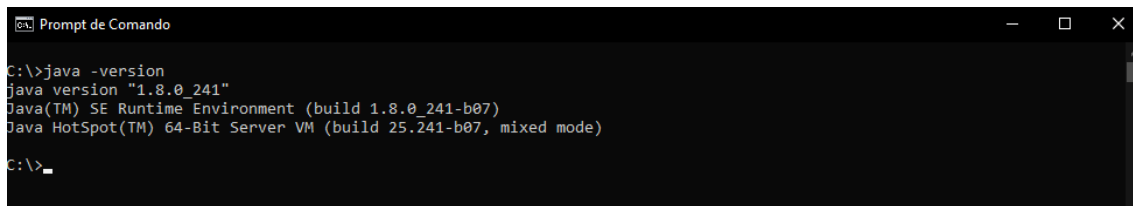


Instalação e Configuração do IDE Eclipse para Desenvolvimento sobre plataformas STM e família de processadores ARM

Os passos independentes do sistema operacional são:

- Instalar JDK e JRE de Java
- Instalar IDE Eclipse Neon 3 (SystemWorkbench)
- Instalar STM32CubeMx
- Instalar Node.js
- Instalar gestor de pacotes xPack
- Instalar pacotes e plugins ARM e GNU MCU em eclipse
- Instalar Toolchain e Windows Build Tool (este ultimo somente para Windows)
- Configurar rotas no Eclipse
- Configurar ferramentas para Debug
- Criar projeto de teste

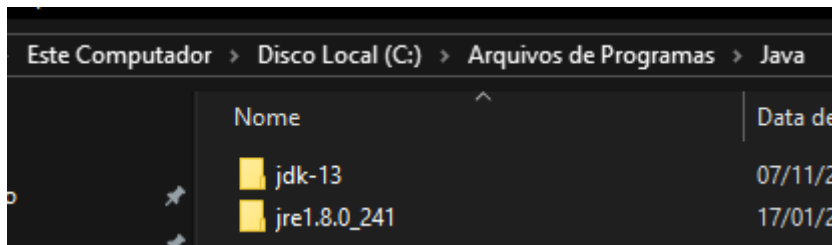
1. Verificar Instalação de JDK e JRE de Java



```
Prompt de Comando

C:\>java -version
java version "1.8.0_241"
Java(TM) SE Runtime Environment (build 1.8.0_241-b07)
Java HotSpot(TM) 64-Bit Server VM (build 25.241-b07, mixed mode)

C:\>
```



2. Descargar e Instalar Eclipse Neon (SystemWorkbench) do site da STM

https://www.st.com/content/st_com/en/products/development-tools/software-development-tools/stm32-software-development-tools/stm32-ides/sw4stm32.html

O site da STM envia ao site do projeto

Get Software

Part Number ▲	General Description	Supplier	Download
+ SW4STM32	System Workbench for STM32: free IDE on Windows, Linux and OS X	AC6	Go to site

No site do projeto é preciso fazer um cadastro para baixar o arquivo

Registration

Accessing OpenSTM32.org is free, but you need to be logged in to have access to some parts of the site, like the System Workbench for STM32 documentation and download instructions.

You should either [Log in](#) or [register](#) on OpenSTM32.org.

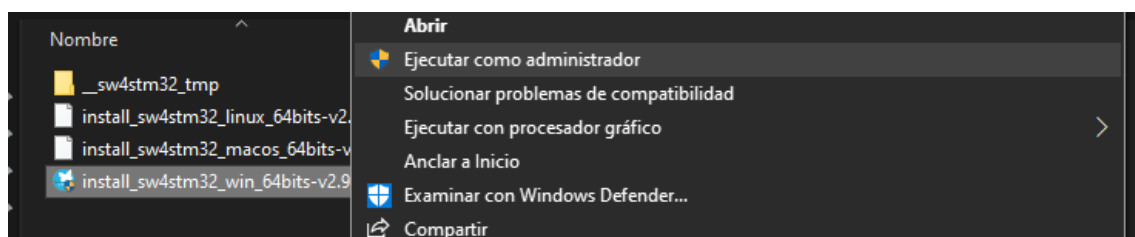
Step 1: Explore

- Search for Content
- Visit Wiki Pages
 - You can start from [Wiki Home](#)
- Read Blogs and Forums
- Look at the FAQs
- Install System Workbench for STM32 - Bare Metal Edition
 - Instructions are provided [here](#)
 - You can download the System Workbench for STM32 installer from the [download area](#).

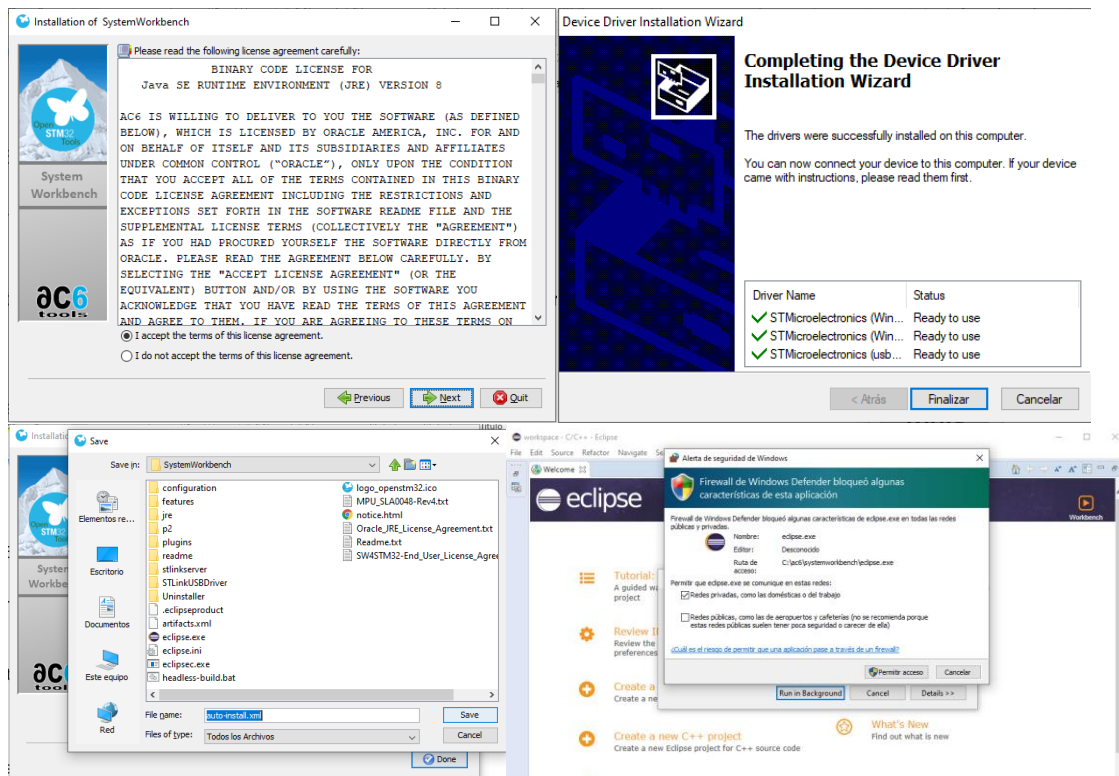
Baixar o arquivo para o sistema a usar

- Latest Windows 64 bit installer Version v2.9, updated on Friday, April 12, 2019 at 16:41:04 CEST):
 - Installer: [install_sw4stm32_win_64bits-v2.9.exe](#) ?
- Latest Mac OS/X 64 bit installer Version v2.9, updated on Friday, April 12, 2019 at 16:41:13 CEST):
 - Installer: [install_sw4stm32_macos_64bits-v2.9.run](#) ?
- Latest Linux 64 bit installer Version v2.9, updated on Friday, April 12, 2019 at 16:40:36 CEST):
 - Installer: [install_sw4stm32_linux_64bits-v2.9.run](#) ?

Para Instalar Eclipse IDE é preciso executar o arquivo `install_sw4stm32_win_64bits-v2.9` como administrador.



No processo de instalação aceitar todos os termos de licencia, instalar os drivers para os dispositivos STM, gerar o script de instalação e permitir a comunicação do eclipse na rede.



3. Instalar STM32CubeMX

https://www.st.com/content/st_com/en/products/development-tools/software-development-tools/stm32-software-development-tools/stm32-configurators-and-code-generators/stm32cubemx.html

Get Software

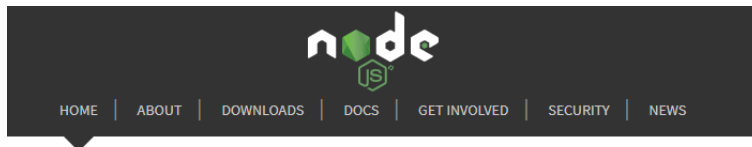
Part Number	General Description	Software Version	Download	Previous versions
+ STM32CubeMX	STM32Cube initialization code generator	5.6.1	Get Software	Select version

Fazer o login no site e baixar o arquivo. Ele baixa um arquivo comprimido como os instaladores para os três sistemas operacionais, Windows, Linux e Mac. Instalar.

4. Instalar Node.js a través do gerenciador de pacotes. Isso para ter maior controle da versão a usar.

Para isso é preciso entrar ao site de node e selecionar a opção “Other Downloads”

<https://nodejs.org/en/>



Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

Download for Windows (x64)



[Other Downloads](#) | [Changelog](#) | [API Docs](#) | [Other Downloads](#) | [Changelog](#) | [API Docs](#)

Or have a look at the [Long Term Support \(LTS\)](#) schedule.

Sign up for [Node.js Everywhere](#), the official Node.js Monthly Newsletter.

Na janela que abre ir até o final e selecionar “Installing Node.js via package manager”

- Signed SHASUMS for release files ([How to verify](#))
- All download options
- **Installing Node.js via package manager**
- Previous Releases
- Nightly builds
- Node-ChakraCore Nightly builds
- Unofficial builds
- Building Node.js from source on supported platforms
- Installing Node.js via binary archive

Ir até o final e abrir o site de chocolate, <https://chocolatey.org/>

Windows

Simply download the Windows Installer directly from the nodejs.org web site.

