GigaDevice Semiconductor Inc.

GD32 MCU Eclipse development environment setup tutorial for Windows

Application Note
AN068

Table of Contents

List of Figures

List of Tables

1.   Introduction

This guide introduces how to set up the GD32 Eclipse development environment. Applicable to all GD32 MCUs.

2.   Development environment preparation

- Operating system: WIN7 / WIN10 64-bit OS
- IDE: Eclipse IDE for GNU ARM & RISC-V C/C++ Developers
- Cross toolchains: arm-none-eabi-gcc / riscv-none-embed-gcc
- Build Tools: GNU MCU Eclipse build tools
- GDB server: OpenOCD / J-Link GDB Server

3. Tool installation instructions

3.1. Cross toolchains installation

3.1.1. ARM cross toolchains installation

■ **Download the xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip**

Visit *https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/* to choose to download different versions of the ARM cross toolchains.

In this guide, choose to download xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip and the download address is : *https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/tags*
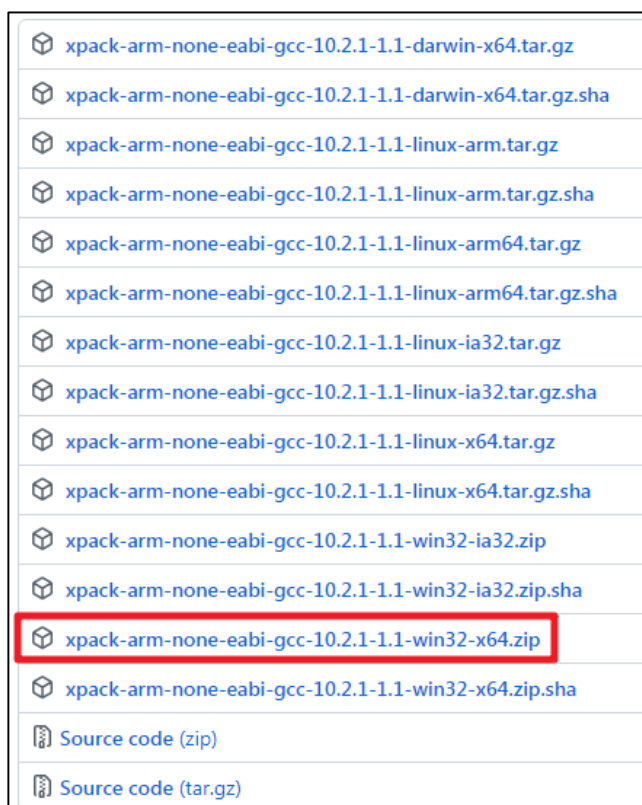
Figure 3-1. Download ARM cross toolchains

3.1.2. RISC-V cross toolchains installation

■ **Download the xpack-riscv-none-embed-gcc-10.1.0-1.1-win32-x64.zip**

Visit *https://xpack.github.io/riscv-none-embed-gcc/releases/* to choose to download different versions of the RISC-V cross toolchains.

In this guide, choose to download xpack-riscv-none-embed-gcc-10.1.0-1.1-win32-x64.zip and the download address is : ***https://github.com/xpack-dev-tools/riscv-none-embed-gcc-xpack/releases/tag/v10.1.0-1.1/***

