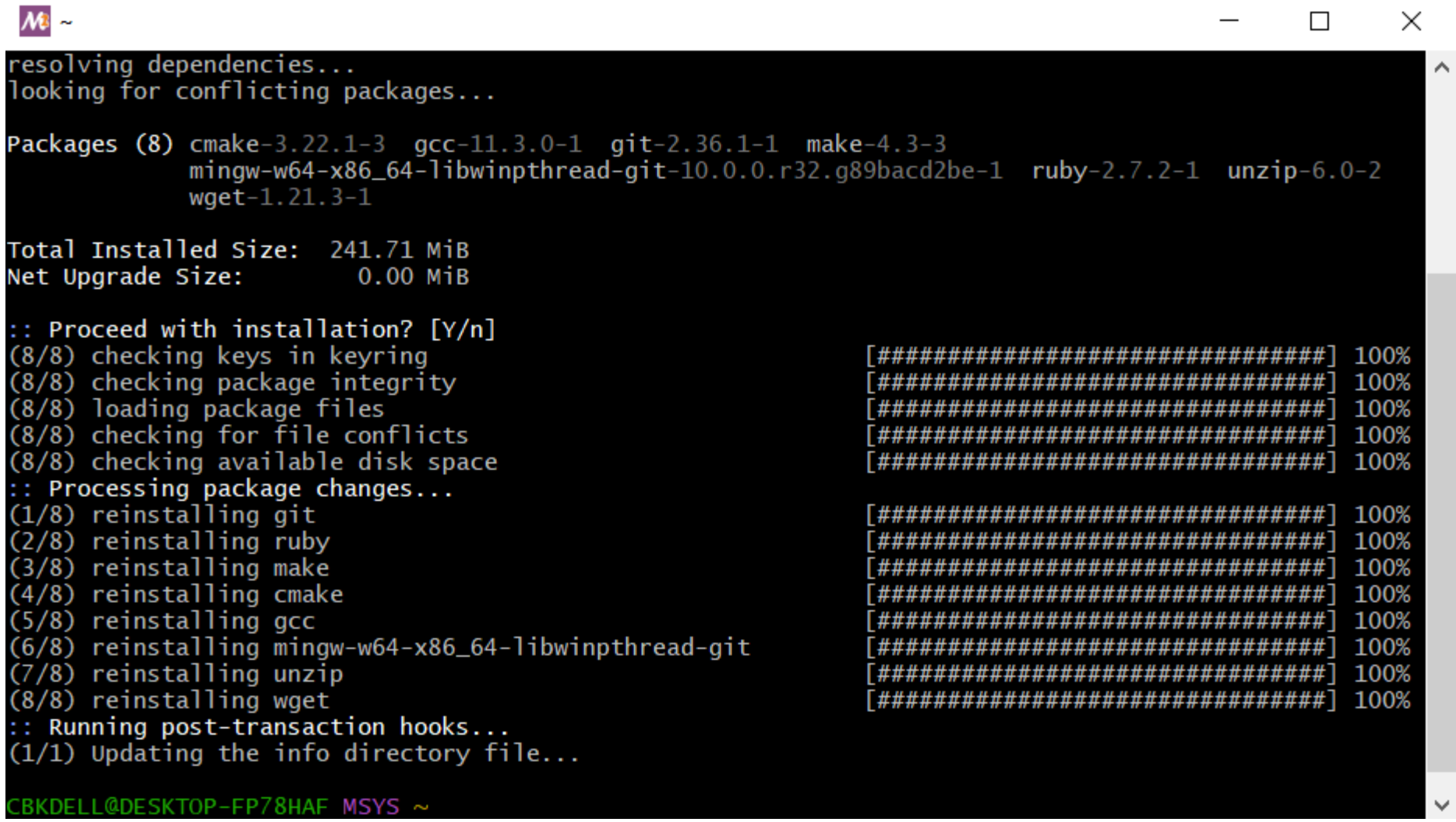

```
pacman -S git ruby make cmake gcc mingw-w64-x86_64-libwinpthread-git unzip wget
```

Y to Proceed installation



pacman -S git ruby make cmake gcc mingw-w64-x86_64-libwinpthread-git unzip wget

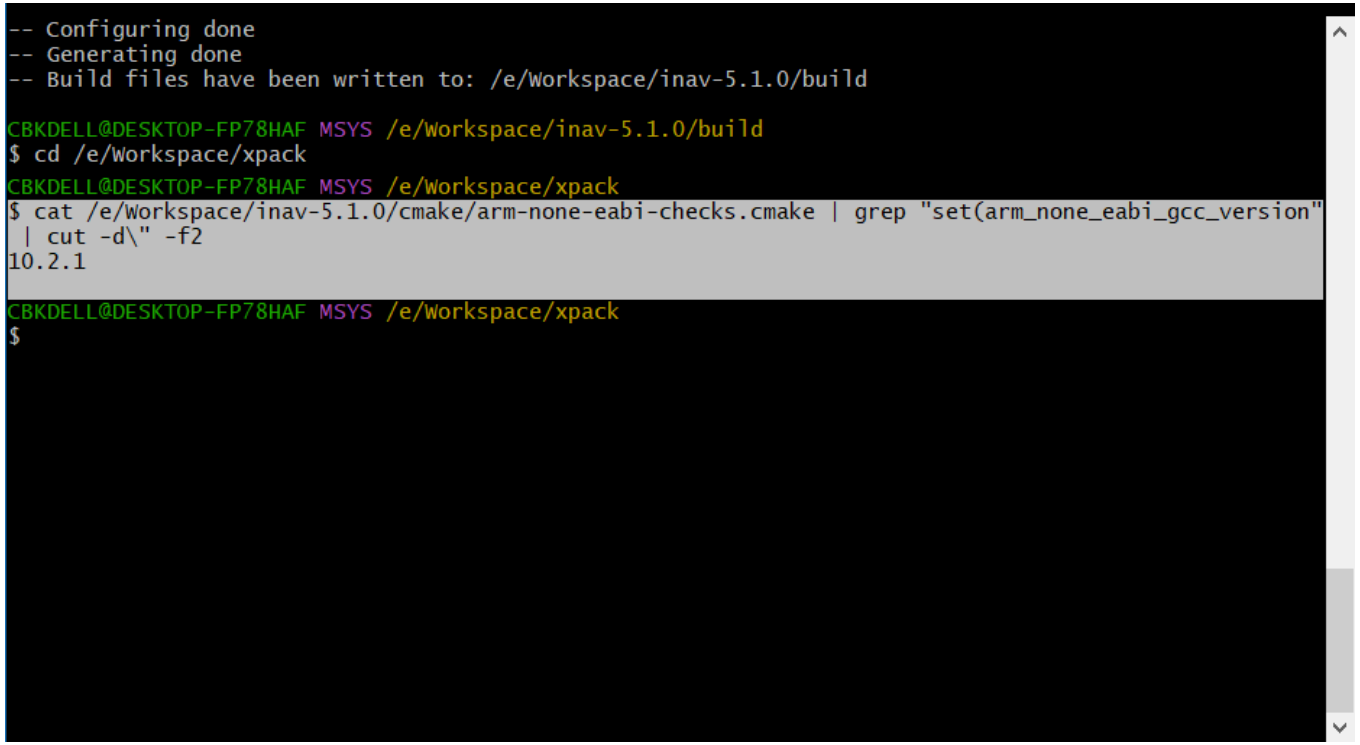
After installation



pacman -S git ruby make cmake gcc mingw-w64-x86_64-libwinpthread-git unzip wget

To get the toolkit version you need for your INAV version

