APPLICATION NOTE

Eclipse Environment Setup

A-MCUAP3-ANGA03EN v1.1

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Revision History

Revision	Date	Description
1.0	2019	Released with AmbiqSuite SDK
1.1	April 11, 2022	Updated template

Reference Documents

Document ID	Description

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Introduction

The open source Eclipse IDE is not formally supported in AmbiqSuite SDK and only limited tests are performed. AmbiqSuite does support GCC makefiles and all examples compiled and tested in the environment. This application note provides a step-by-step procedure to setup Eclipse development and debugging environment on machines running Windows operating systems. In this document, Windows 10 64-bit is used an example. It outlines the open source tools that need to be downloaded, but the user should keep in mind that these tools change quite rapidly and some research may be required to get the latest versions.

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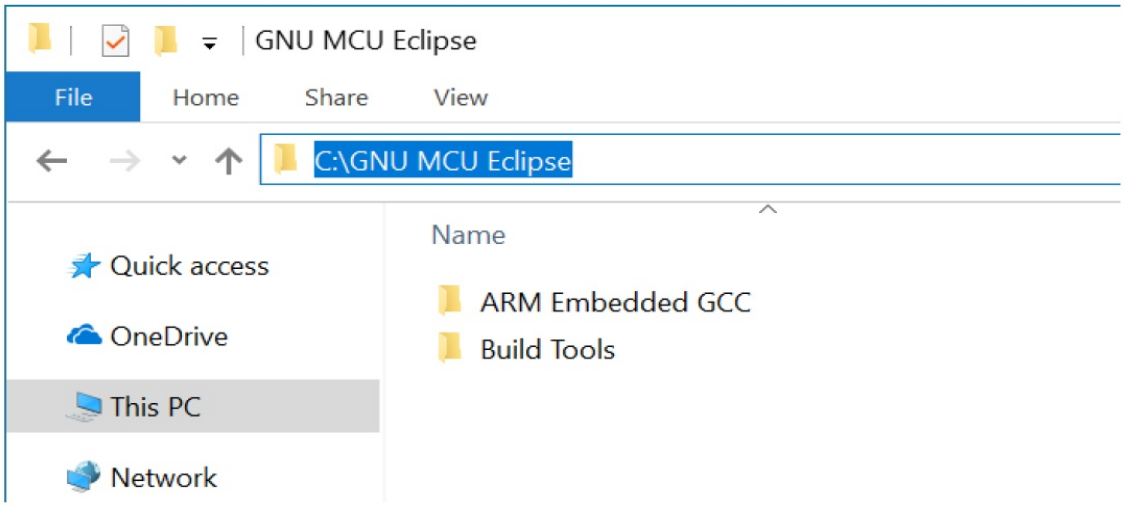
Installation

Use the following procedure to install:

1. Java Runtime Environment (JRE) or Java Development Kit (JDK)
   - JRE is sufficient for our usage.
   - https://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html
   - Make sure JRE is in Windows environment variable Path.
2. GNU MCU Eclipse Arm Embedded GCC
   - Download from https://github.com/gnu-mcu-eclipse/arm-none-eabi-gcc/releases/
   - Extract and place it to a proper location and add this path to Windows environment variable Path.
3. GNU MCU Eclipse Windows Build Tools
   - Download from https://github.com/gnu-mcu-eclipse/windows-build-tools/releases
   - Extract and place it to a proper location.

   For example:



4. GNU MCU Eclipse IDE for C/C++ Developers
   - Download from https://github.com/gnu-mcu-eclipse/org.eclipse.epp.packages/releases. Make sure the version matches the installed JRE, both 32-bit version or 64-bit.
   - Extract and place it to a proper location.
5. J-Link Software and Documentation pack for Windows
   - Download from https://www.segger.com/downloads/jlink/#J-LinkSoftwareAndDocumentationPack and install it.