Figure 3-2. Download RISC-V cross toolchains-1
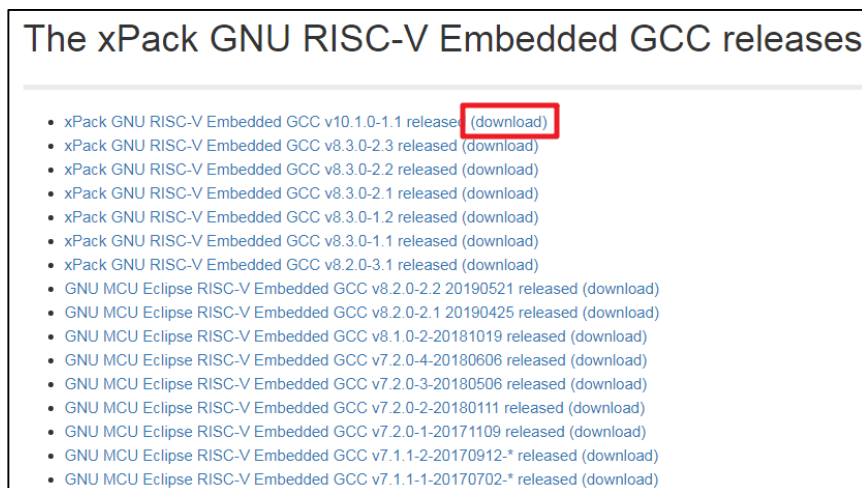
Figure 3-3. Download RISC-V cross toolchains-2
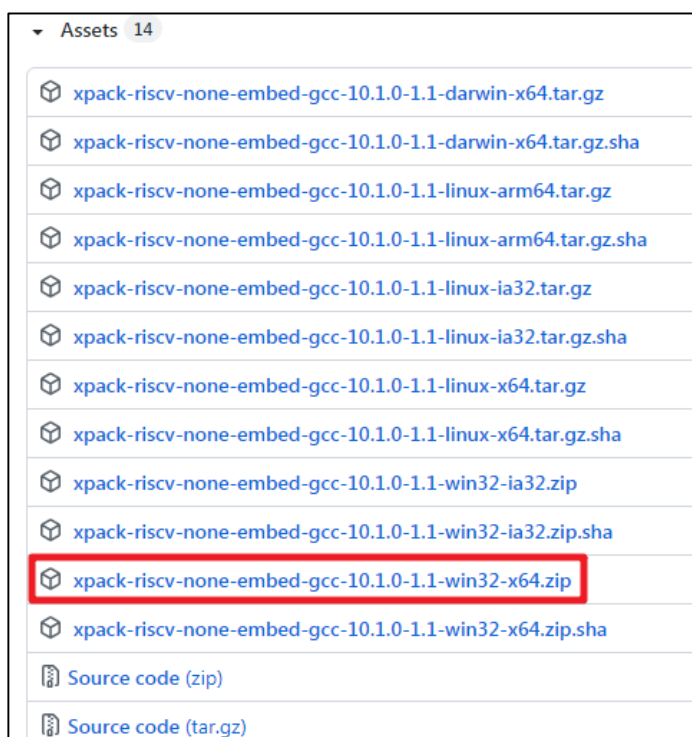
3.2.   Build Tools installation

■   **Download the xpack-windows-build-tools-4.2.1.2-win32-x64.zip**

Visit ***https://xpack.github.io/windows-build-tools/releases/*** to choose to download different versions of the Build tools.

In this guide, choose to download xpack-windows-build-tools-4.2.1.2-win32-x64.zip and the download address is : ***https://github.com/xpack-dev-tools/windows-build-tools-xpack/releases/tag/v4.2.1-2/***

Figure 3-4. Download Build Tools-1
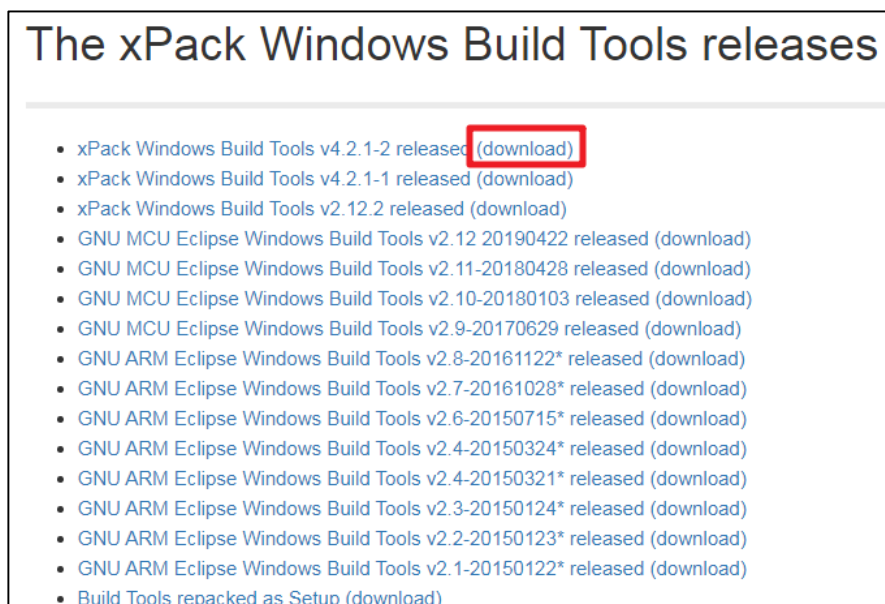
Figure 3-5. Download Build Tools-2
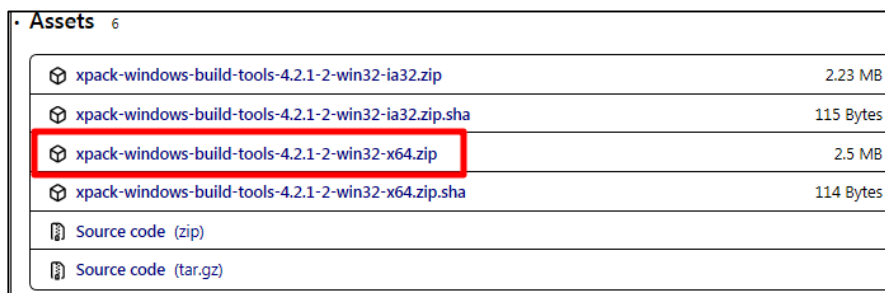
3.3.   Eclipse IDE installation