for INAV version 5.0.0, 6.1.0 toolchain version needed is 10.2.1
for INAV version 7.0.0 , 7.1.2 toolchain version needed is 10.3.1
for INAV version 8.0.0 , 8.1.1 toolchain version needed is 13.2.1



Go to Xpack directory by typing

```
cd /e/Workspace/xpack
```

Source the version number that needs to be downloaded

```
cat /e/Workspace/inav-8.0.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

```
cat /e/Workspace/inav-7.1.2/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

```
cat /e/Workspace/inav-7.1.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

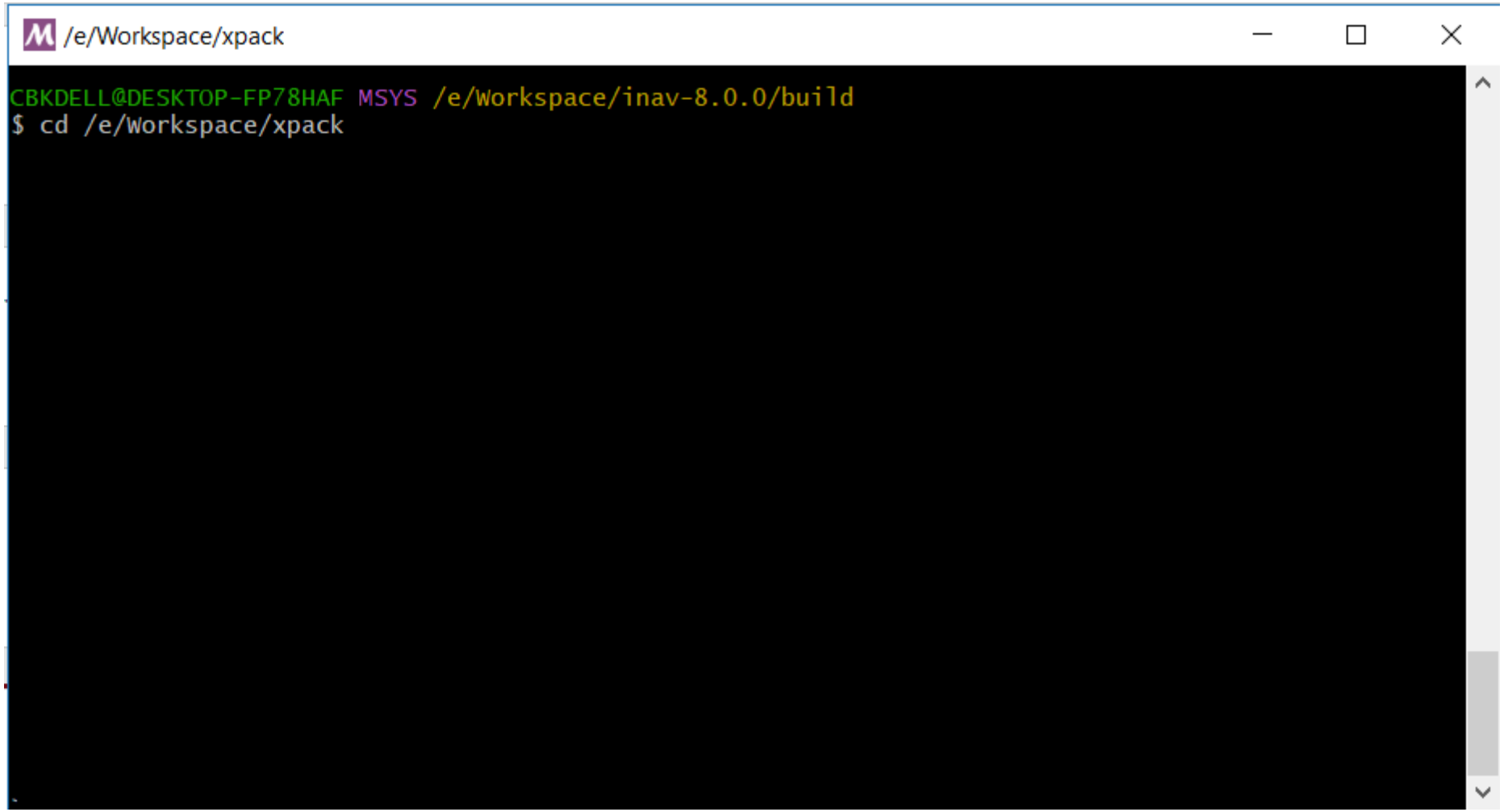
```
cat /e/Workspace/inav-7.0.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

```
cat /e/Workspace/inav-6.0.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

```
cat /e/Workspace/inav-5.1.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2