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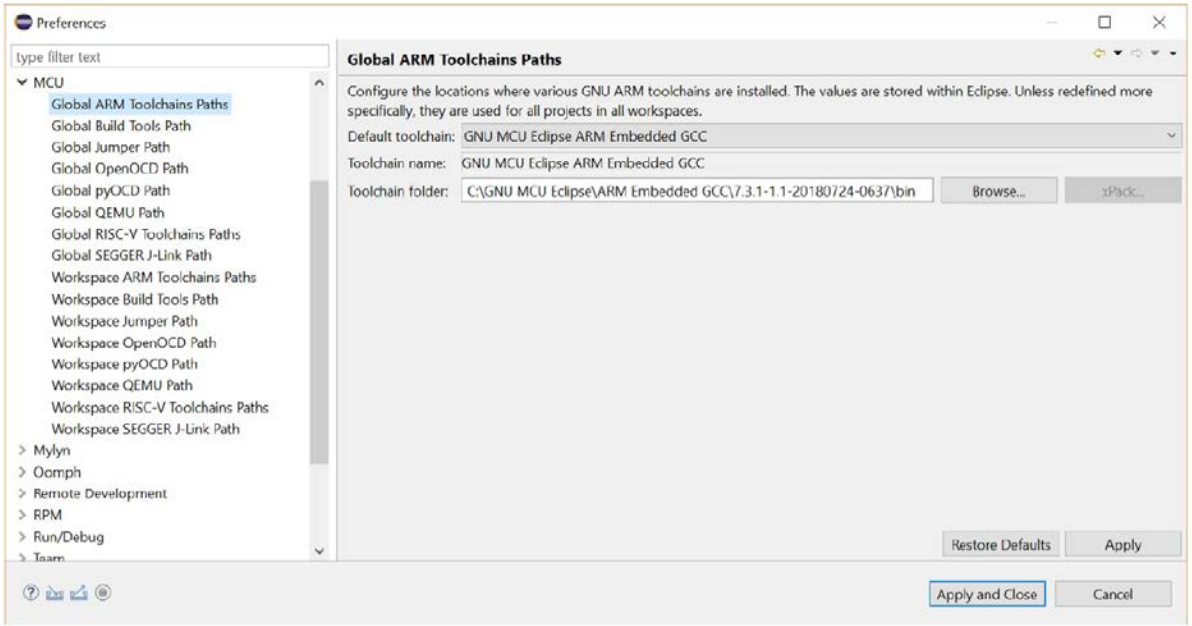
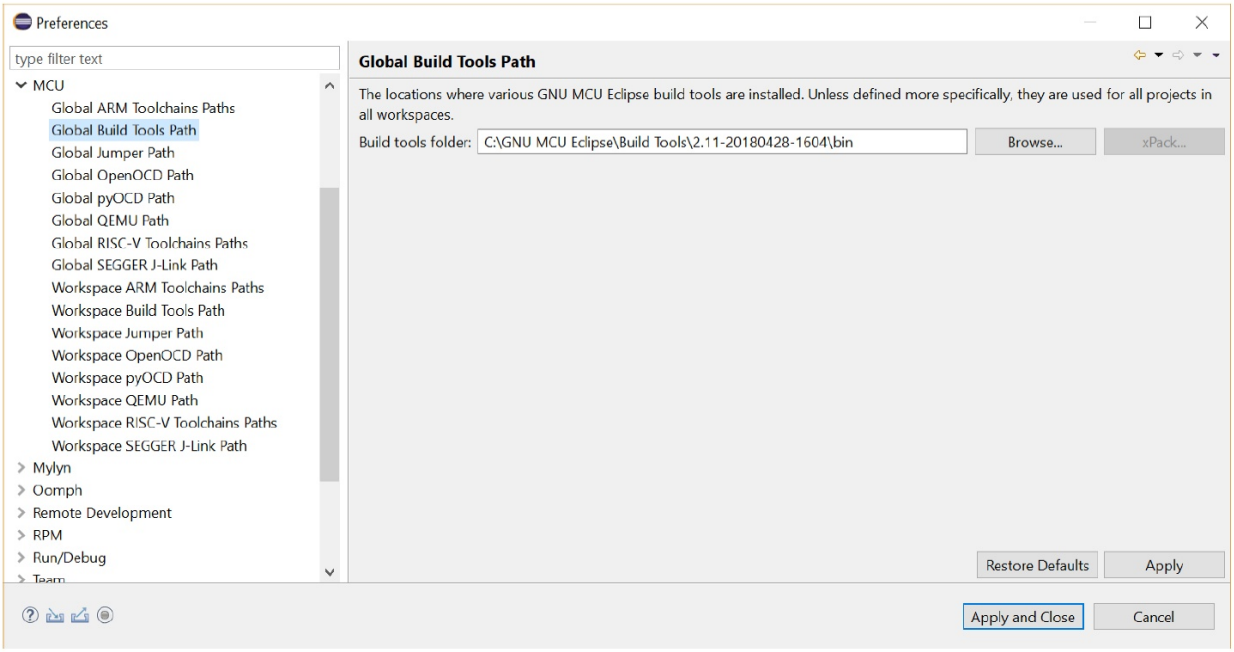
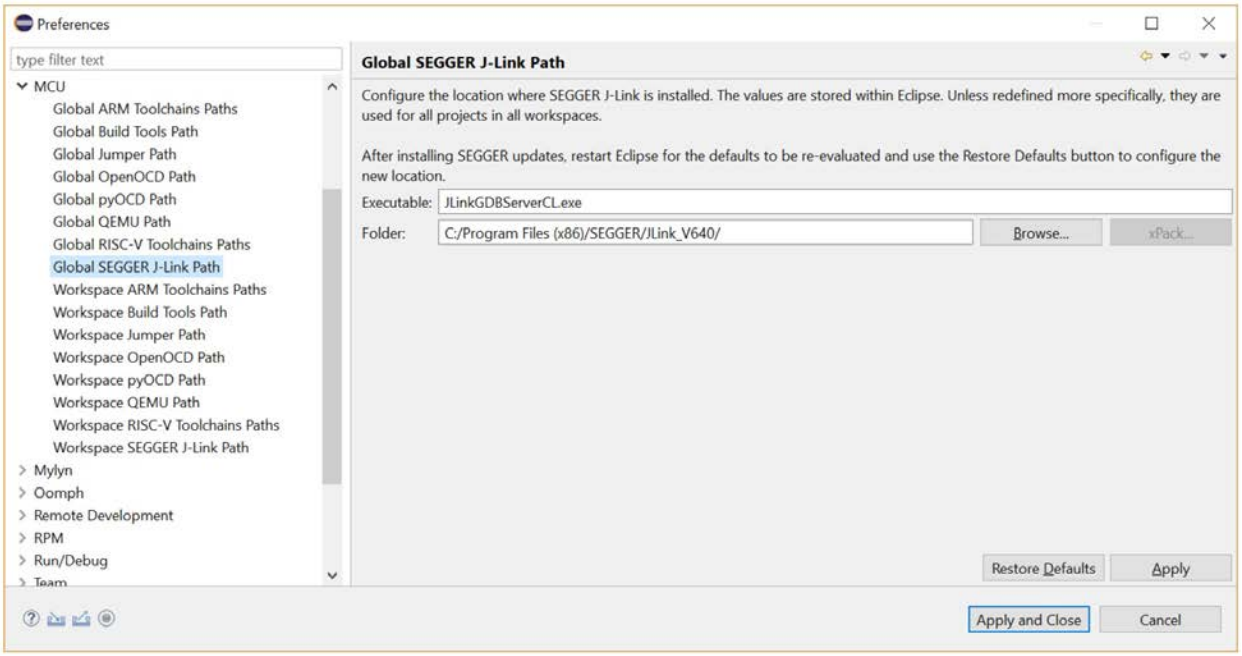
Eclipse Setup