Alternatives

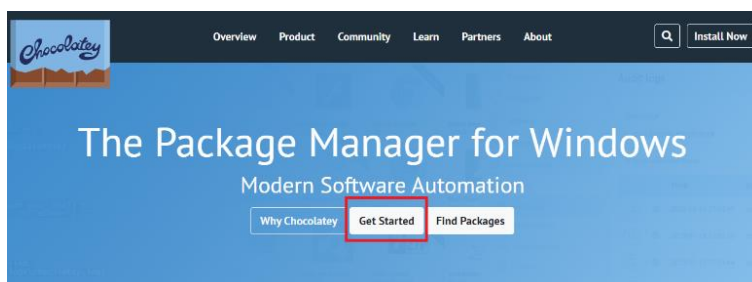
Using **Chocolatey**:

```
cinst nodejs
# or for full install with npm
cinst nodejs.install
```

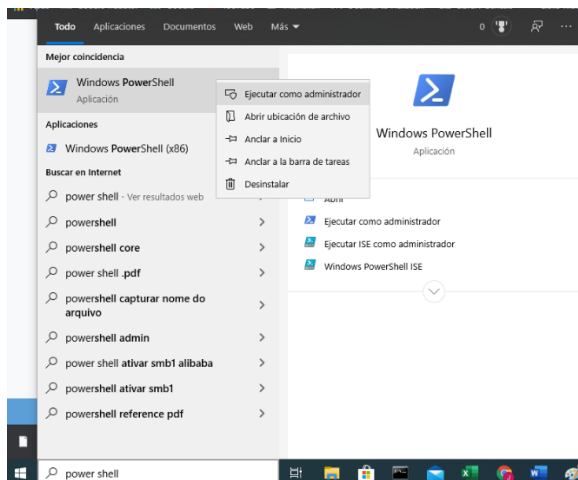
Using **Scoop**:

```
scoop install nodejs
```

Selecionar “Get Started”



Abrir o power shell do windows como administrador



Ejecutar no power shell o comando “Get-ExecutionPolicy”

```
Administrador: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. Todos los derechos reservados.

Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Windows\system32> Get-ExecutionPolicy
Restricted
PS C:\Windows\system32>
```

Caso retorne “Restricted”, executar o comando “Set-ExecutionPolicy AllSigned”, e aceitar com a opção s, a troca da diretiva de execução . Verificar de novo com o primeiro comando, o retorno deve ser “AllSigned”.

```
Administrador: Windows PowerShell
PS C:\Windows\system32> Get-ExecutionPolicy
Restricted
PS C:\Windows\system32> Set-ExecutionPolicy AllSigned

Cambio de directiva de ejecución
La directiva de ejecución te ayuda a protegerte de scripts en los que no confías. Si cambias dicha directiva, podrías exponerte a los riesgos de seguridad descritos en el tema de la Ayuda about_Execution_Policies en https://go.microsoft.com/fwlink/?LinkID=135170. ¿Quieres cambiar la directiva de ejecución?
[S] Sí [O] Sí a todo [N] No [T] No a todo [U] Suspender [?] Ayuda
(el valor predeterminado es "N"):s
PS C:\Windows\system32> Get-ExecutionPolicy
AllSigned
PS C:\Windows\system32>
```

Copiar o comando no quadro

Now run the following command:

```
Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072
```

Copy to Clipboard



E colar no Power Shell

```
Administrador: Windows PowerShell
PS C:\Windows\system32> Get-ExecutionPolicy
Restricted
PS C:\Windows\system32> Set-ExecutionPolicy AllSigned

Cambio de directiva de ejecución
La directiva de ejecución te ayuda a protegerte de scripts en los que no confías. Si cambias dicha directiva, podrías exponerte a los riesgos de seguridad descritos en el tema de la Ayuda about_Execution_Policies en https://go.microsoft.com/fwlink/?LinkID=135170. ¿Quieres cambiar la directiva de ejecución?
[S] Sí [O] Sí a todo [N] No [T] No a todo [U] Suspender [?] Ayuda
(el valor predeterminado es "N"):s
PS C:\Windows\system32> Get-ExecutionPolicy
AllSigned
PS C:\Windows\system32> Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('https://chocolatey.org/install.ps1'))
```

Verificar com o comando “choco”

```
Administrador: Windows PowerShell
PS C:\Windows\system32> choco
Chocolatey v0.10.15
Please run 'choco -?' or 'choco <command> -?' for help menu.
PS C:\Windows\system32>
```

Instalar node na versão lts com o comando “choco install nodejs-lts” ou “cinst nodejs-lts” e a opção [y]

```
Administrador: Windows PowerShell
PS C:\Windows\system32> choco install nodejs-lts
Chocolatey v0.10.15
Installing the following packages:
nodejs-lts
By installing you accept licenses for the packages.
Progress: Downloading nodejs-lts 12.16.1... 100%

nodejs-lts v12.16.1 [Approved]
nodejs-lts package files install completed. Performing other installation steps.
The package nodejs-lts wants to run 'chocolateyinstall.ps1'.
Note: If you don't run this script, the installation will fail.
Note: To confirm automatically next time, use '-y' or consider:
choco feature enable -n allowGlobalConfirmation
Do you want to run the script?([Y]es/[A]ll - yes to all/[N]o/[P]rint): y

Installing 64 bit version
Installing nodejs-lts...
nodejs-lts has been installed.
nodejs-lts may be able to be automatically uninstalled.
Environment Vars (like PATH) have changed. Close/reopen your shell to
see the changes (or in powershell/cmd.exe just type `refreshenv`).
The install of nodejs-lts was successful.
Software installed as 'MSI', install location is likely default.

Chocolatey installed 1/1 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).
PS C:\Windows\system32>
```

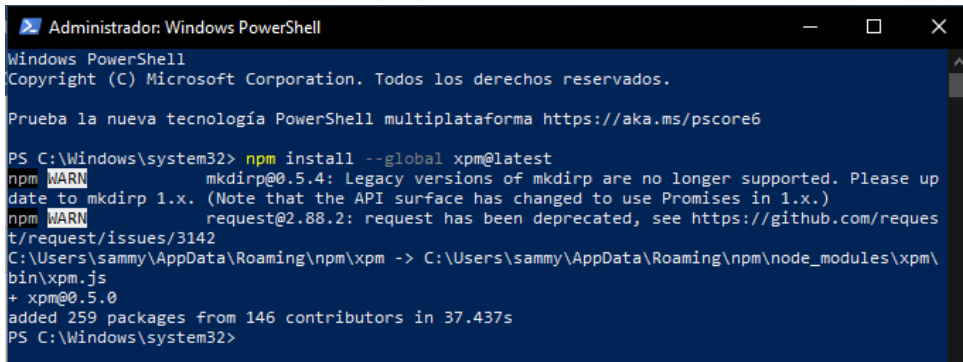
Fechar e abrir o power shell como administrador e verificar a versão do node e de npm com os comandos “node -v” e “npm -v”

```
Administrador: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. Todos los derechos reservados.

Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Windows\system32> node -v
v12.16.1
PS C:\Windows\system32> npm -v
6.13.4
PS C:\Windows\system32>
```

5. Instalar gestor de pacotes xPack, com o comando “npm install --global xpm@latest”.
Para informação do pacote acessar ao site <https://xpack.github.io/xpm/install/>



```
Administrador: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. Todos los derechos reservados.

Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Windows\system32> npm install --global xpm@latest
npm WARN deprecated mkdirp@0.5.4: Legacy versions of mkdirp are no longer supported. Please up
date to mkdirp 1.x. (Note that the API surface has changed to use Promises in 1.x.)
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/reques
t/request/issues/3142
C:\Users\sammy\AppData\Roaming\npm\xpm -> C:\Users\sammy\AppData\Roaming\npm\node_modules\xpm\
bin\xpm.js
+ xpm@0.5.0
added 259 packages from 146 contributors in 37.437s
PS C:\Windows\system32>
```

A versão instalada pode ser verificada no cmd como o comando “xpm --version”

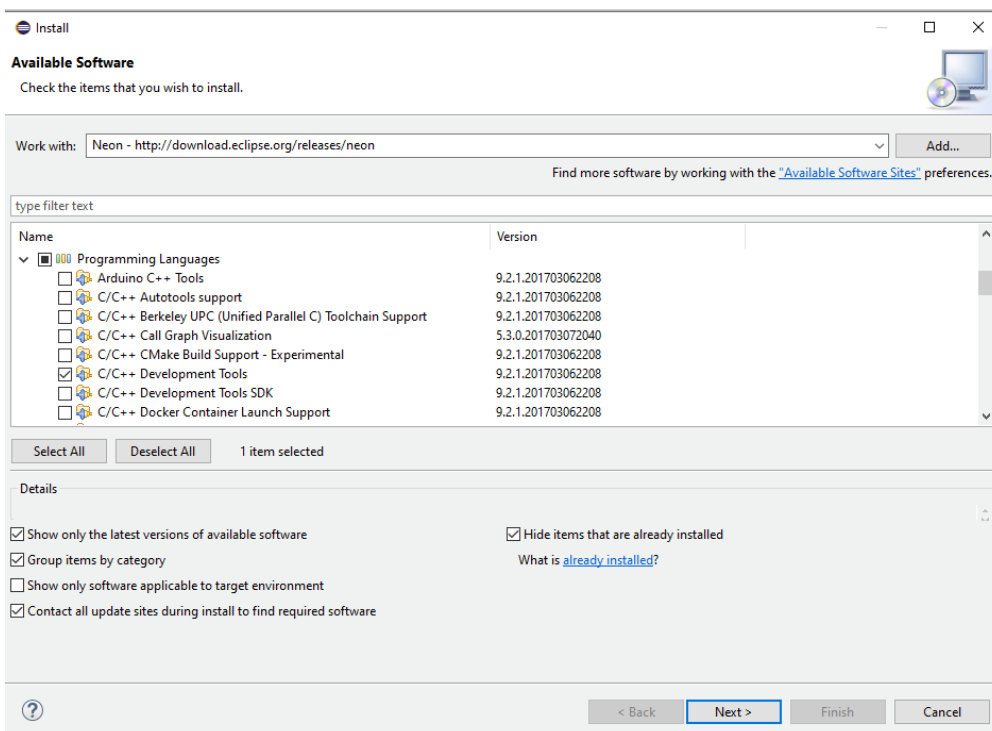


```
Símbolo del sistema
C:\>xpm --version
0.5.0
C:\>
```

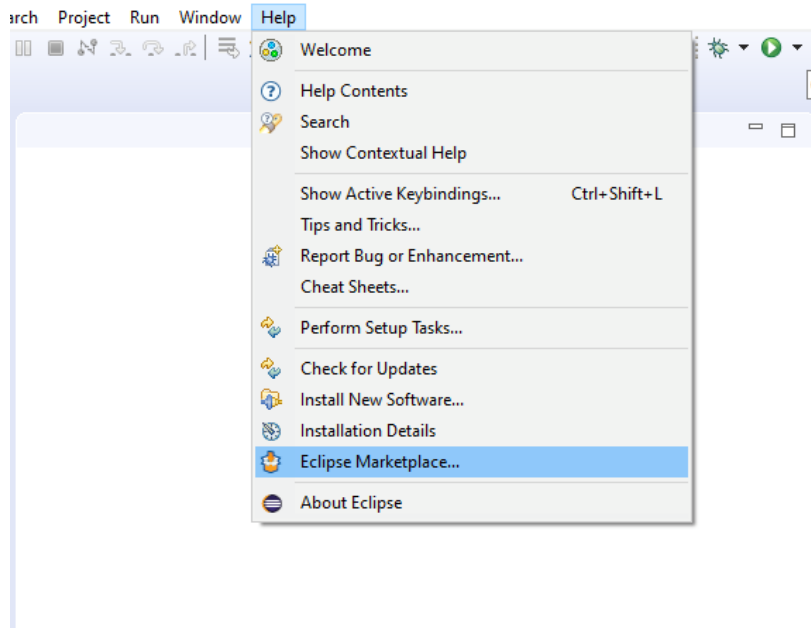
6. Instalar plugins GNU MCU em eclipse

Em Eclipse é preciso instalar os plugins da família de processador MCU de ARM.