```

Go to Xpack directory by typing

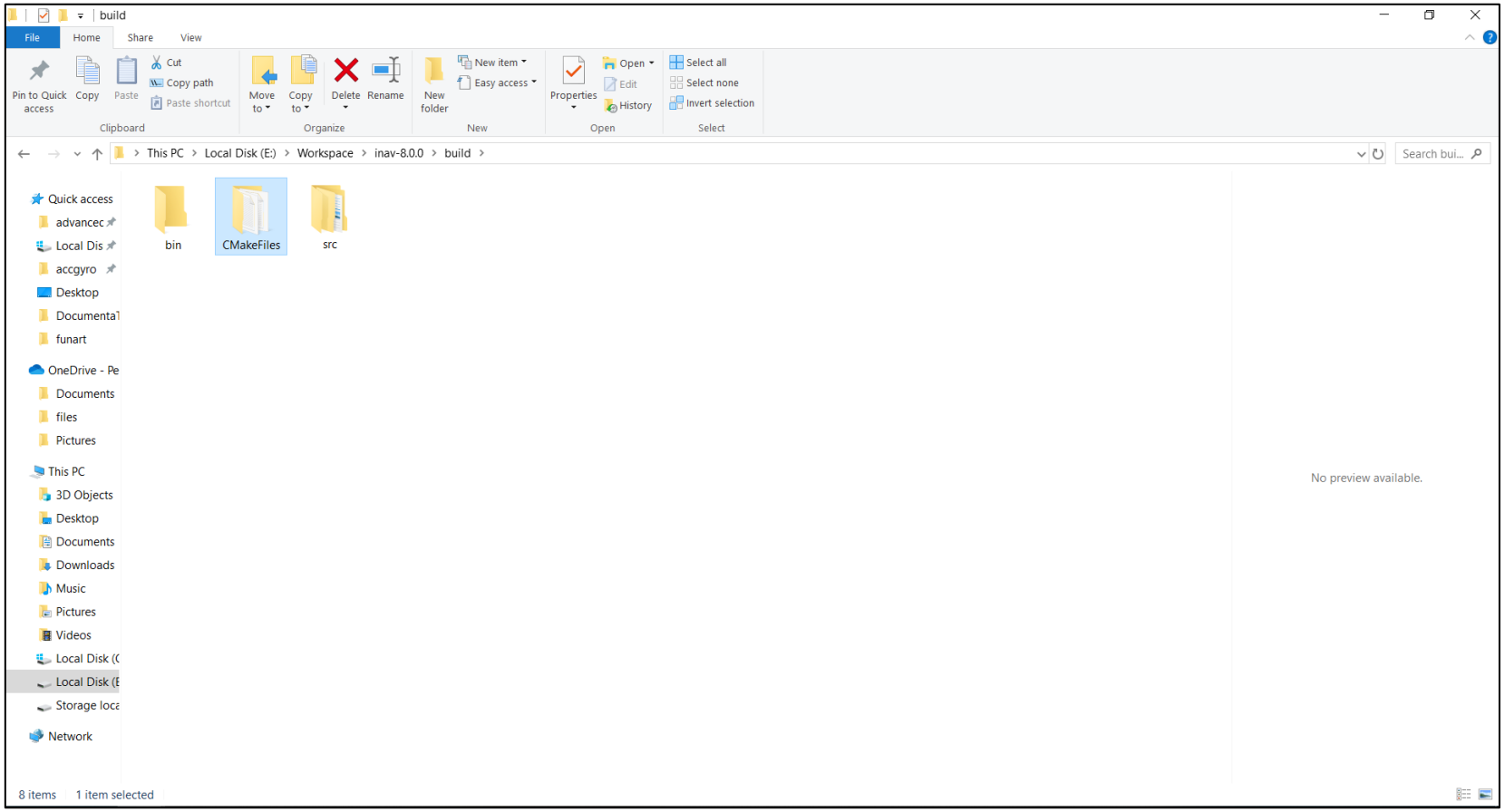
cd /e/Workspace/xpack



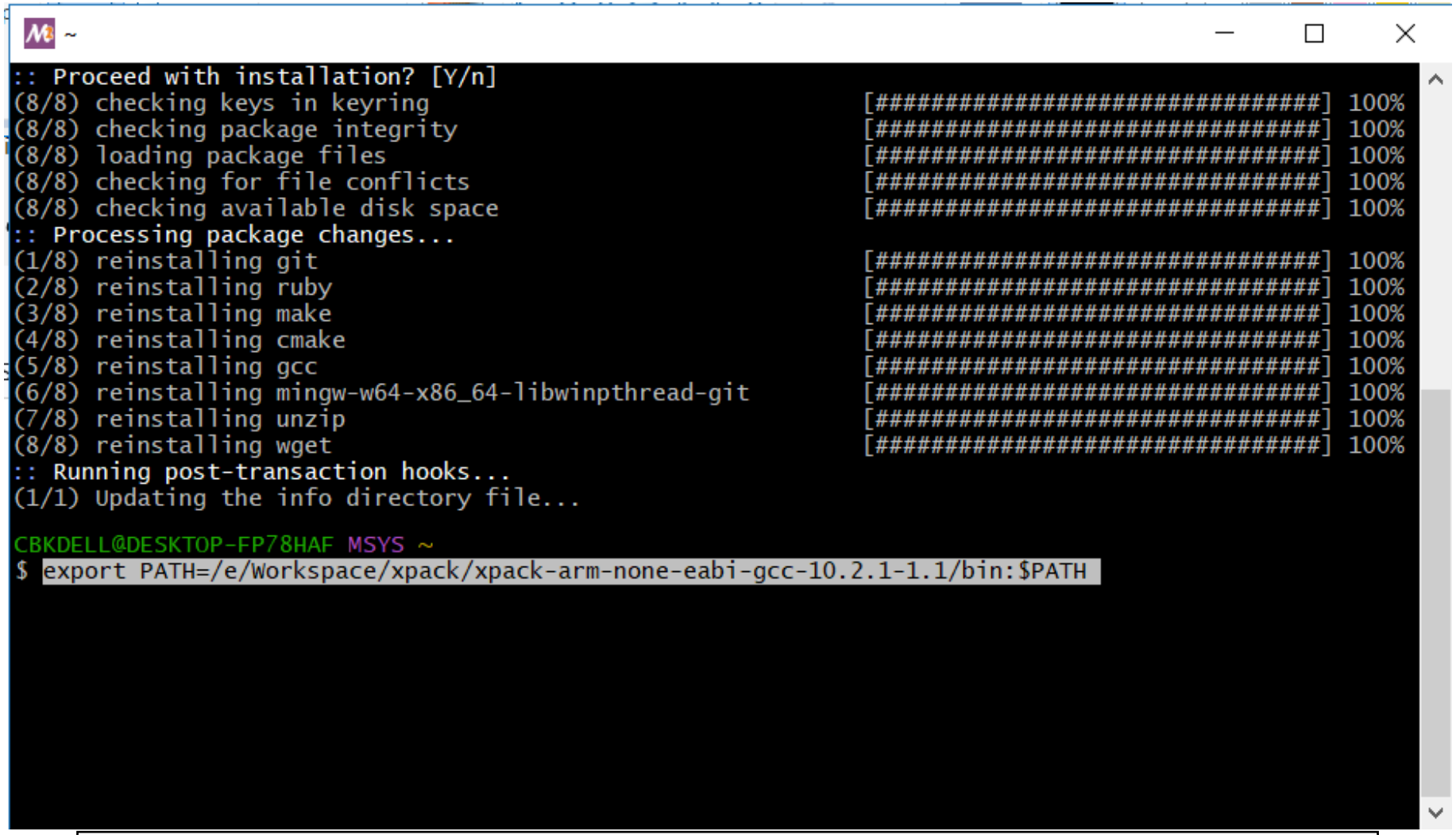
Build Folder

E/Workspace/INAV-8.0.0/build

If you have an old CMakeFiles folder of a different versions
Delete it before Exporting a new path

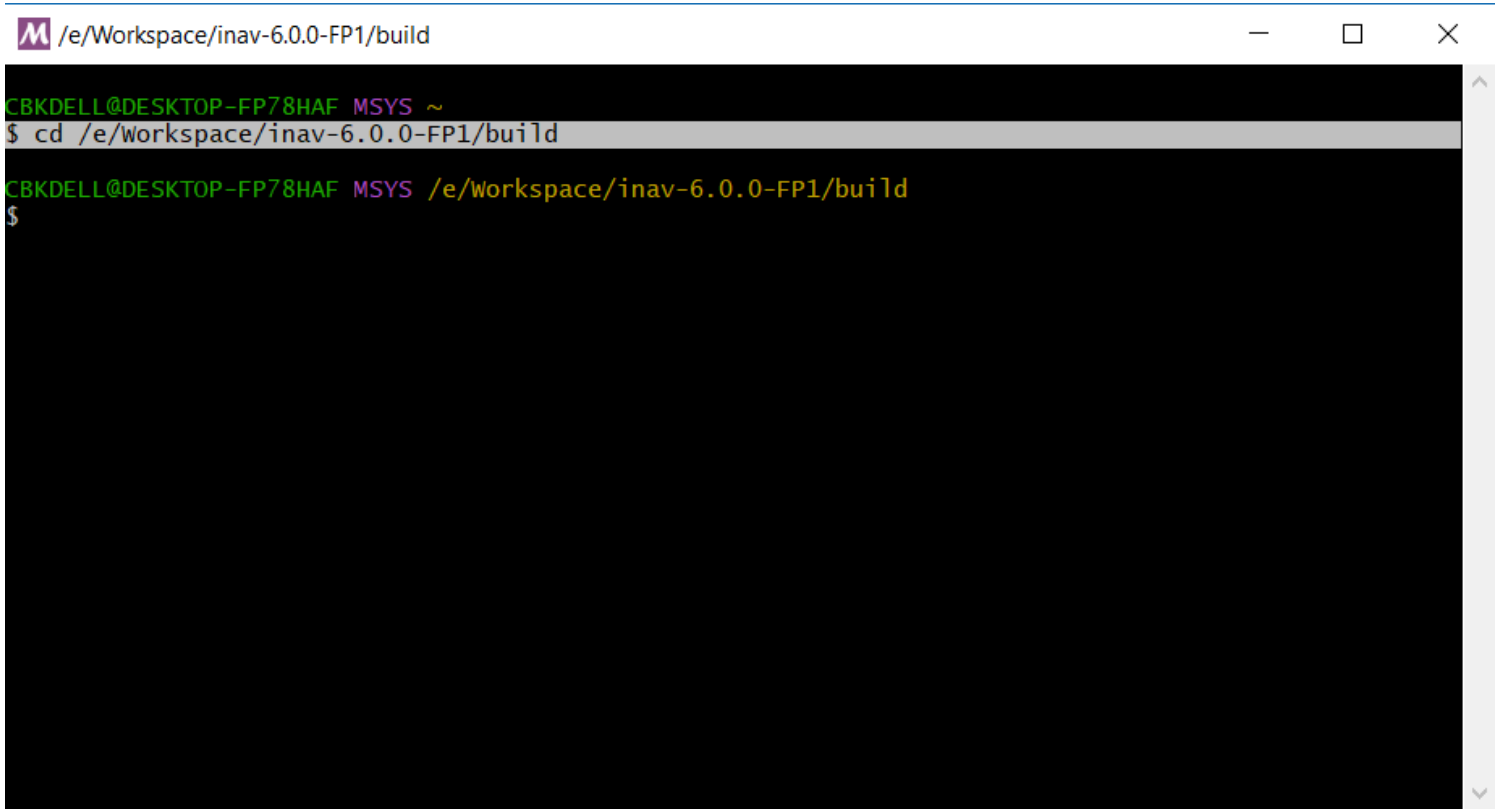