3.3.1.   JDK installation

■   **Download the *jdk-8u202-windows-x64.exe***

Eclipse needs to run in Java environment, so user need to install JDK before inst alling Eclipse. Visit ***http://www.oracle.com/technetwork/java/javase/downloads/java-archive-javase8-2177648.html*** to choose to download different versions of JDK tools.

In this guide, choose to download and install jdk-8u202-windows-x64.exe.

Figure 3-6. Download JDK-1

| Windows x64 | 211.58 MB | ↓ jdk-8u202-windows-x64.exe |
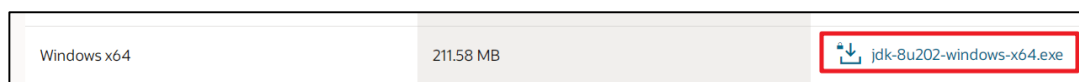
Before the file can be downloaded, user must accept the license agreement.

Figure 3-7. Download JDK-2

You must accept the Oracle Binary Code License Agreement for the Java SE Platform Products to download this software.

☑ I reviewed and accept the Oracle Binary Code License Agreement for the Java SE Platform Products
Required

You will be redirected to the login screen in order to download the file.

Download jdk-8u202-windows-x64.exe ↓
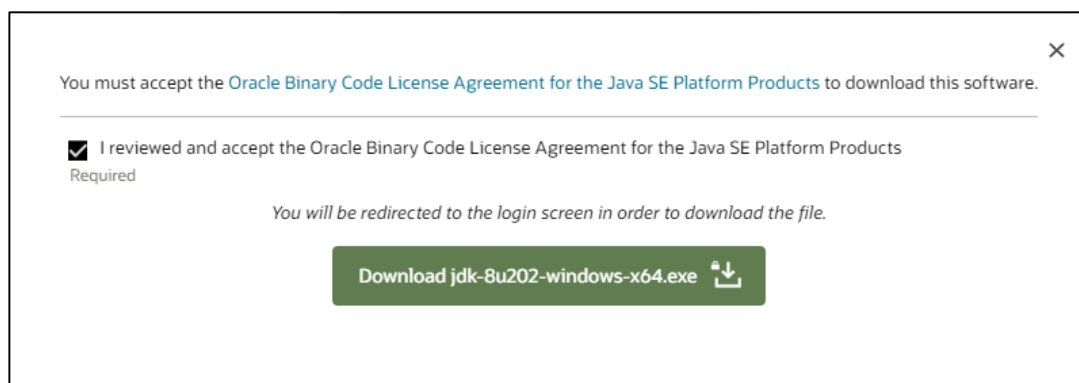
◼ **Install the *jdk-8u202-windows-x64.exe***

Open the CMD window and type java -version to test whether the JDK is installed correctly. If the JDK has been installed correctly, user can get similar output as shown in *Figure 3-8. JDK version test*.

Figure 3-8. JDK version test

```
C:\Users\▮▮▮.▮>java -version
java version "1.8.0_202"
Java(TM) SE Runtime Environment (build 1.8.0_202-b08)
Java HotSpot(TM) 64-Bit Server VM (build 25.202-b08, mixed mode)
```

3.3.2. Eclipse IDE for GNU ARM & RISC-V C/C++ Developers installation

◼ ***Download the eclipse-embedcpp-2021-03-R-win32-x86_64.zip***

Visit ***https://eclipse-embed-cdt.github.io/packages/releases/*** to download different v ersions of Eclipse IDE.

In this guide, choose to download and install eclipse-embedcpp-2021-03-R-win32-x86_64.zip.