Use the following procedure to setup Eclipse:

1. Launch Eclipse and you will be asked to setup a workspace which can be anywhere.
2. In Eclipse, navigate to **Window** > **Preferences**. In the left panel, unfold MCU and configure Global Arm Toolchains Paths, Global Build Tools Path and Global SEGGER J-Link Path.




Preferences
type filter text
MCU
Global ARM Toolchains Paths
Global Build Tools Path
Global Jumper Path
Global OpenOCD Path
Global pyOCD Path
Global QEMU Path
Global RISC-V Toolchains Paths
Global SEGGER J-Link Path
Workspace ARM Toolchains Paths
Workspace Build Tools Path
Workspace Jumper Path
Workspace OpenOCD Path
Workspace pyOCD Path
Workspace QEMU Path
Workspace RISC-V Toolchains Paths
Workspace SEGGER J-Link Path
Mylyn
Oomph
Remote Development
RPM
Run/Debug
Team
Global Build Tools Path
The locations where various GNU MCU Eclipse build tools are installed. Unless defined more specifically, they are used for all projects in all workspaces.
Build tools folder: C:\GNU MCU Eclipse\Build Tools\2.11-20180428-1604\bin
Browse...
xPack...
Restore Defaults
Apply
Apply and Close
Cancel


Preferences
type filter text
MCU
Global ARM Toolchains Paths
Global Build Tools Path
Global Jumper Path
Global OpenOCD Path
Global pyOCD Path
Global QEMU Path
Global RISC-V Toolchains Paths
Global SEGGER J-Link Path
Workspace ARM Toolchains Paths
Workspace Build Tools Path
Workspace Jumper Path
Workspace OpenOCD Path
Workspace pyOCD Path
Workspace QEMU Path
Workspace RISC-V Toolchains Paths
Workspace SEGGER J-Link Path
Mylyn
Oomph
Remote Development
RPM
Run/Debug
Team
Global SEGGER J-Link Path
Configure the location where SEGGER J-Link is installed. The values are stored within Eclipse. Unless redefined more specifically, they are used for all projects in all workspaces.
After installing SEGGER updates, restart Eclipse for the defaults to be re-evaluated and use the Restore Defaults button to configure the new location.
Executable: JLinkGDBServerCL.exe
Folder: C:/Program Files (x86)/SEGGER/JLink_V640/
Browse...
xPack...
Restore Defaults
Apply
Apply and Close
Cancel