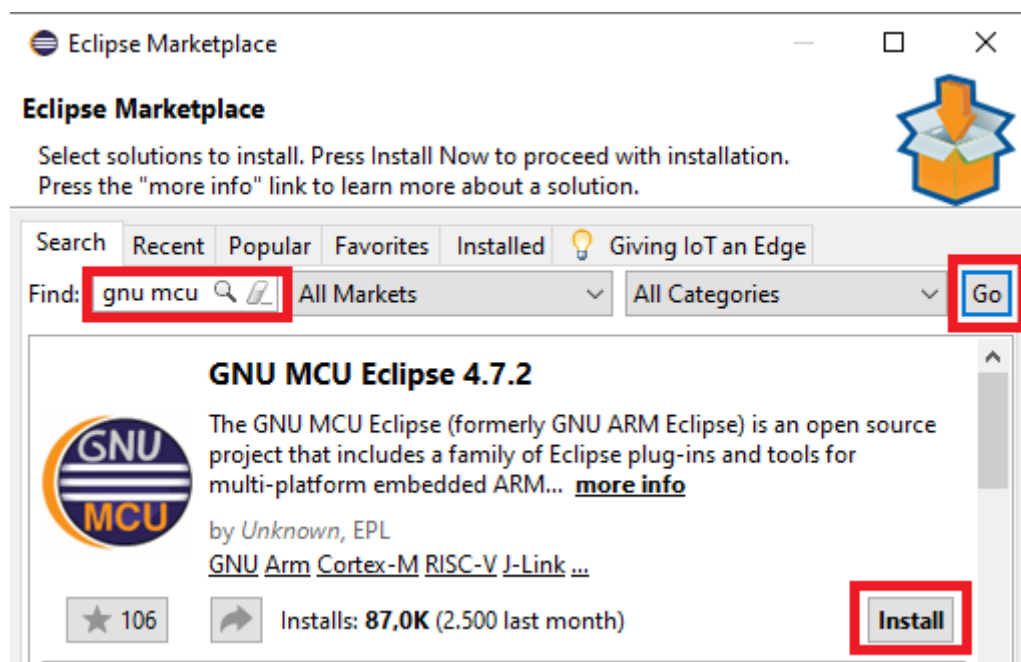
No menu Help > Install New Software



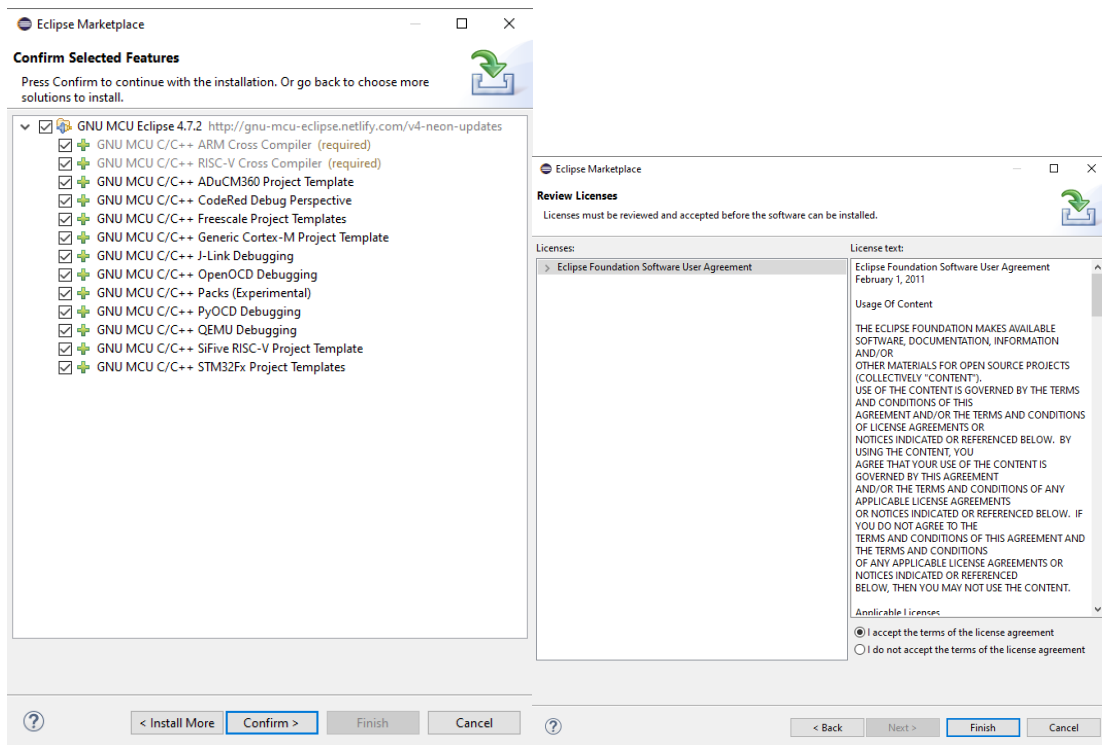
No menu Help > Eclipse Marketplace



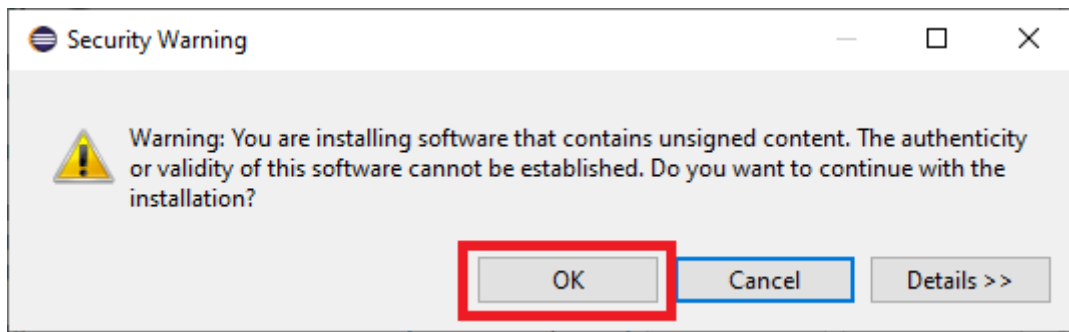
Procurar como “gnu mcu” e instalar



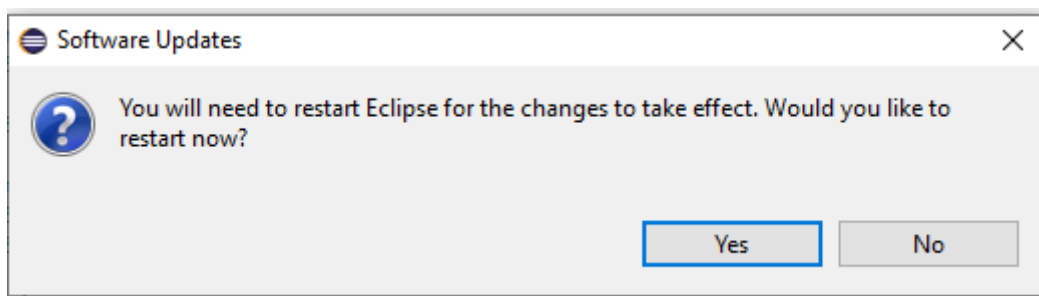
Selecionar todos os pacotes, aceitar o acordo de licenca e instalar



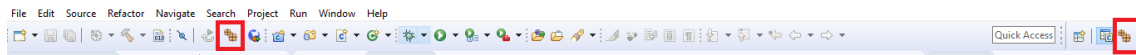
Aceitar o aviso de Warning



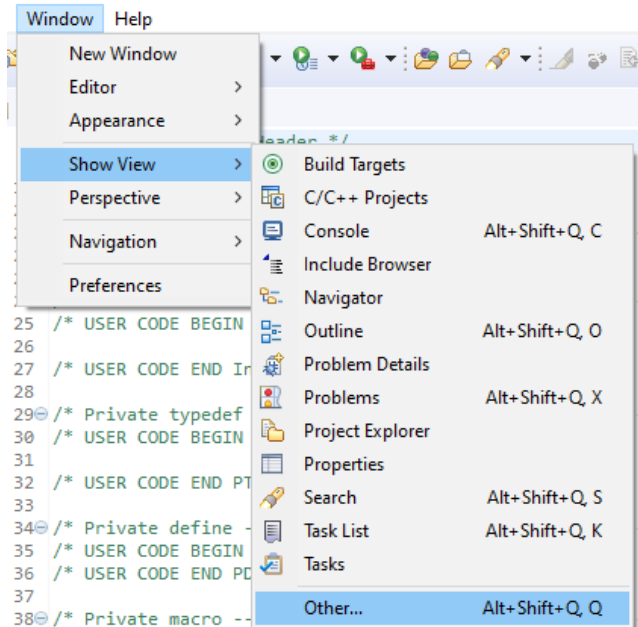
Restaurar Eclipse para aplicar câmbios



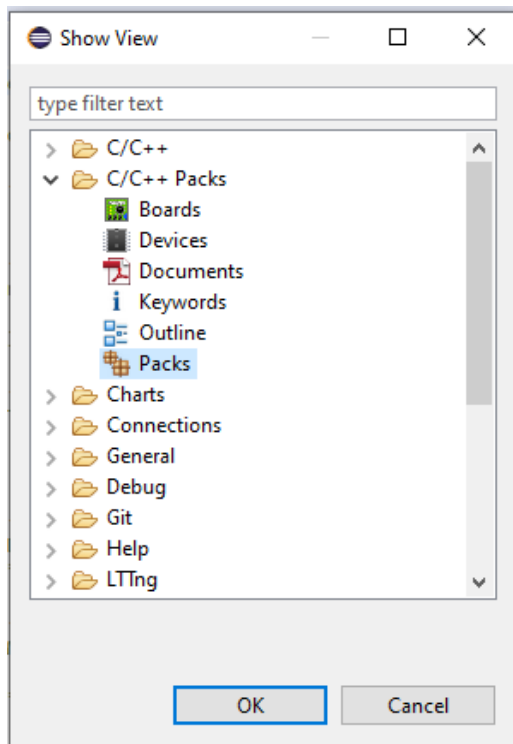
Verificar o package manager na barra de Ferramentas



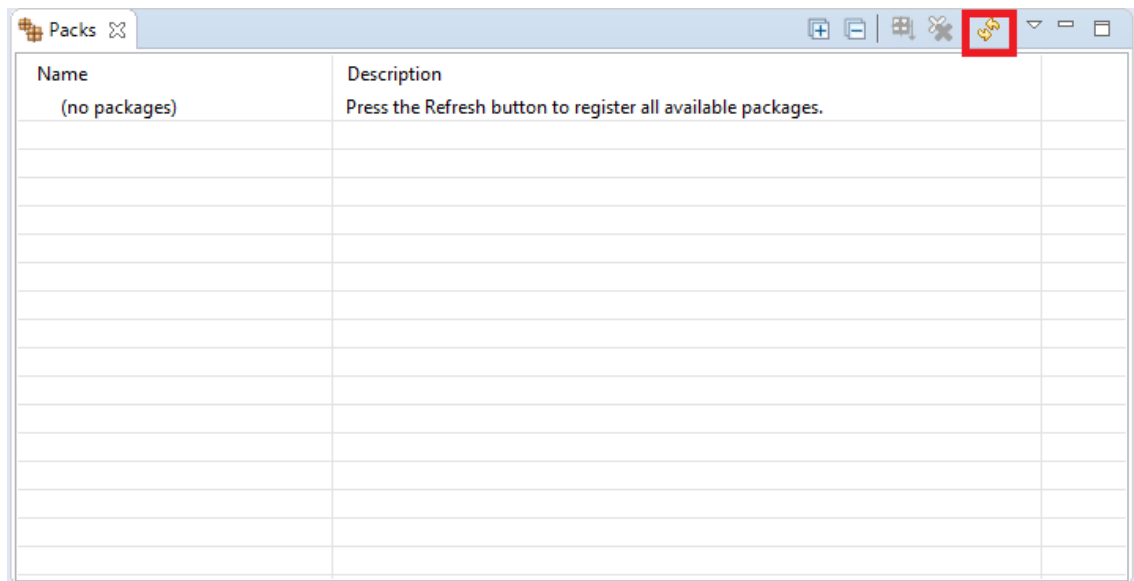
Caso não esteja, incluir desde o menu Window > Show View > Other