The download address is:

https://www.eclipse.org/downloads/download.php?file=/technology/epp/downloads/r elease/2021-03/R/eclipse-embedcpp-2021-03-R-win32-x86_64.zip

Figure 3-9. Download Eclipse-1

Eclipse packages releases

Eclipse IDE for Embedded C/C++ Developers 2021-03 released
- Eclipse IDE for Embedded C/C++ Developers 2020-12 released
- Eclipse IDE for Embedded C/C++ Developers 2020-09 released
- Eclipse IDE for Embedded C/C++ Developers 2020-06 released
- Eclipse IDE for Embedded C/C++ Developers 2020-03 released

Figure 3-10. Download Eclipse-2

Download
- Windows x86_64 zip (sha)
- macOS x86_64 tar.gz (sha)
- macOS x86_64 dmg (sha)
- Linux x86_64 tar.gz (sha)
- Linux AArch64 tar.gz (sha) <– NEW! Runs on Raspberry Pi OS 64-bit

Figure 3-11. Download Eclipse-3

⬇ Download

Download from: China - TUNA (https)

File: eclipse-embedcpp-2021-03-R-win32-x86_64.zip   SHA-512

\>> Select Another Mirror
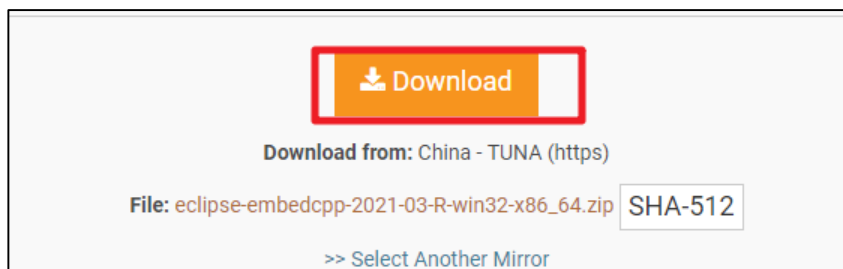
3.4. Debug Tools driver installation

3.4.1. OpenOCD installation

■ **Download the *OpenOCD.exe***

OpenOCD software does not need to be installed, just open and use. The OpenOCD software for GD32 MCU can be obtained from the original GD factory.

3.4.2. Segger J-Link installation

■ **Download the J-Link software**

Visit ***https://www.segger.com/downloads/jlink#Documentation*** to download different versions of J-Link drivers.

In this guide, choose to download and install J-LinkV7.54b.

Figure 3-12. Download J-Link driver

After the download is completed, just install it directly.

4. Eclipse startup and configurations

4.1. Create worksapce

The Eclipse software itself is a green software and does not need to be installed. Just double-click the eclipse.exe in the eclipse folder to start Eclipse, as shown in ***Figure 4-1. Eclipse IDE Launcher***.

Figure 4-1. Eclipse IDE Launcher
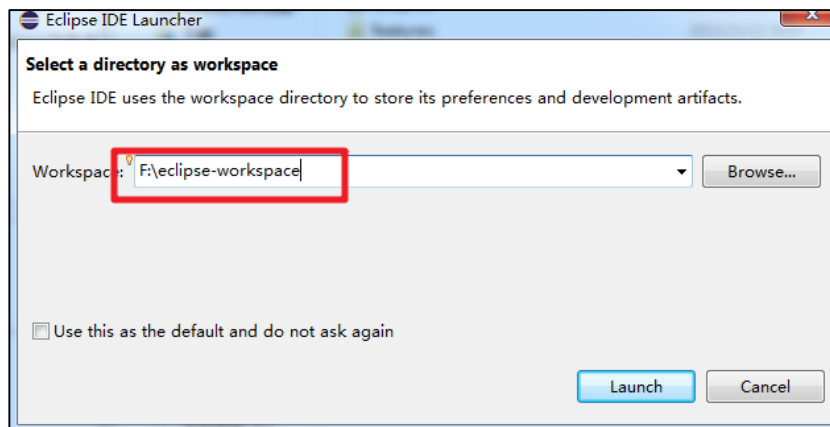
As shown in ***Figure 4-1. Eclipse IDE Launcher***, select the local English path to create a workspace. Click Launch. (Note: the path depth can not be too deep)

After entering the welcome interface, user can choose to close the welcome in the upper left corner or open the workbench icon in the upper right corner to enter the main interface.