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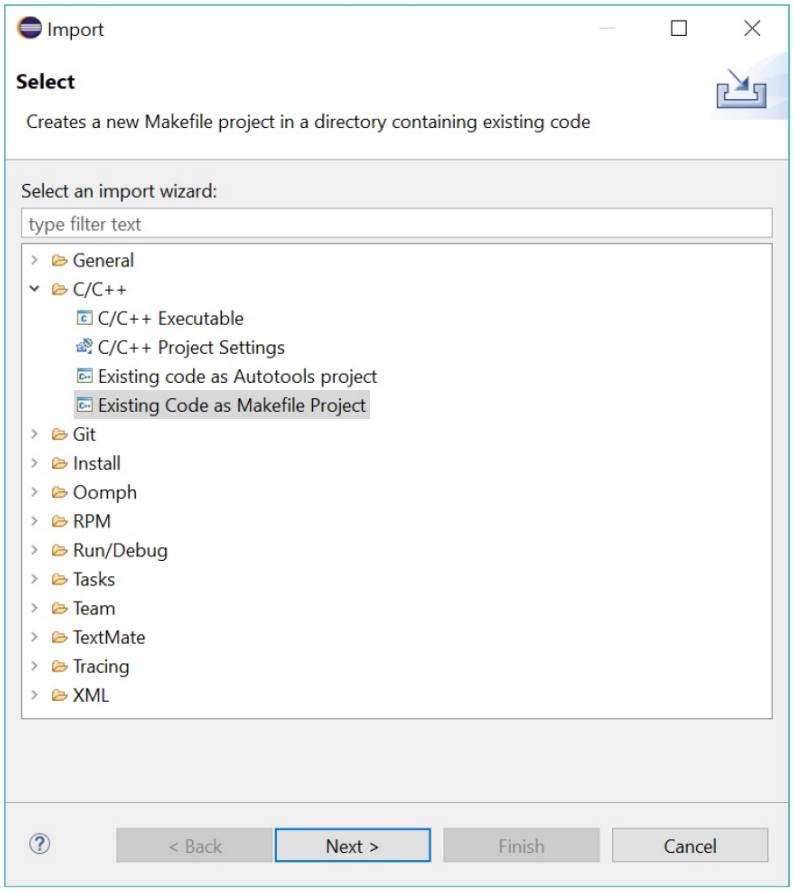
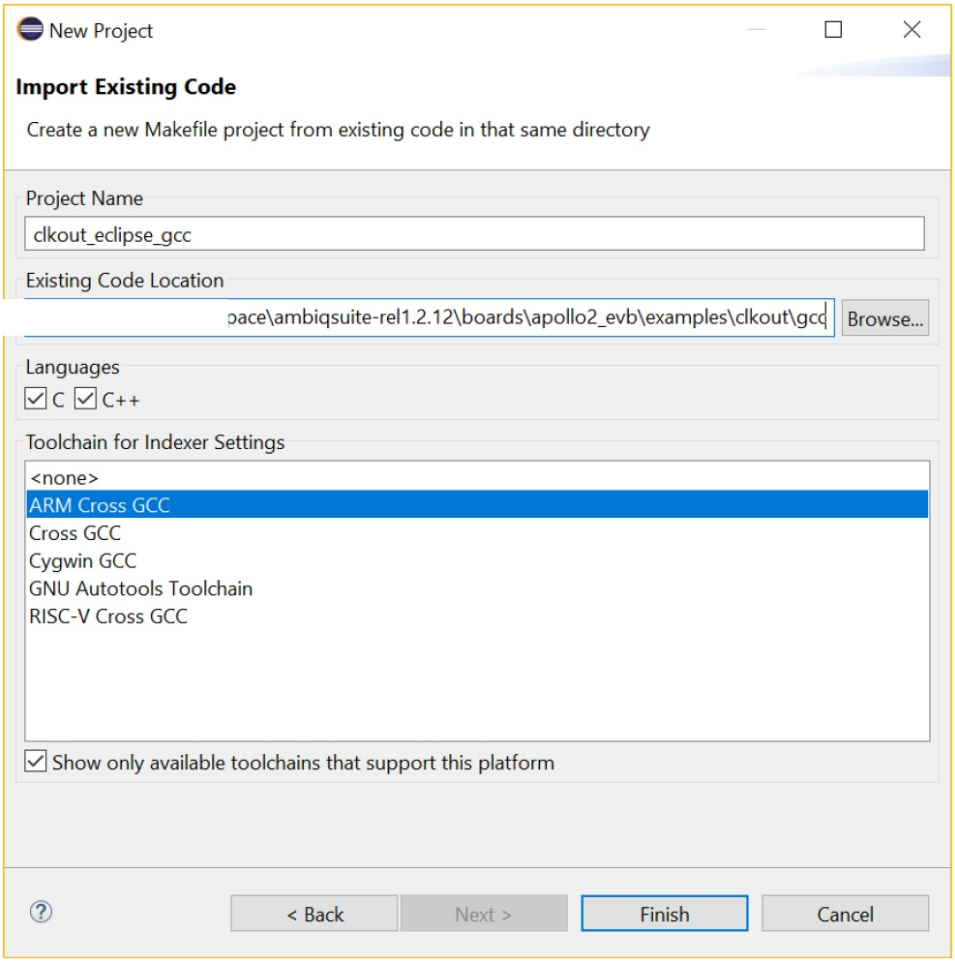
Project Import and Compilation

Use the following procedure to import and compile projects:

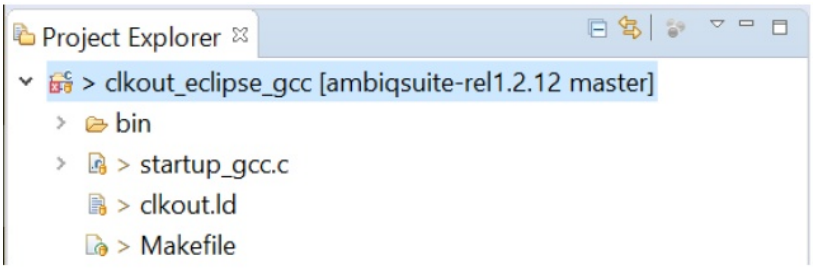
1. In Eclipse, navigate to **File** >**Import**. Select **C/C++>Existing Code** as **Makefile Project**. Click Next. For projects which are to be imported for the first time use this option. For those projects which have previously been imported to Eclipse (check if the files, **.project** and **.cproject**, and the folder **.settings** exist in **<project>/gcc**,) select **General** >**Existing Projects** into Workspace.



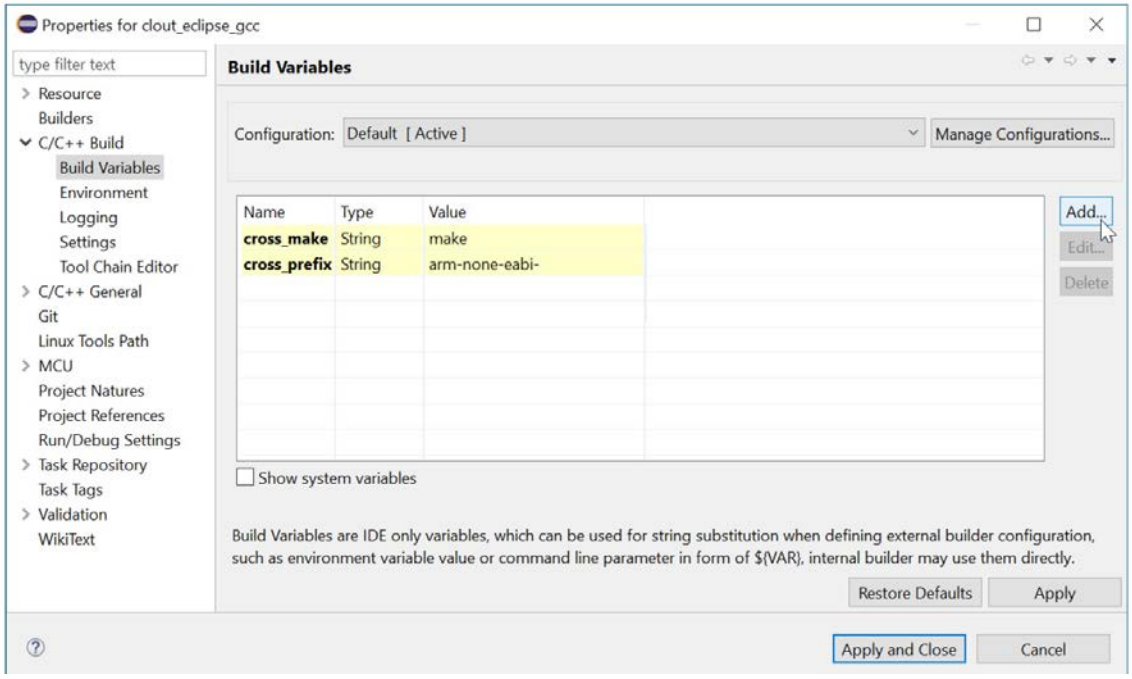
2. Select the targeting project. Take the project clkout of R2.0 for Apollo3 as an example.
   - Change the project name (optional).
   - Select **ARM Cross GCC** in Toolchain for Indexer Settings.