Set a Path for the Exported GCC to the Environment Pls make sure the directory is same name as the folder



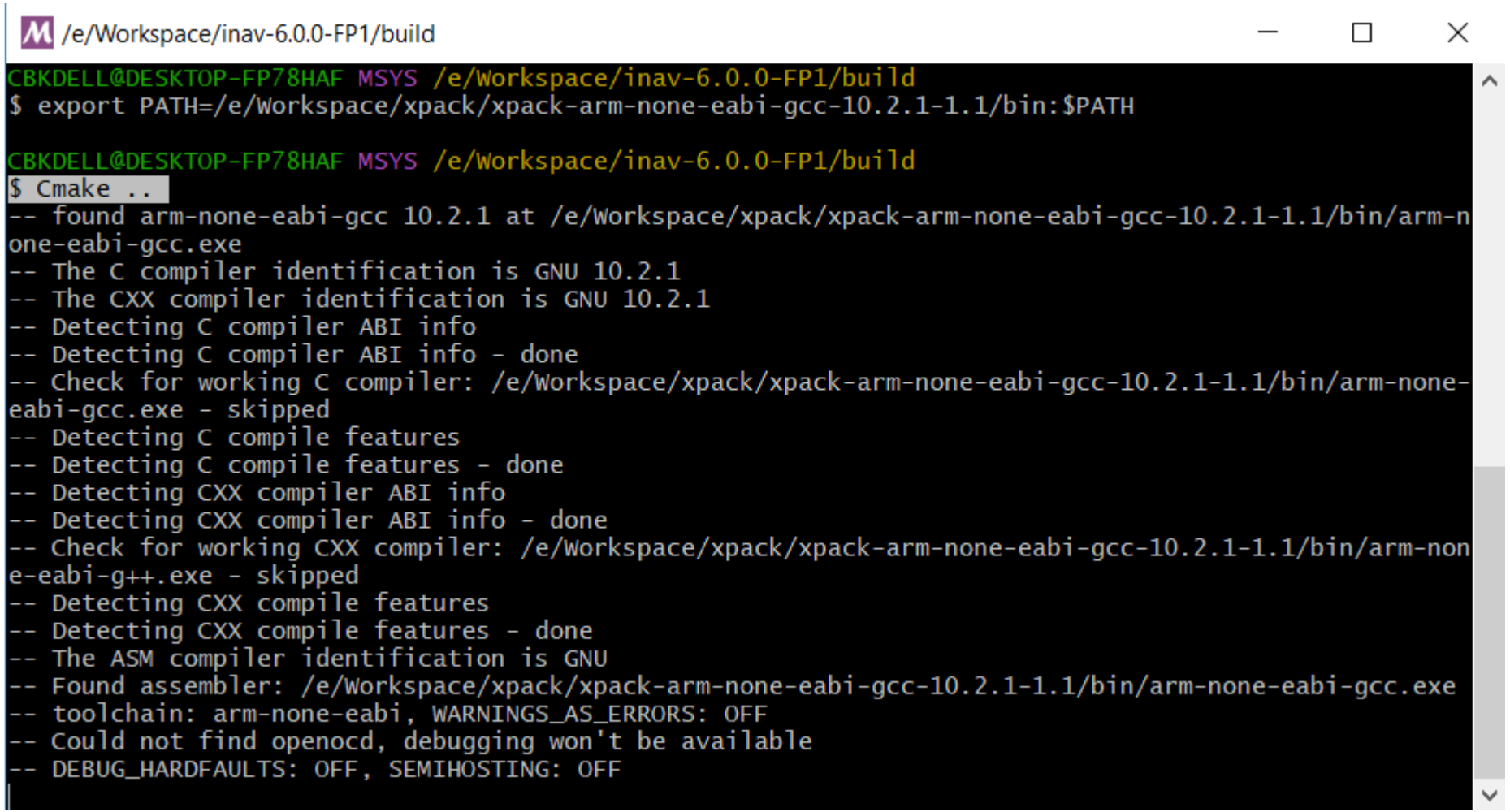
INAV 5.1.0 – 6.1.0	export PATH=/e/Workspace/xpack/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin:$PATH
INAV 7.0.0 – 7.1.2	export PATH=/e/Workspace/xpack/xpack-arm-none-eabi-gcc-10.3.1-2.2/bin:$PATH
INAV 8.0.0	export PATH=/e/Workspace/xpack/xpack-arm-none-eabi-gcc-13.2.1-1.1/bin:$PATH

Go to the build directory by entering this command