Figure 4-2. Eclipse workspace
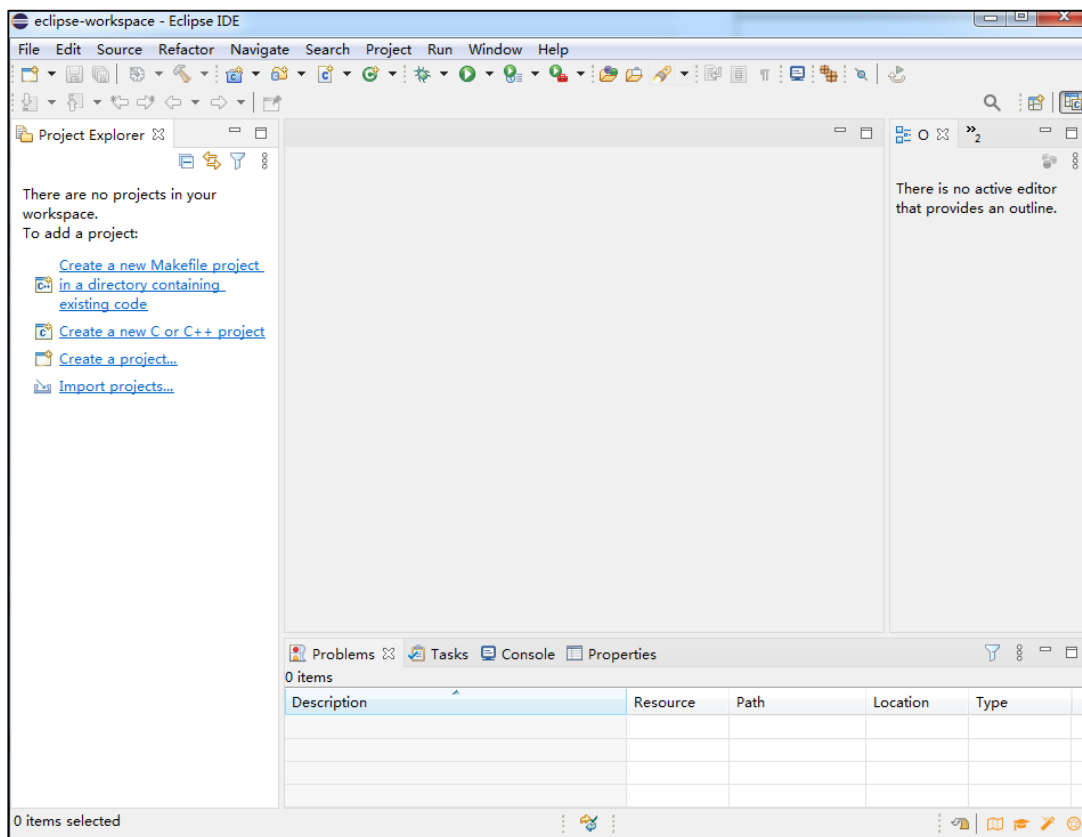
Multiple projects can be contained in the same workspace.

4.2.   Set Build Tools path

Create an eclipse_toolchain folder under the eclipse installation path. Decompress the ARM/RISCV cross-compilation chain, Build tool and OpenOCD downloaded in ***Tool installation instructions*** and place them in this folder.

Figure 4-3. eclipse_toolchain folder
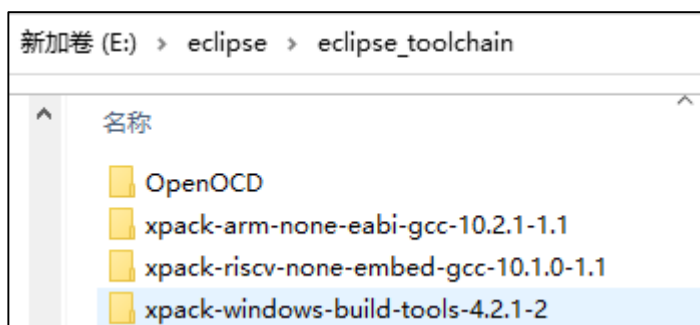
Open "Winodow->Preferences" option.