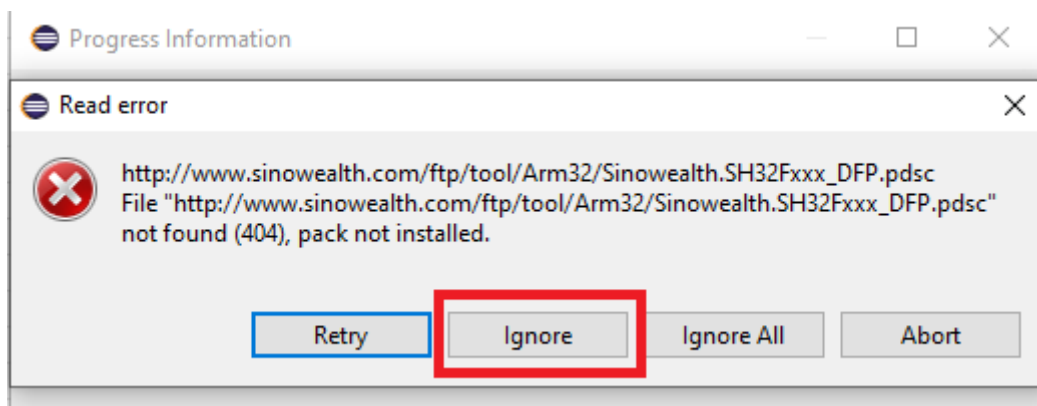
Na ventana emergente escolher na pasta C/C++ Packs



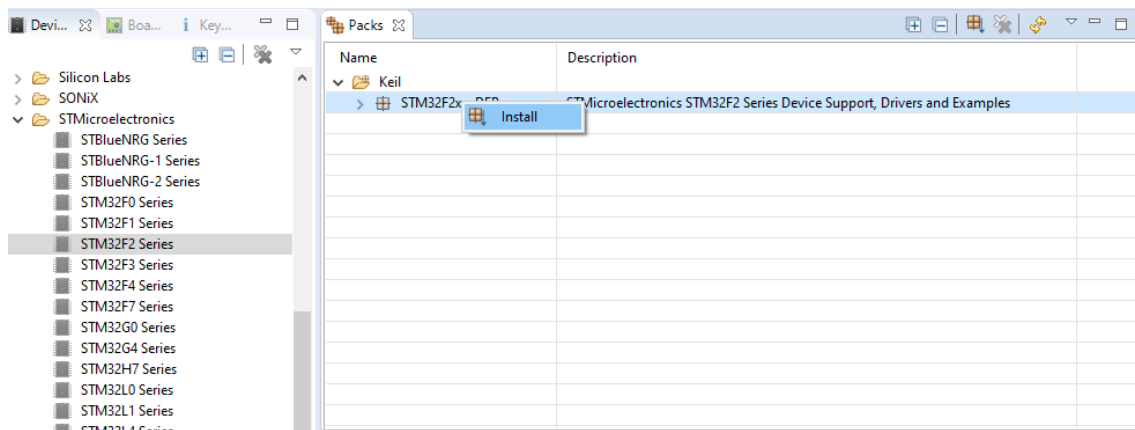
É preciso atualizar para que os packs sejam inclusos no Eclipse



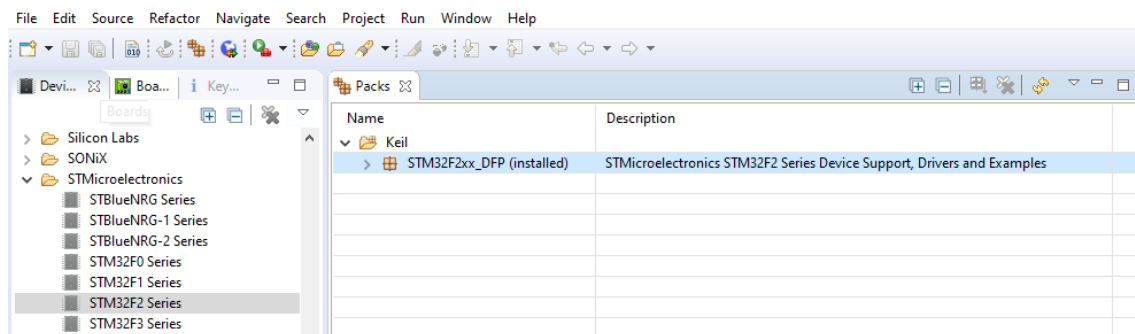
Durante o processo de atualização dos packs é possível aparecer alguns erros, é só ignorar



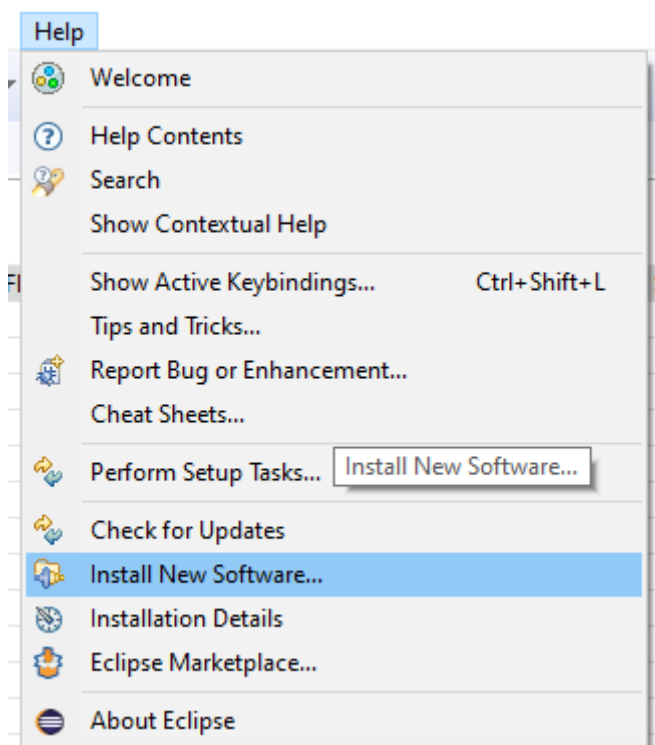
Uma vez instalados os packs, é preciso instalar na coluna esquerda os pacotes específicos de desenvolvimento para cada família de processadores da STM, neste caso para a placa STM32F207ZG



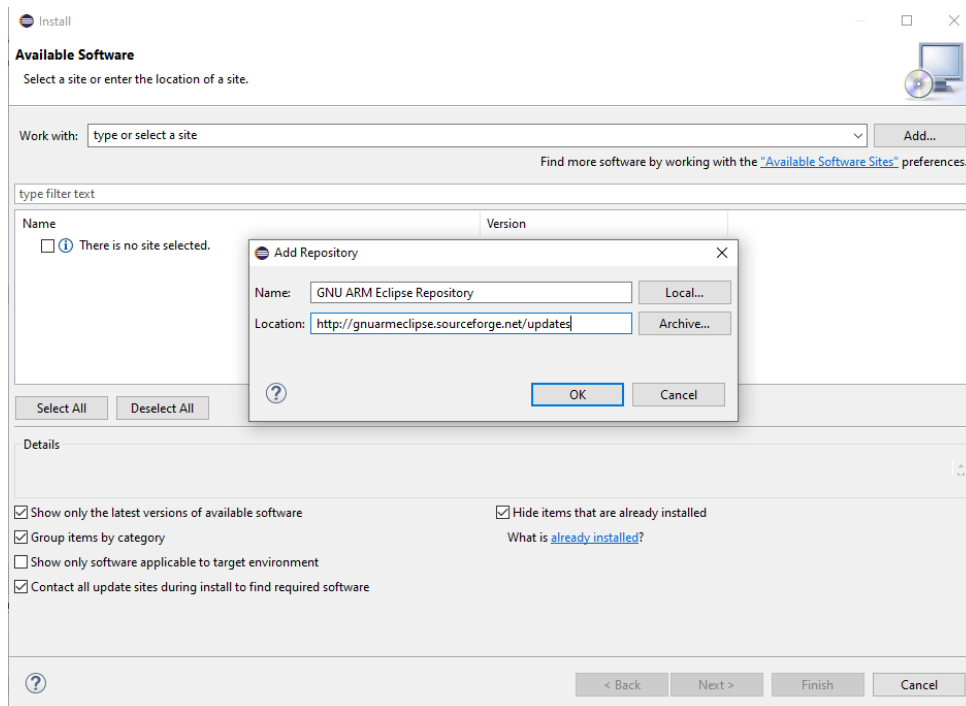
E verificar



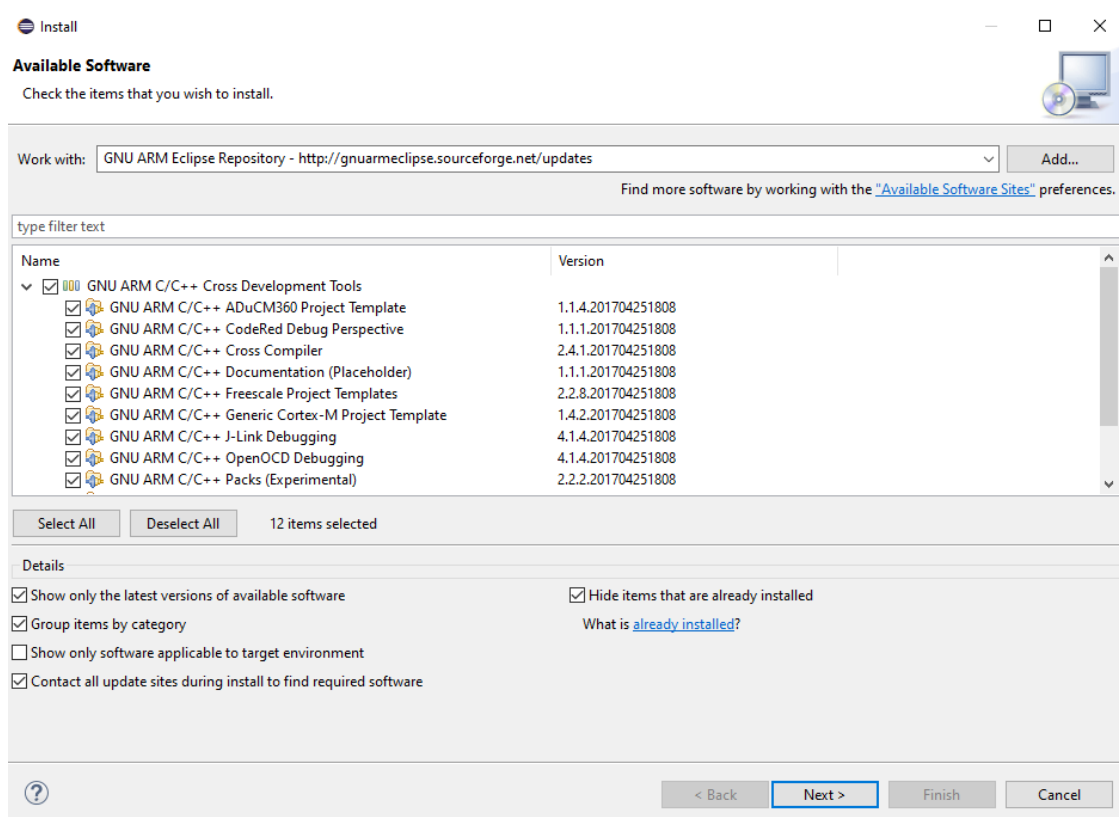
Agora é preciso incluir o repositório da ARM no eclipse para instalar as ferramentas de desenvolvimento . Desde o menu Help > Install New Software