```
cd /e/Workspace/inav-5.1.0/build
cd /e/Workspace/inav-6.1.0/build
cd /e/Workspace/inav-7.0.0/build
cd /e/Workspace/inav-7.1.0/build
cd /e/Workspace/inav-7.1.1/build
cd /e/Workspace/inav-7.1.2/build
cd /e/Workspace/inav-8.0.0/build
cd /e/Workspace/inav-8.0.0-RC3/build
```

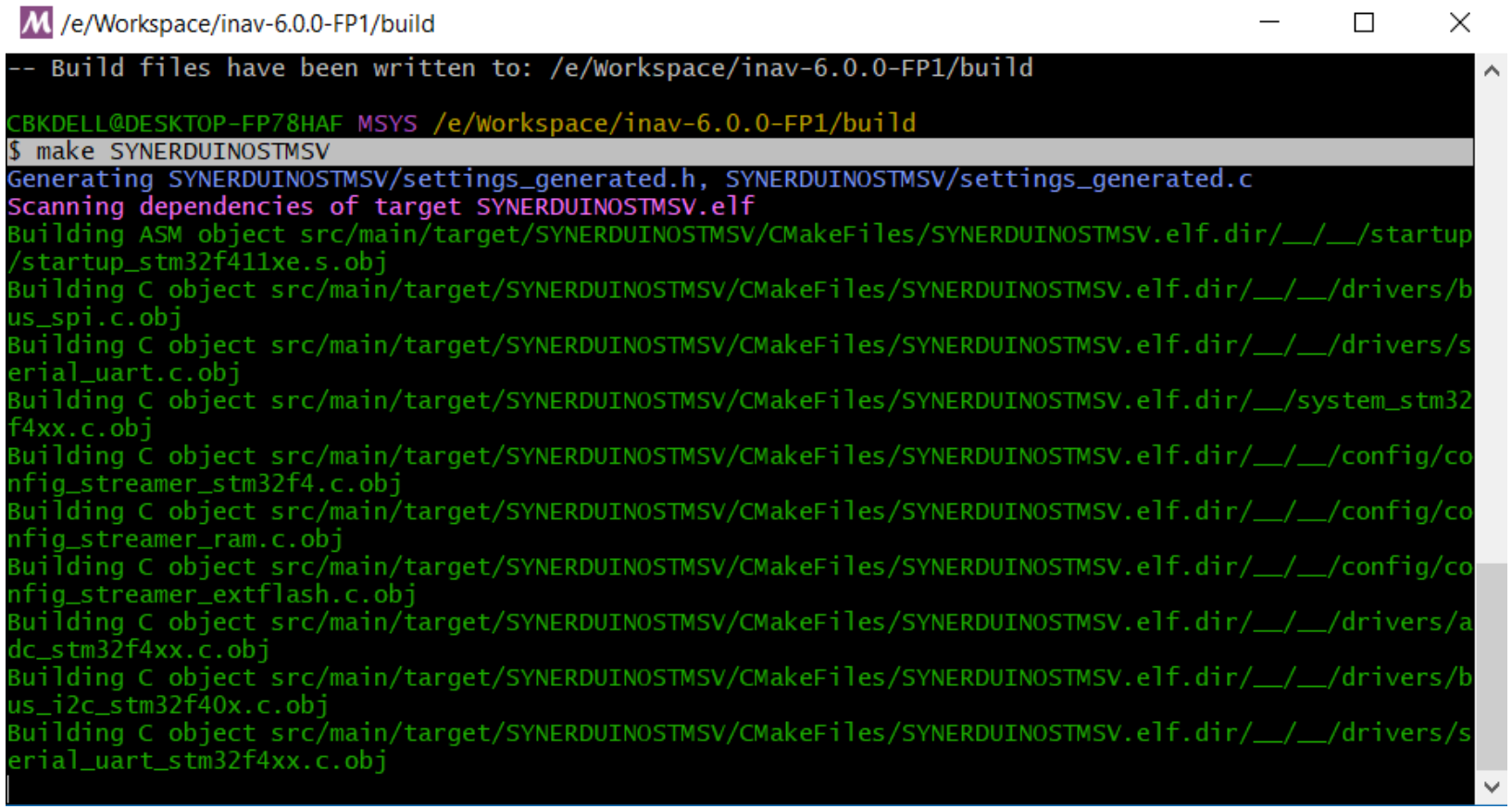
This will extract the Cmake into the build folder creating the Environment



Cmake ..