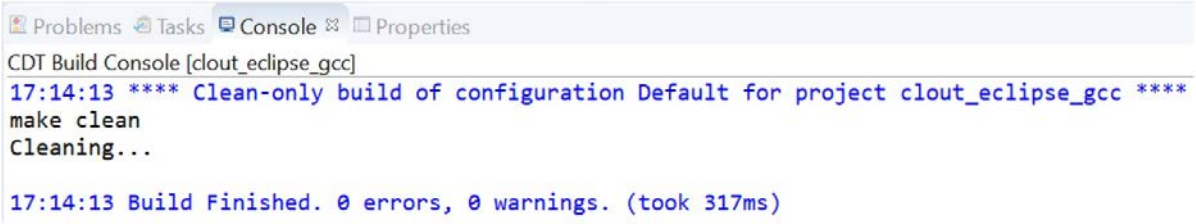
3. After the project is imported, the project explorer shows the project like the following screenshot.



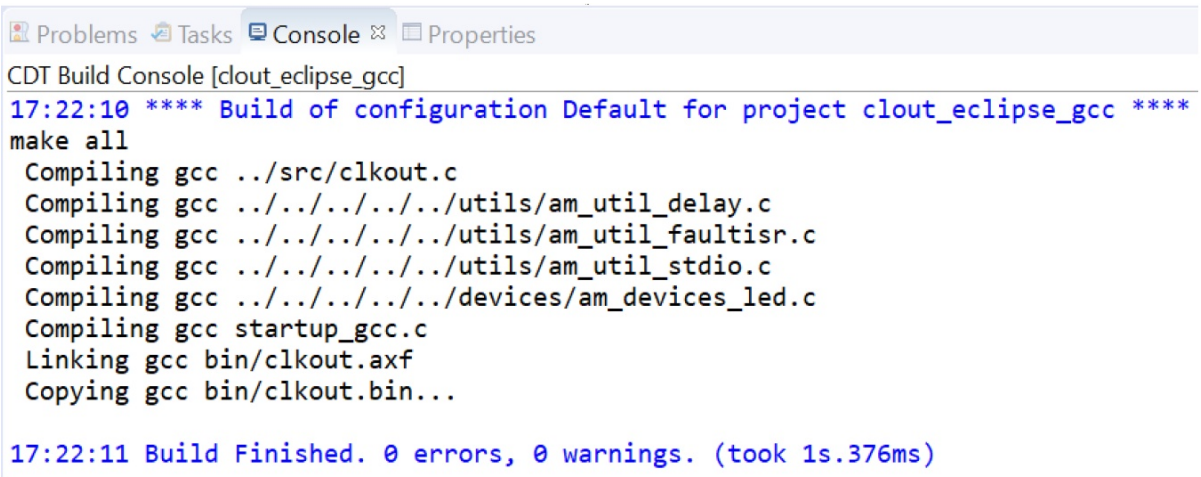
4. Right click on the project and go to **Properties** > **C/C++ Builds** > **Build Variables**. Add two variables as highlighted in below. Click **Apply** and **Close**.