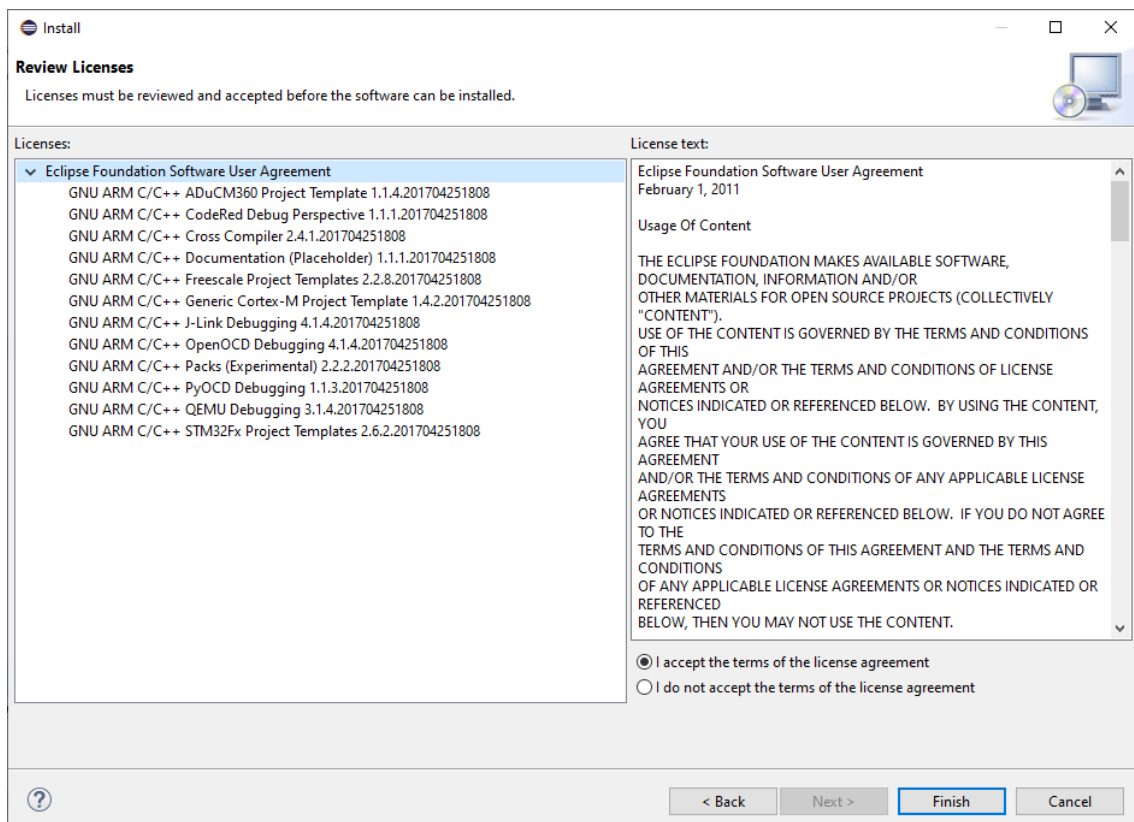
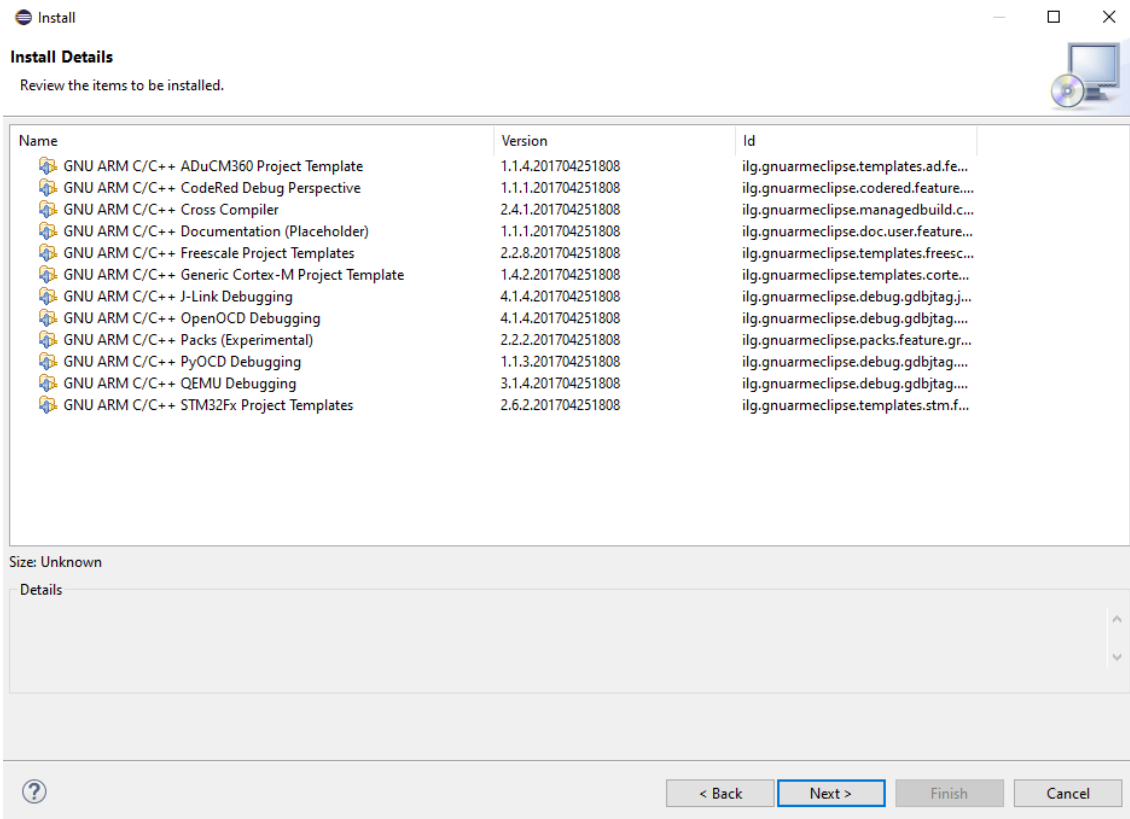


Agregar o nome GNU ARM Eclipse Repository e Endereço do repositório
<http://gnuarmclipse.sourceforge.net/updates>

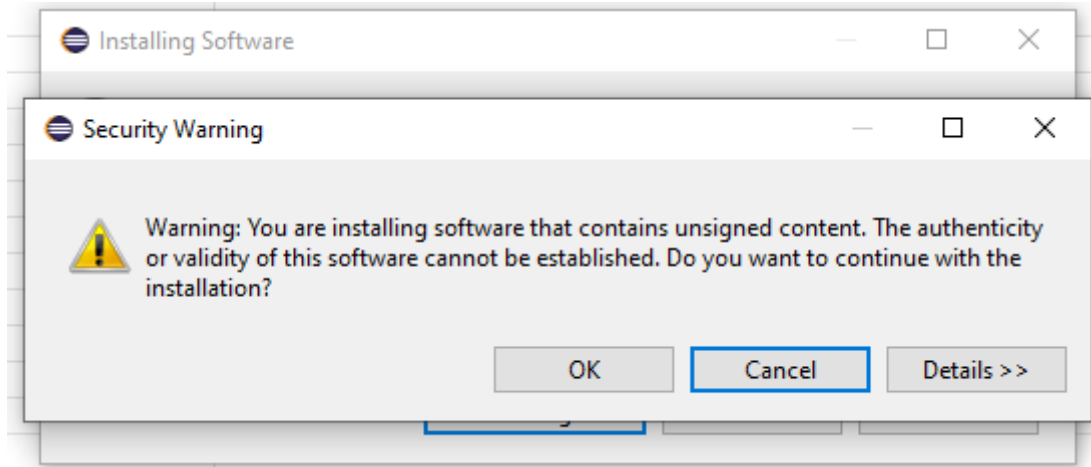


Verificar a instalação de todos os pacotes

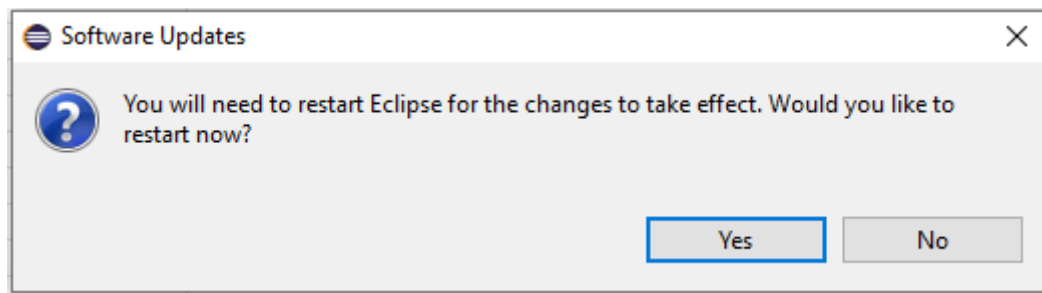




Aceitar o Warning



E restaurar Eclipse



7. Instalar Toolchain e Windows Build Tool (este ultimo somente para Windows)

Toolchain

No cmd usando o gestor de pacotes xPack e o comando

xpm install --global @gnu-mcu-eclipse/arm-none-eabi-gcc

```
Símbolo del sistema
C:\>xpm install --global @gnu-mcu-eclipse/arm-none-eabi-gcc
xPack manager - install package(s)

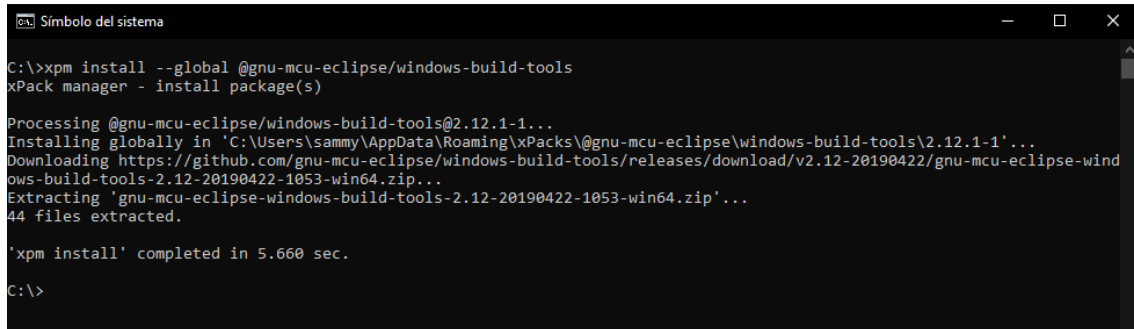
Processing @gnu-mcu-eclipse/arm-none-eabi-gcc@8.2.1-1.7.1...
Installing globally in 'C:\Users\sammy\AppData\Roaming\xPacks\@gnu-mcu-eclipse\arm-none-eabi-gcc\8.2.1-1.7.1'...
Downloading https://github.com/gnu-mcu-eclipse/arm-none-eabi-gcc/releases/download/v8.2.1-1.7/gnu-mcu-eclipse-arm-none-eabi-gcc-8.2.1-1.7-20190524-0603-win64.zip...
Extracting 'gnu-mcu-eclipse-arm-none-eabi-gcc-8.2.1-1.7-20190524-0603-win64.zip'...
3300 files extracted.

'xpm install' completed in 37.870 sec.
C:\>
```