Figure 4-4. Eclipse Window Perferences option
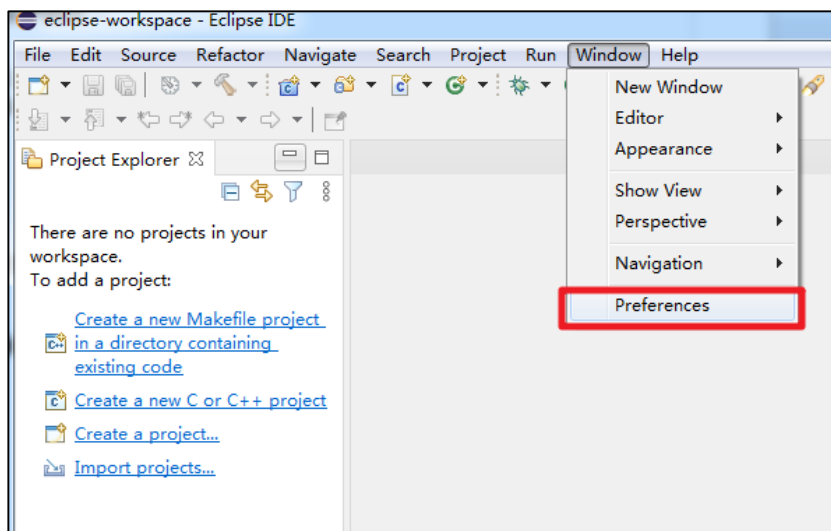
Select "MCU->Global Build Tools Path" option to set the global build tool path :
${eclipse_home}\eclipse_toolchain\xpack-windows-build-tools-4.2.1-2\bin

Figure 4-5. Set Build Tools path
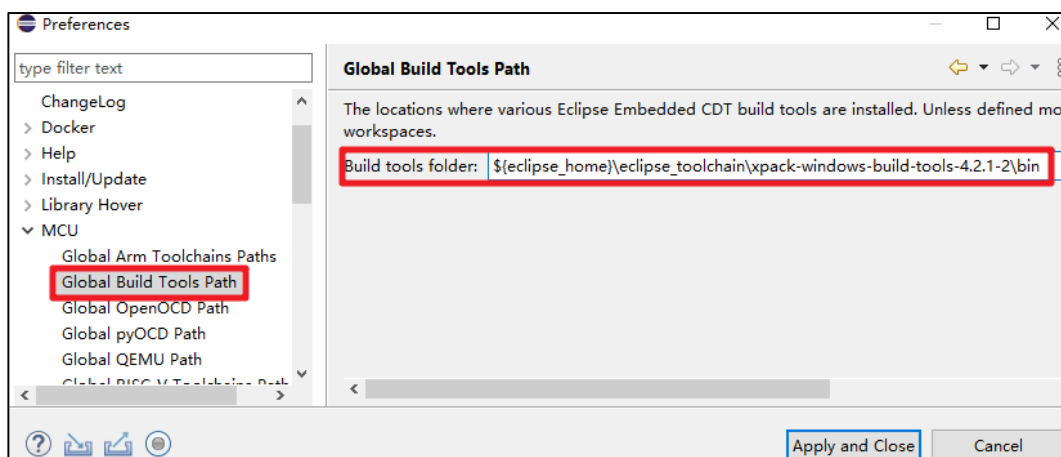
Note: The path configured here is configured as a relative path.

4.3. Set ARM Toolchains path

Select "MCU->Global Arm Toolchains Path" option to set the Arm Toolchains path :
${eclipse_home}\eclipse_toolchain\xpack-arm-none-eabi-gcc-10.2.1-1.1\bin

Figure 4-6. Set ARM Toolchains path
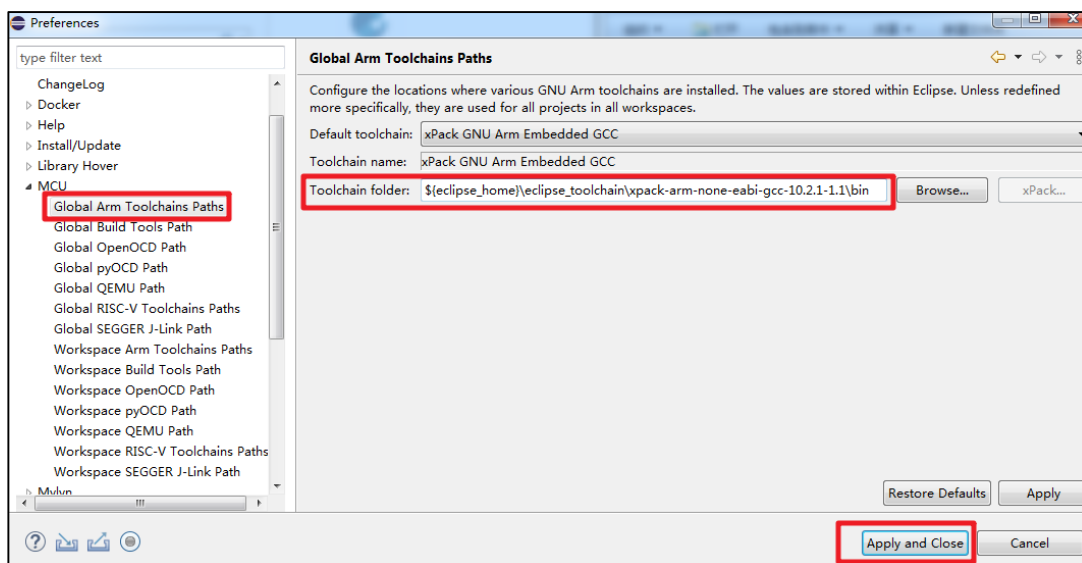
Note: The path configured here is configured as a relative path.