5. Right click on the project and select **Clean Project**.



6. Right click on the project and select **Build Project**.



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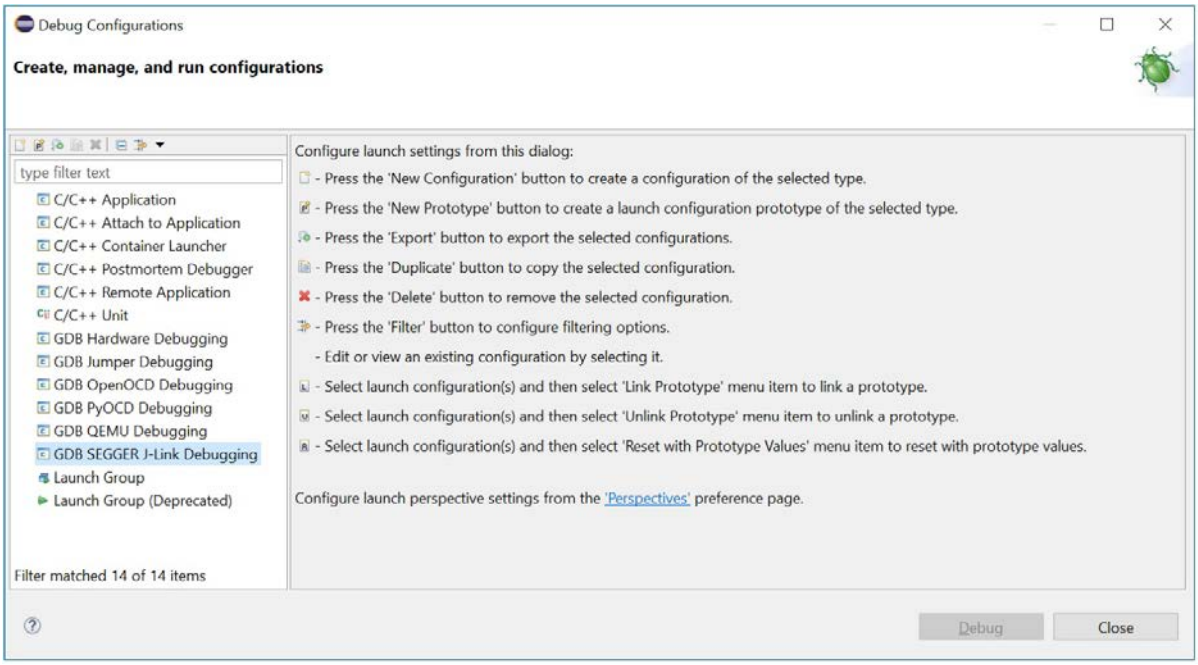
Project Debugging

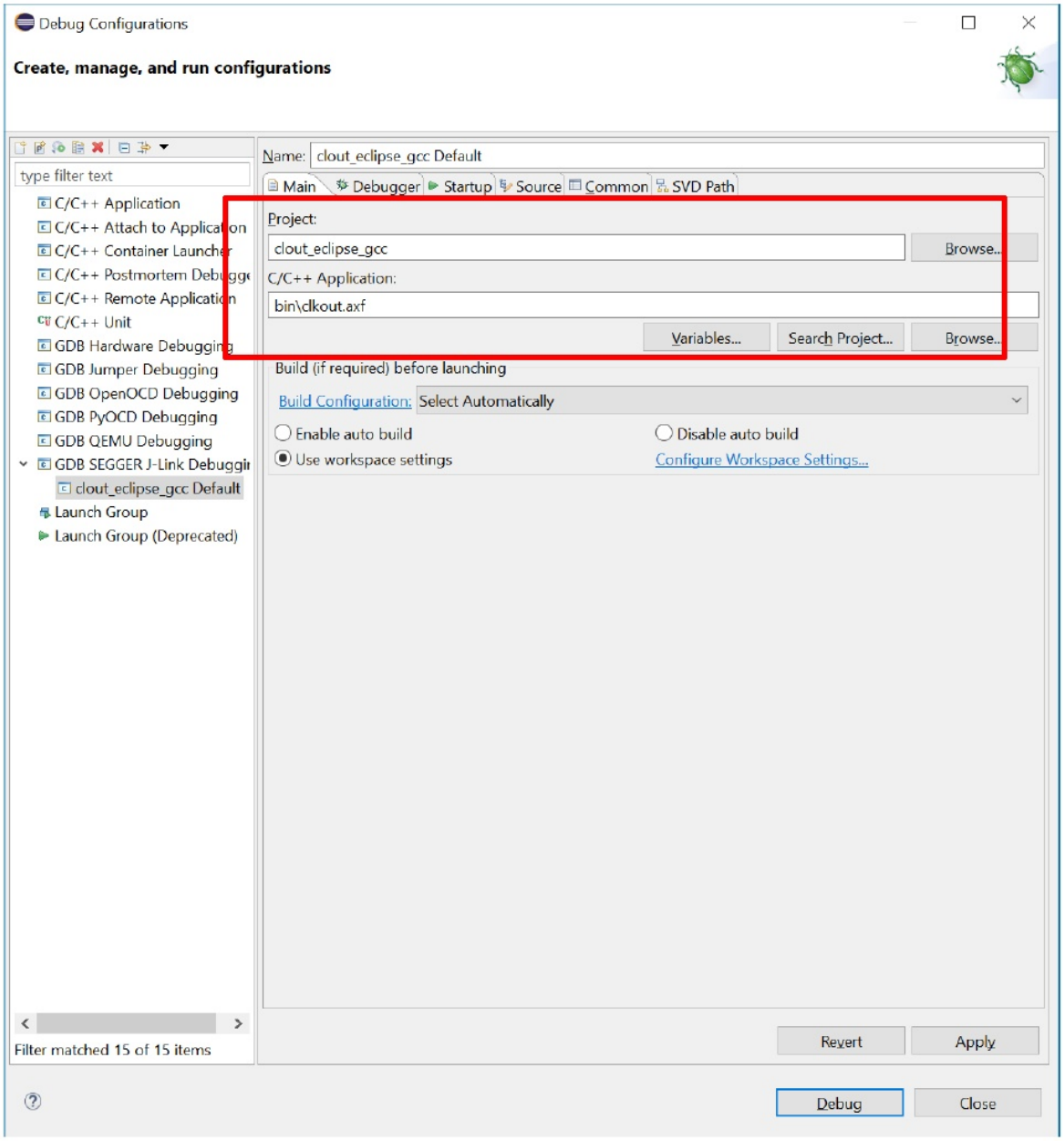
Use the following procedure to debug a project:

1. Navigate to **Run** > **Debug** Configurations.

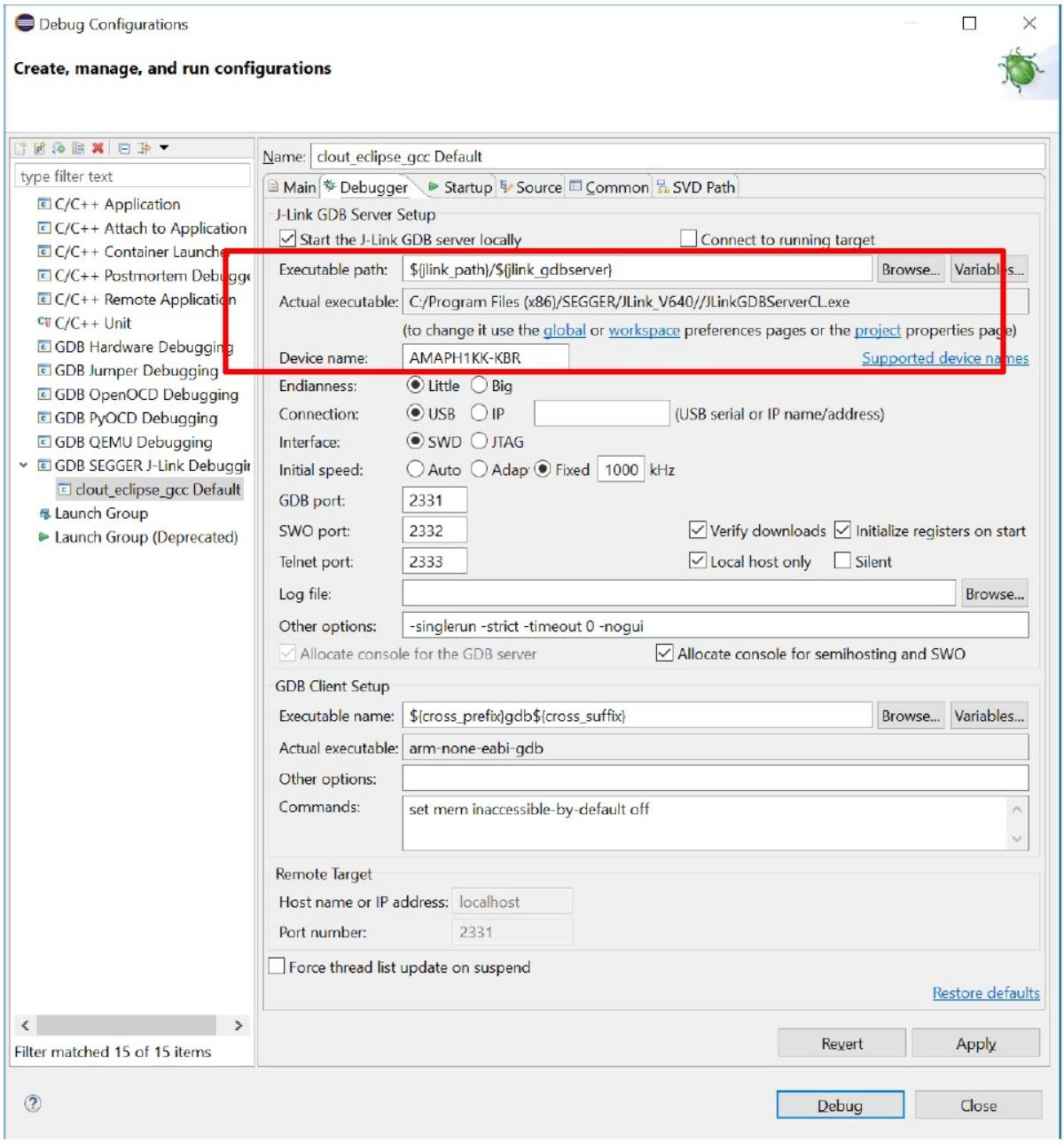


2. Right click on **GDB SEGGER J-Link Debugging** and select **New Configuration**.

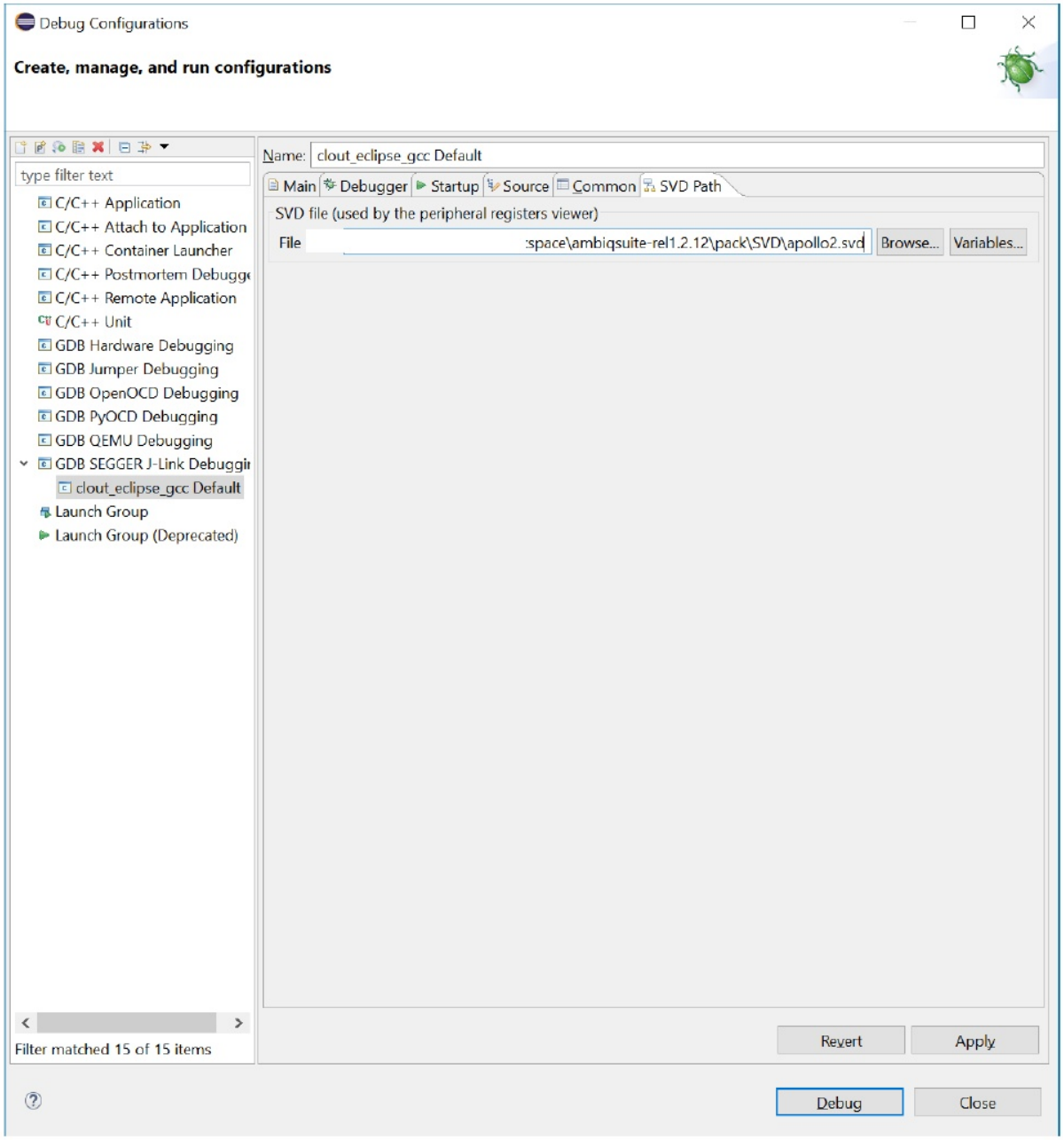
3. In Main page, make sure Project has the name identical to the one set in project import and **C/C++ Application** pointed to the corresponding **.axf** file.



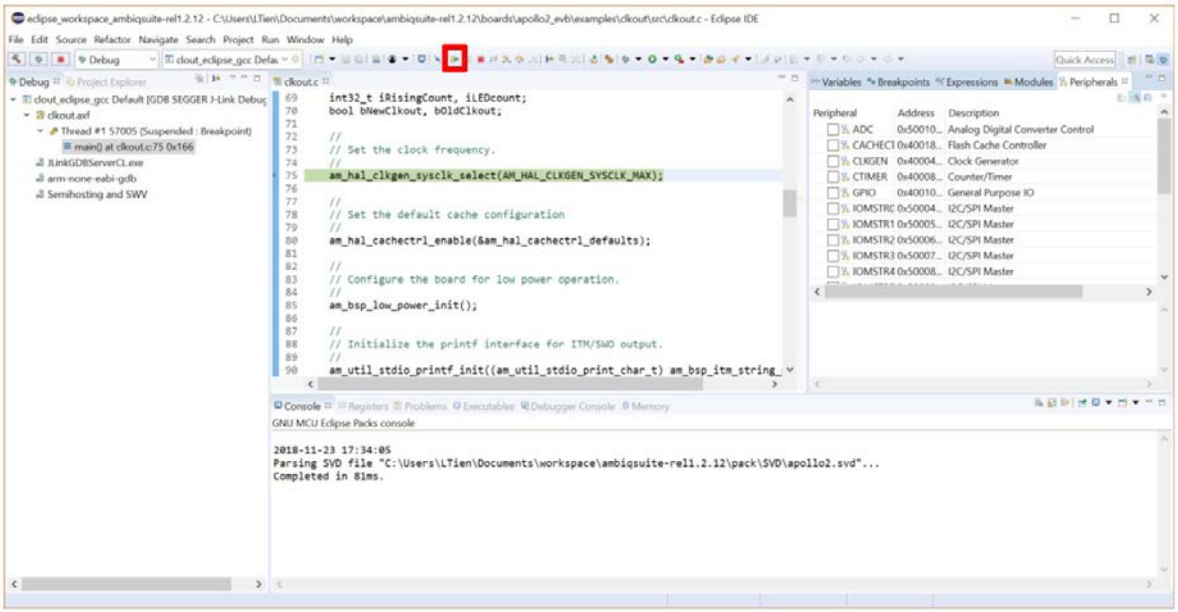
4. In Debugger page, make sure Actual executable is correctly interpreted and Device name is added.



5. In SVD page, add the path to the targeting board SVD file located in **<SDK>/**pack. Click **Apply** and **Debug**.



6. After the debugger is launched, the program stops at the main function. Click the run icon highlighted in the red frame below. The LEDs on EVB shall start to blink.



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Troubleshooting

1. Make sure Windows Environment variable Path is configured correctly. For Windows 10, right click on This PC and navigate to **Properties** > **Advanced system settings** > **Environment Variables**, and check the variable **Path**.
2. Contact regional Ambiq Field Application Engineers if you encounter further questions.

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April 2022