Windows Build Tools

No cmd usando o gestor de pacotes xPack e o comando

xpm install --global @gnu-mcu-eclipse/windows-build-tools



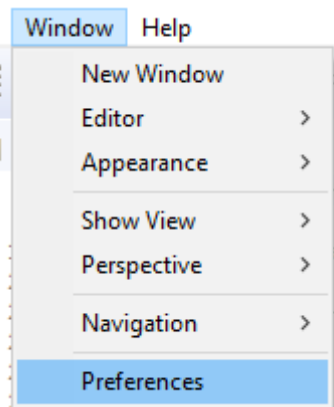
```
Símbolo del sistema
C:\>xpm install --global @gnu-mcu-eclipse/windows-build-tools
xPack manager - install package(s)

Processing @gnu-mcu-eclipse/windows-build-tools@2.12.1-1...
Installing globally in 'C:\Users\sammy\AppData\Roaming\xPacks\@gnu-mcu-eclipse\windows-build-tools\2.12.1-1'...
Downloading https://github.com/gnu-mcu-eclipse/windows-build-tools/releases/download/v2.12-20190422/gnu-mcu-eclipse-wind
ows-build-tools-2.12-20190422-1053-win64.zip...
Extracting 'gnu-mcu-eclipse-windows-build-tools-2.12-20190422-1053-win64.zip'...
44 files extracted.

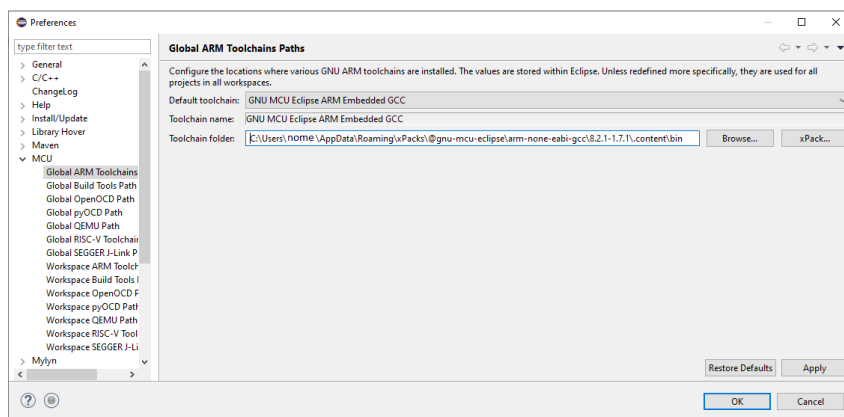
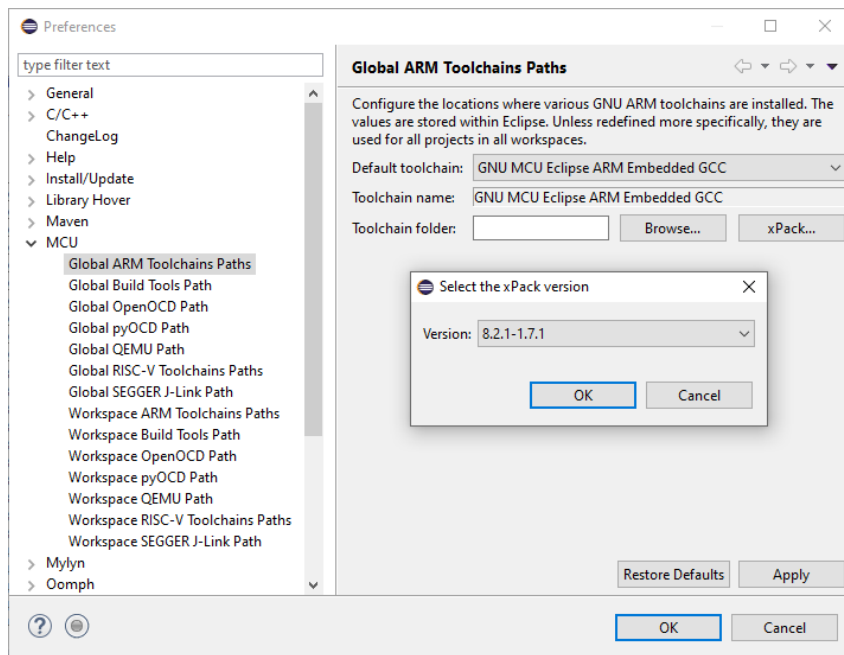
'xpm install' completed in 5.660 sec.
C:\>
```

8. Configurar rotas em Eclipse

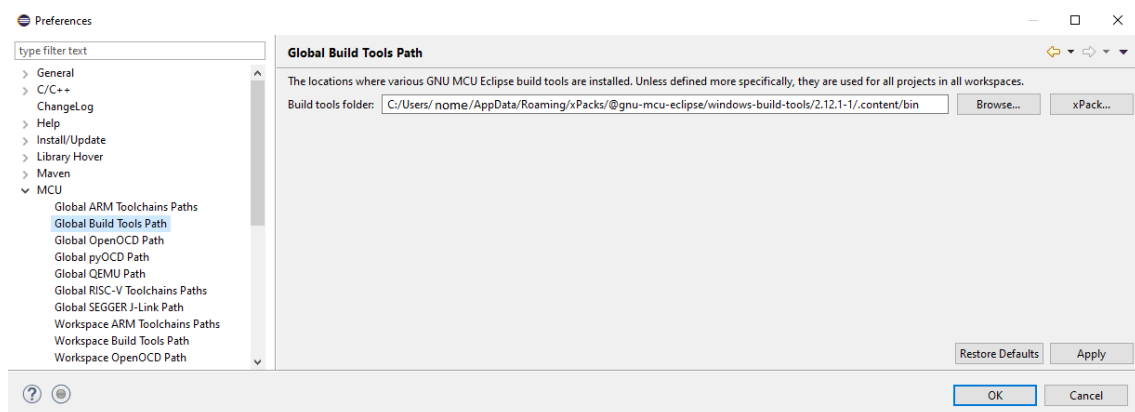
Abrir as Preferencias do IDE no menu Window > Preferences e indicar o caminho para os pacotes instalados no passo anterior.



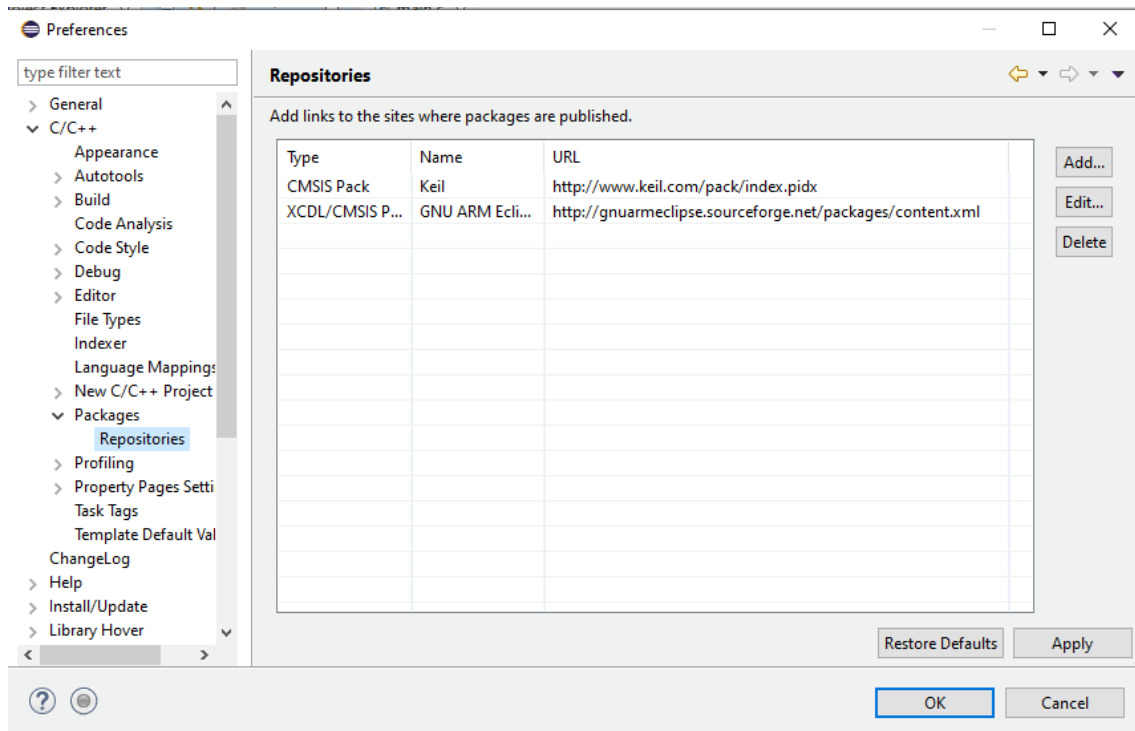
Para o toolchain no menu MCU > Global ARM Toolchains Paths basta com dar click no botão xPack, caso não reconheça ele ingressar manualmente o caminho com o botão Browse. Neste passo pode precisar mostrar as pastas ocultas para encontrar o caminho



Para as Windows Build Tools no menu MCU > Global Build Tools Paths também dar click no botão xPack, caso não reconheça ele ingressar manualmente o caminho com o botão Browse. Também pode precisar mostrar as pastas ocultas para encontrar o caminho