4.4. Set RISC-V Toolchains path

Select "MCU->Global RISC-V Toolchains Path" option to set the RISC-V Toolchains path : ${eclipse_home}\eclipse_toolchain\xpack-riscv-none-embed-gcc-10.1.0-1.1\bin

Figure 4-7. Set RISC-V Toolchains path
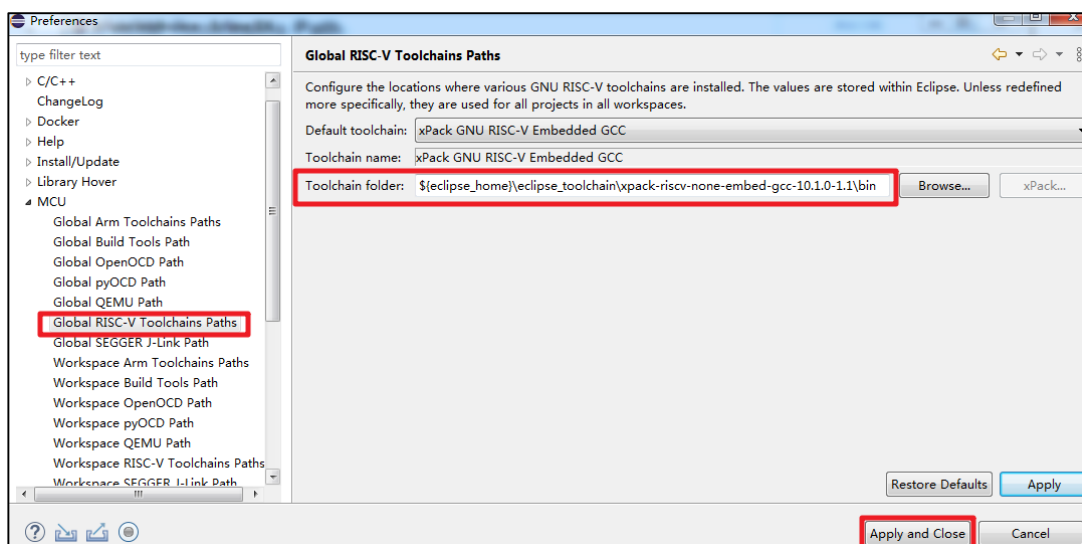
Note: The path configured here is configured as a relative path.

4.5. Set OpenOCD path

Select "MCU->Global OpenOCD Path" option to set the OpenOCD path : ${eclipse_home}\eclipse_toolchain\OpenOCD\bin

Figure 4-8. Set OpenOCD path
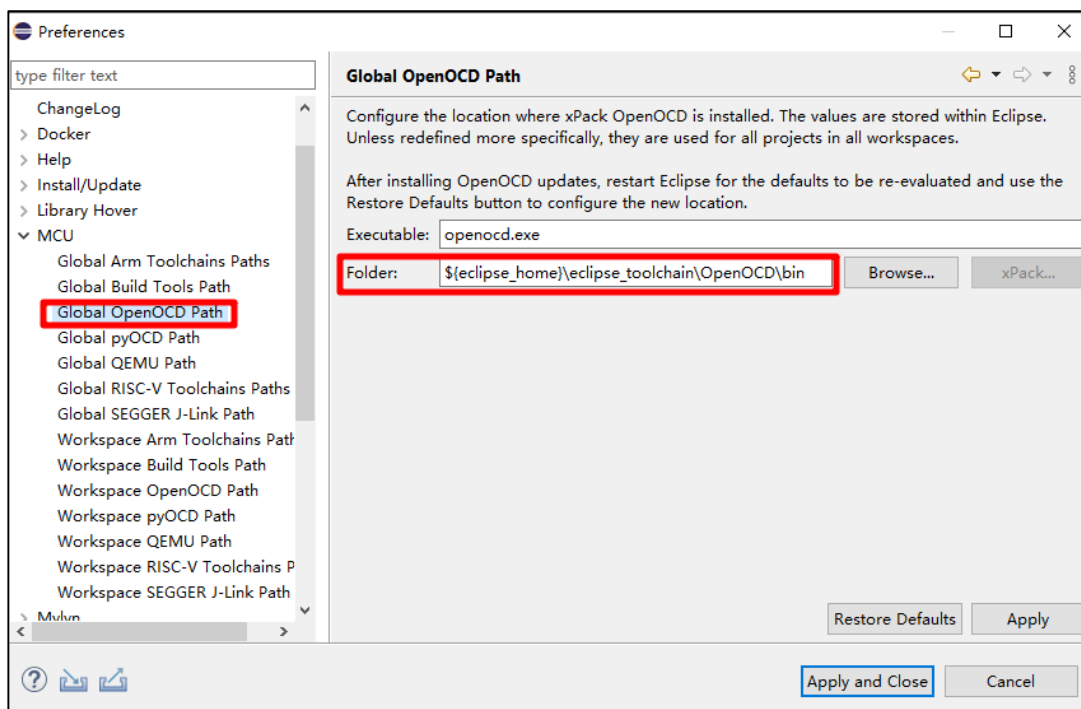
Note: The path configured here is configured as a relative path.