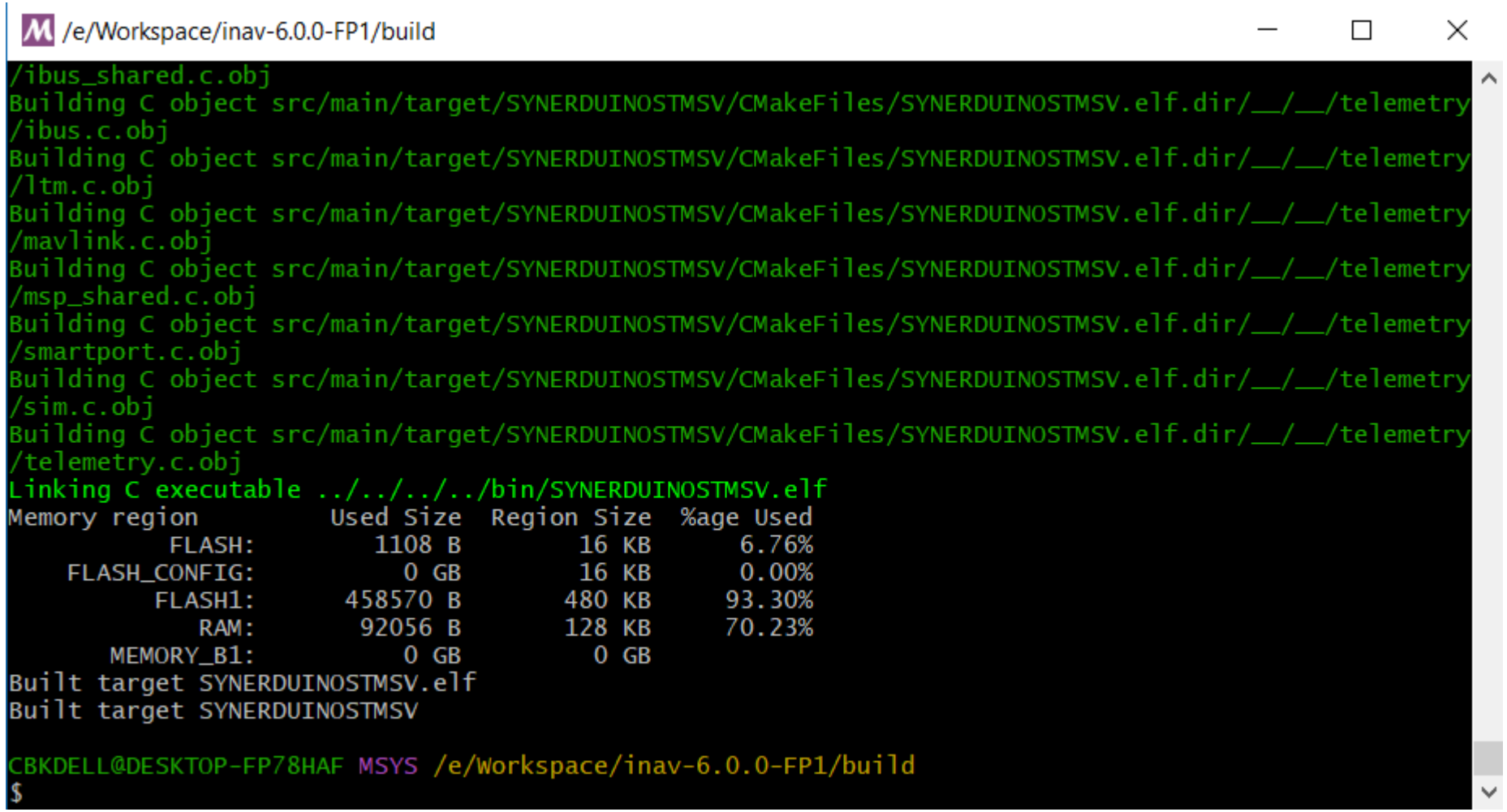
You may need to run rm -rf * in build directory if you had any failed previous runs now run cmake

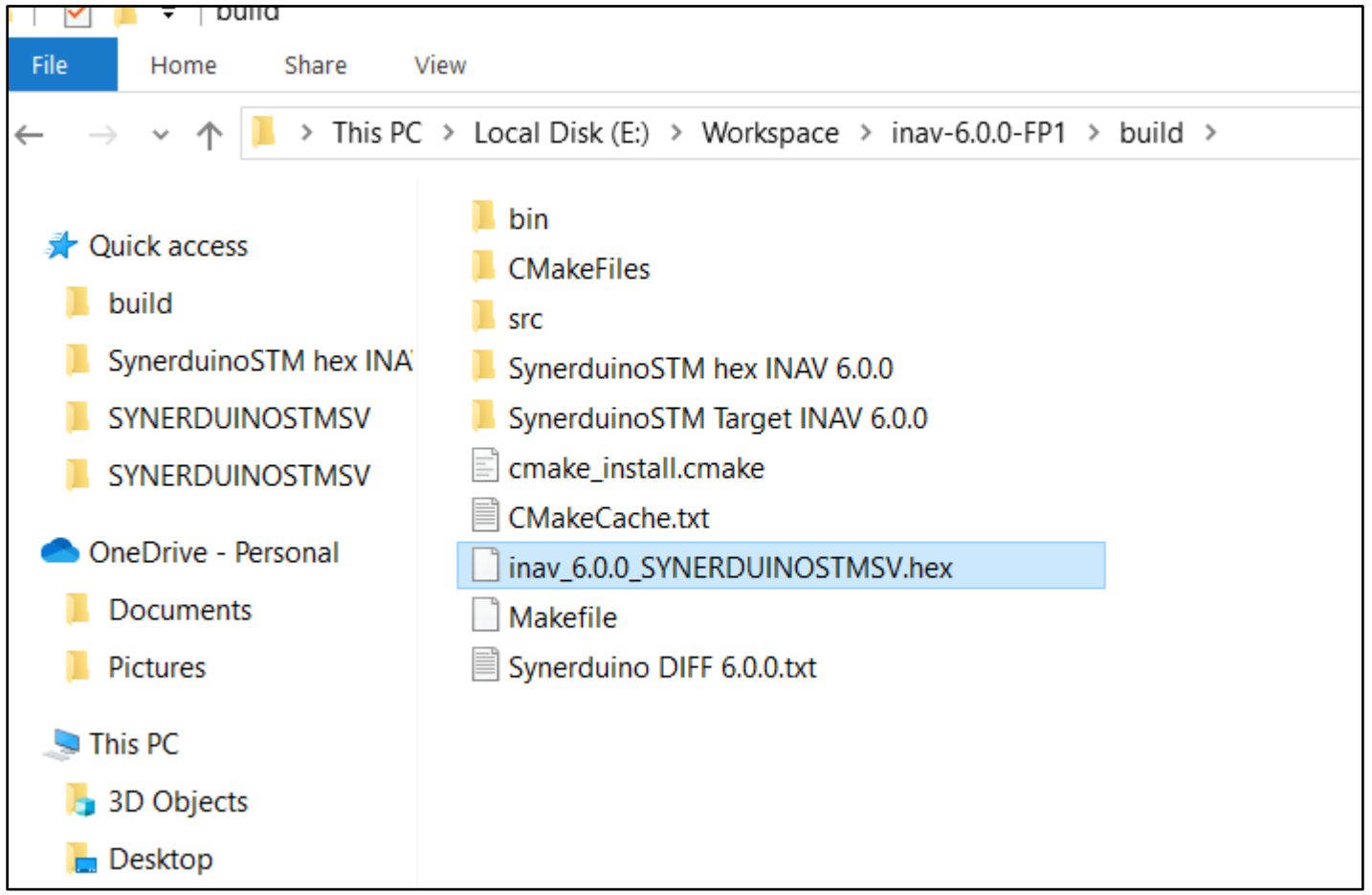
This will build the Hexfile Targeted the Synerduino board and its settings to the Build Folder the Hexfile is use as Firmware when loading the configurator



INAV6	make SYNERDUINOSTM	INAV7	make SYNERDUINOSTM_F411
	make SYNERDUINOSTM2	INAV8	make SYNERDUINOSTM_F405
	make SYNERDUINOSTMSV		make SYNERDUINOSTM_H743
	make SYNERDUINOSTMSV2		make SYNERDUINOSTM_H743A

Once completed the Hexfile can be found on the Build folder





And… its here .

INAV_5.1.0 SYNERDUINOSTM.hex
INAV_5.1.0 SYNERDUINOSTMSV.hex
INAV_6.0.0_SYNERDUINOSTM.hex
INAV_6.0.0_SYNERDUINOSTMSV.hex
INAV_7.0.0_ SYNERDUINOSTM_F411.hex
INAV_8.0.0_ SYNERDUINOSTM_F405.hex

Open this file in the Configurator as this is the firmware
Find it in the Build folder of the INAV directory

```
cd /e/Workspace/inav-5.1.0/build
cd /e/Workspace/inav-6.0.0/build
cd /e/Workspace/inav-7.0.0/build
cd /e/Workspace/inav-7.1.0/build
cd /e/Workspace/inav-7.1.1/build
cd /e/Workspace/inav-8.0.0/build
```