É recomendável também ajustar os paths no menu de repositórios do Eclipse



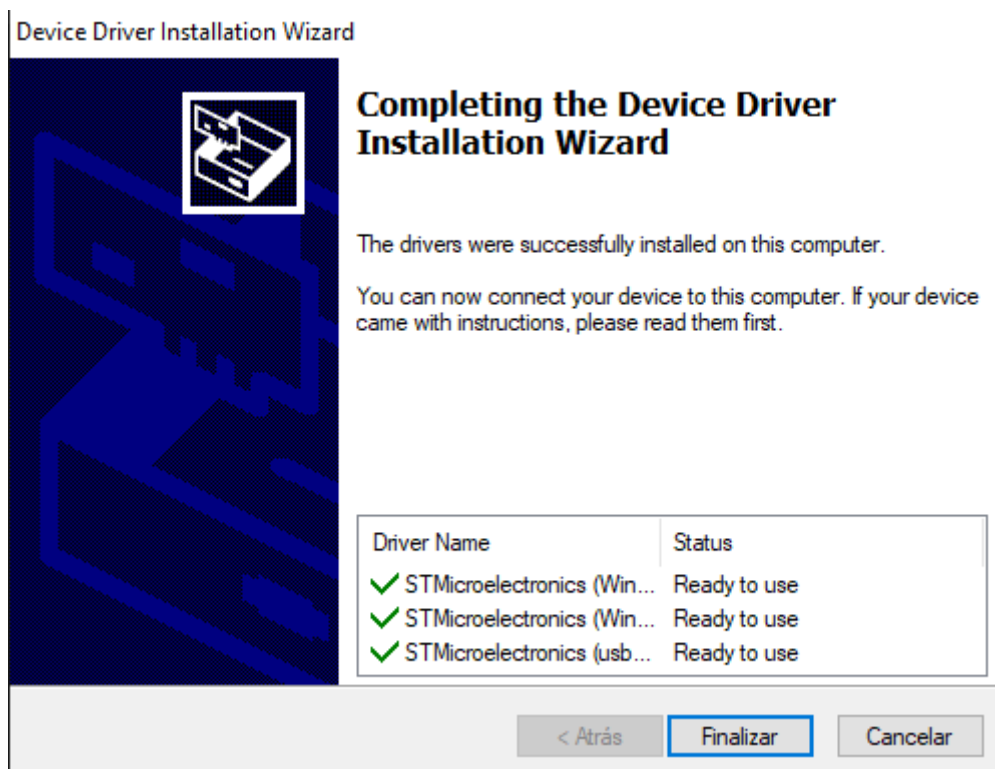
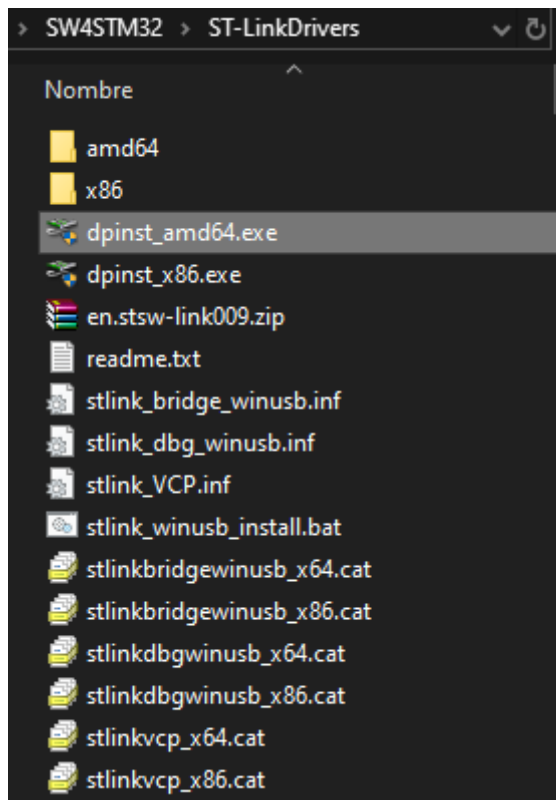
9. Configurar ferramentas para Debug

Baixar os drivers USB do ST-link desde o site da STM

<https://www.st.com/en/development-tools/stsw-link009.html>

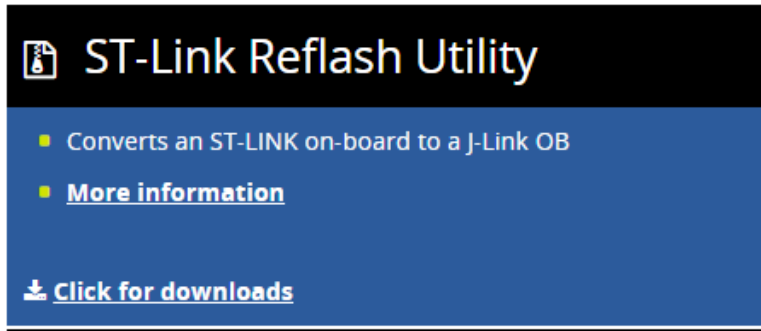
Part Number	Supplier	Download
+ STSW-LINK009	ST	Get Software

Descomprimir arquivos e instalar eles executando como administrador o arquivo “dpinst_amd64.exe”



É preciso também flashear o firmware do ST-Link para o J-Link. Para isto baixar a ferramenta ST-Link Reflash Utility do site de Segger

<https://www.segger.com/downloads/jlink/#J-LinkSoftwareAndDocumentationPack>



Esta é uma aplicação que se executa por consola. É preciso aceitar os termos e inserir a opção [1] para fazer o upgrade do J-Link, e depois [0] para fechar.

```
D:\MuGoL\ProGraMas\STM\SW4STM32\ST-LinkReflashUtility\STLinkReflash.exe

(c) 2016 SEGGER Microcontroller GmbH & Co. KG    www.segger.com
STLinkReflash compiled Aug 12 2019 10:30:05

The following terms come from SEGGER Microcontroller GmbH & Co. KG ("SEGGER")
You must agree to them in order to proceed.

=====
* IMPORTANT *
This utility enables You to replace the firmware of an existing ST-LINK
on-board with firmware from SEGGER that makes the ST-LINK on-board
behave J-Link compatible. You do this replacement at Your own risk.
Though extremely unlikely, You are aware that the replacement process may
result in an unusable ST-LINK on-board. The utility and firmware from SEGGER
are provided on an as-is basis and come without any warranty
and without support.
You further agree to only use the firmware provided by SEGGER via this utility,
within the bounds of the license stated on the download page:
https://www.segger.com/jlink-st-link.html
Except as expressly set forth in this agreement,
the Agreement remains unchanged and continues in full force and effect.

=====

I hereby accept the terms provided by SEGGER.
(A)ccept / (D)ecline
Selection>a
```

```
=====

I hereby accept the amendment to the Evaluation Board License Agreement
provided by STMICROELECTRONICS ("ST")(A)ccept / (D)ecline
Selection>a

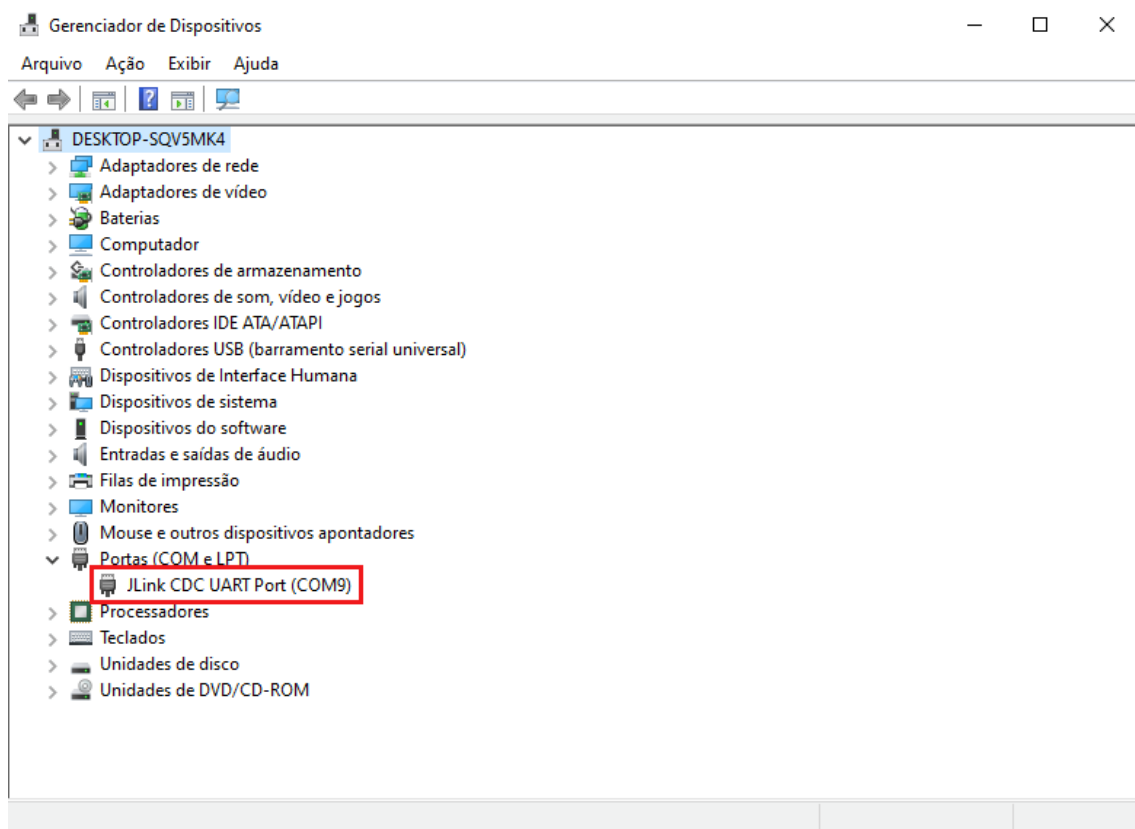
[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>1
```

```
=====

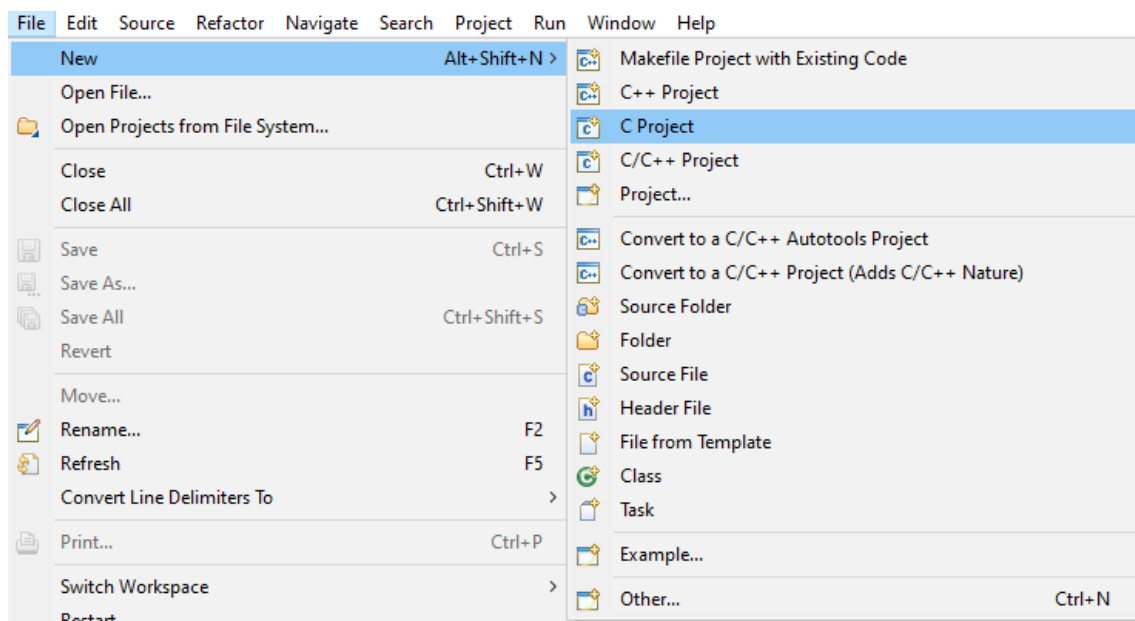
I hereby accept the amendment to the Evaluation Board License Agreement
provided by STMICROELECTRONICS ("ST")(A)ccept / (D)ecline
Selection>a

[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>0
```

Uma vez pronta a atualização do firmware o dispositivo vai aparecer no gerenciador de dispositivos



10. Criar projeto de teste



C Project

Create C project of selected type

Project name:

☒ Use default location

Location:

Choose file system:

Project type:

- GNU Autotools
 - Executable
 - Empty Project
 - Ac6 STM32 MCU Project
 - Hello World ANSI C Project
 - Hello World ARM C Project
 - Hello World RISC-V C Project
 - ADuCM36x C/C++ Project
 - Hello World ARM Cortex-M C/C++ Project**
 - Freescall Kinetis KLxx C/C++ Project
 - Freescall Processor Expert C/C++ Project
 - SiFive RISC-V C/C++ Project
 - STM32F0xx C/C++ Project
 - STM32F10x C/C++ Project
 - STM32F2xx C/C++ Project
 - STM32F3xx C/C++ Project
 - STM32F4xx C/C++ Project
 - STM32F7xx C/C++ Project

Toolchains:

- Cross ARM GCC

☒ Show project types and toolchains only if they are supported on the platform

C Project

Target processor settings

Select the target processor family and define flash and RAM sizes.