4.6. Set SEGGER J-Link path

Select "MCU->Global SEGGER J-Link Path" option to set the SEGGER J-Link path. Here select the local absolute path, in this paper the path is D:\Program Files\SEGGER\JLink.

Figure 4-9. Set SEGGER J-Link Path
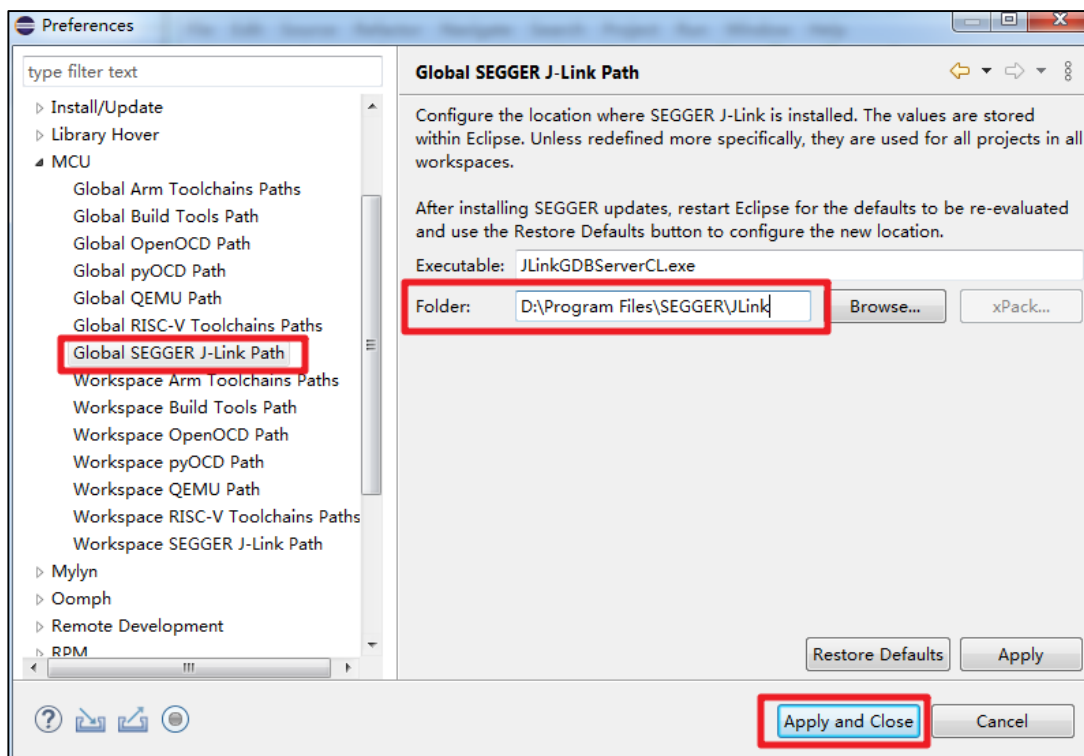
At this point, all the configurations of Eclipse IDE have been completed, and user can use the configured Eclipse to develop GD32 ARM/RISC-V projects.

5. Revision history

Table 5-1. Revision history

Revision No.	Description	Date
1.0	Initial Release	May.30 2022

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