Processor core:

Clock (Hz):

Flash size (kB):

RAM size (kB):

Use system calls:

Trace output:

Check some warnings ☒

Check most warnings ☐

Enable -Werror ☐

Use -Og on debug ☒

Use newlib nano ☒

Use link optimizations ☐

C Project

Folders
Define the project folders.

Include folder:

include

Source folder:

src

System folder:

system

CMSIS library folder:

cmsis

C library folder:

newlib

Linker scripts folder:

ldscripts

Vendor CMSIS name:

DEVICE

?

< Back

Next >

Finish

Cancel

C Project

Select Configurations
Select platforms and configurations you wish to deploy on

Project type: Executable
Toolchains: Cross ARM GCC
Configurations:

☒ Debug

☒ Release

Select all

Deselect all

Advanced settings...

Use "Advanced settings" button to edit project's properties.
Additional configurations can be added after project creation.
Use "Manage configurations" buttons either on toolbar or on property pages.

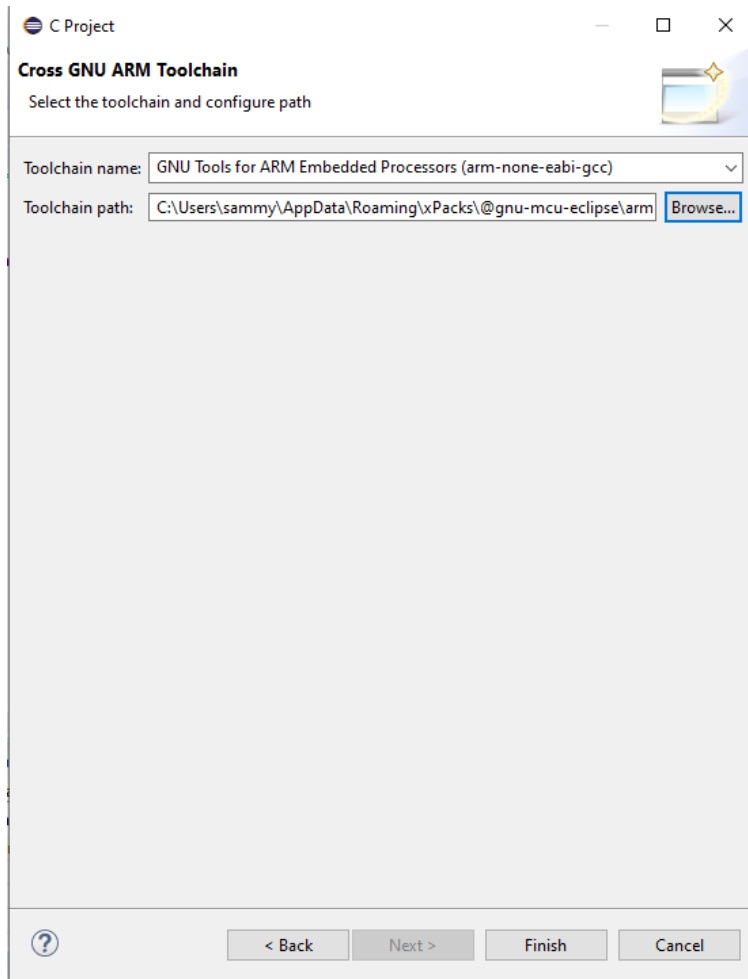
?

< Back

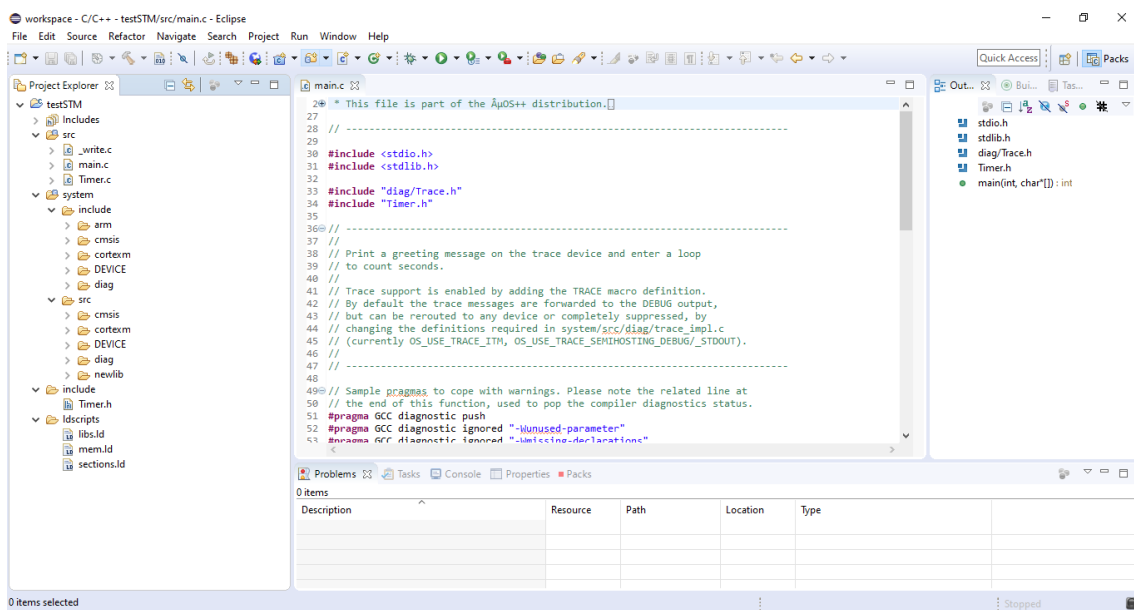
Next >

Finish

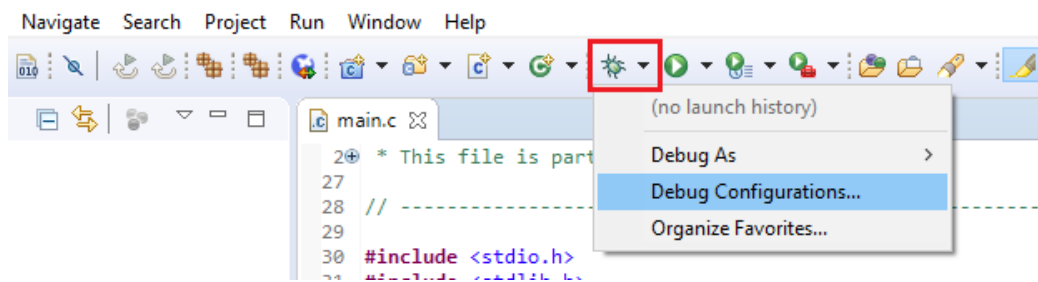
Cancel



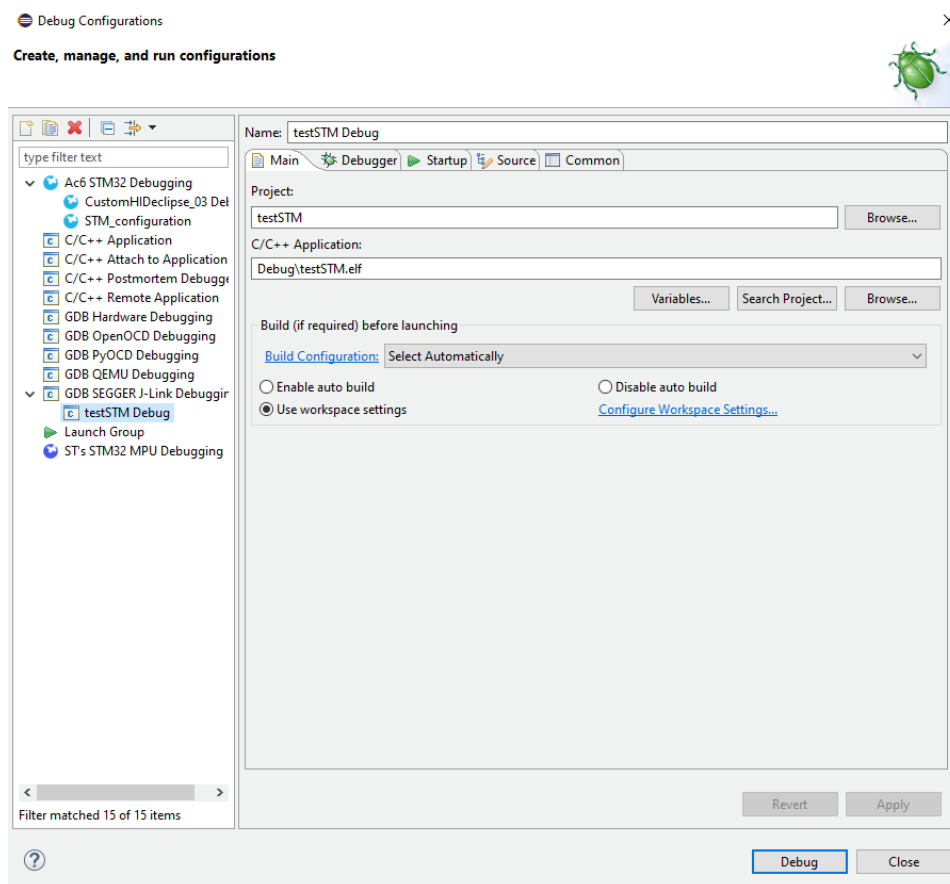
Lo que vai criar um projeto com a seguinte estrutura



Para gravar na placa STM se configura o Debug



Y se cria uma nova configuração dando doble click na opção GDB SEGGER J-Link Debugging



Links de Referencia

<https://gnu-mcu-eclipse.github.io/>

<https://www.youtube.com/watch?v=VtjMGCyLEuA>

https://www.st.com/content/st_com/en.html

<https://nodejs.org/en/>

<https://chocolatey.org/>

<https://www.segger.com/>

