

A blurred background image showing a person in a business suit sitting at a desk, working on a laptop. The person is in the foreground, slightly out of focus, with their hands on the keyboard. The background is a soft, out-of-focus office environment.

RZ/A2M SOFTWARE PACKAGE FOR GR-MANGO DEVELOPMENT ENVIRONMENT CONSTRUCTION

OCT. 30, 2020

SOFTWARE PLATFORM DEPARTMENT 2
SOFTWARE DEPARTMENT DIVISION
IOT AND INFRASTRUCTURE BUSINESS UNIT
RENESAS ELECTRONICS CORPORATION

Agenda

- RZ/A2M Software Package
for GR-MANGO Development Environment **Page 03**
- How to install e² studio **Page 05**
- How to install OpenOCD **Page 24**

RZ/A2M SOFTWARE PACKAGE DEVELOPMENT ENVIRONMENT

RZ/A2M Software Package for GR-MANGO Development Environment

Development Environment

✓ **IDE :**
(Integrated Development Environment)

e² studio v7.8.0 (32bit ver.)

e² studio 2020-07 (64bit ver.)

✓ **Tool chain :**

GNUARM-NONE Toolchain v16.01

(※)Included in the e² studio installation

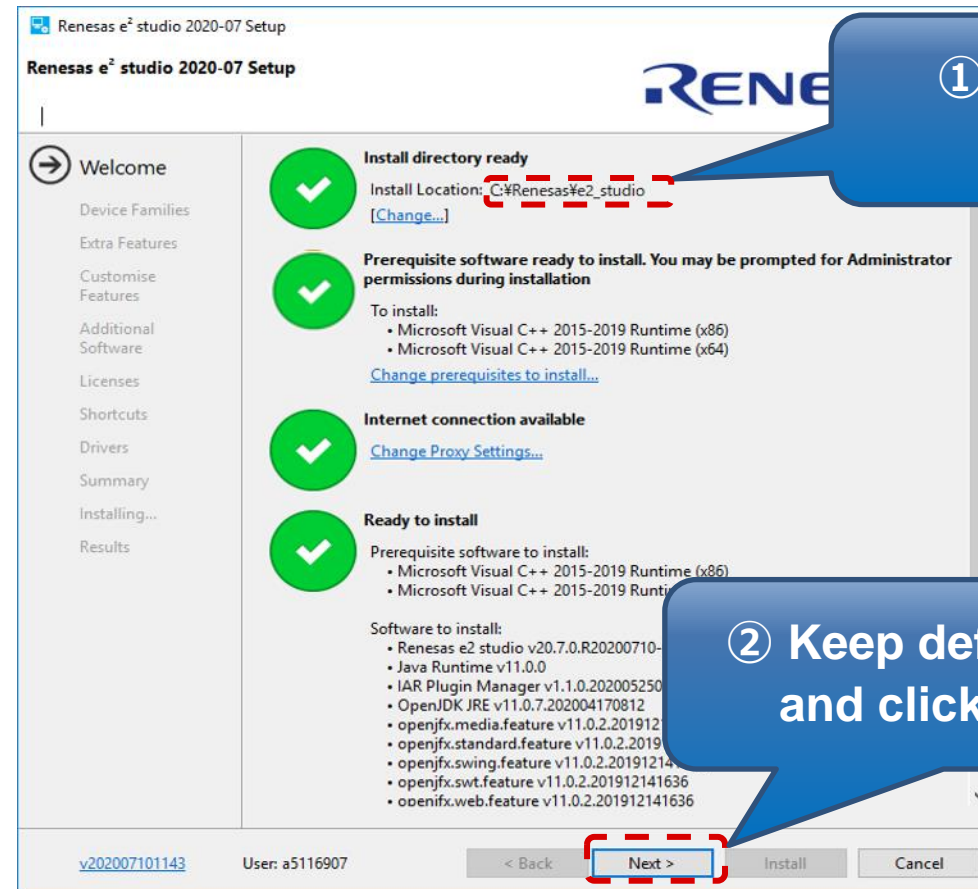
✓ **Software for Debug :**

OpenOCD v0.10.0

HOW TO INSTALL E² STUDIO

How to install e² studio (1/18)

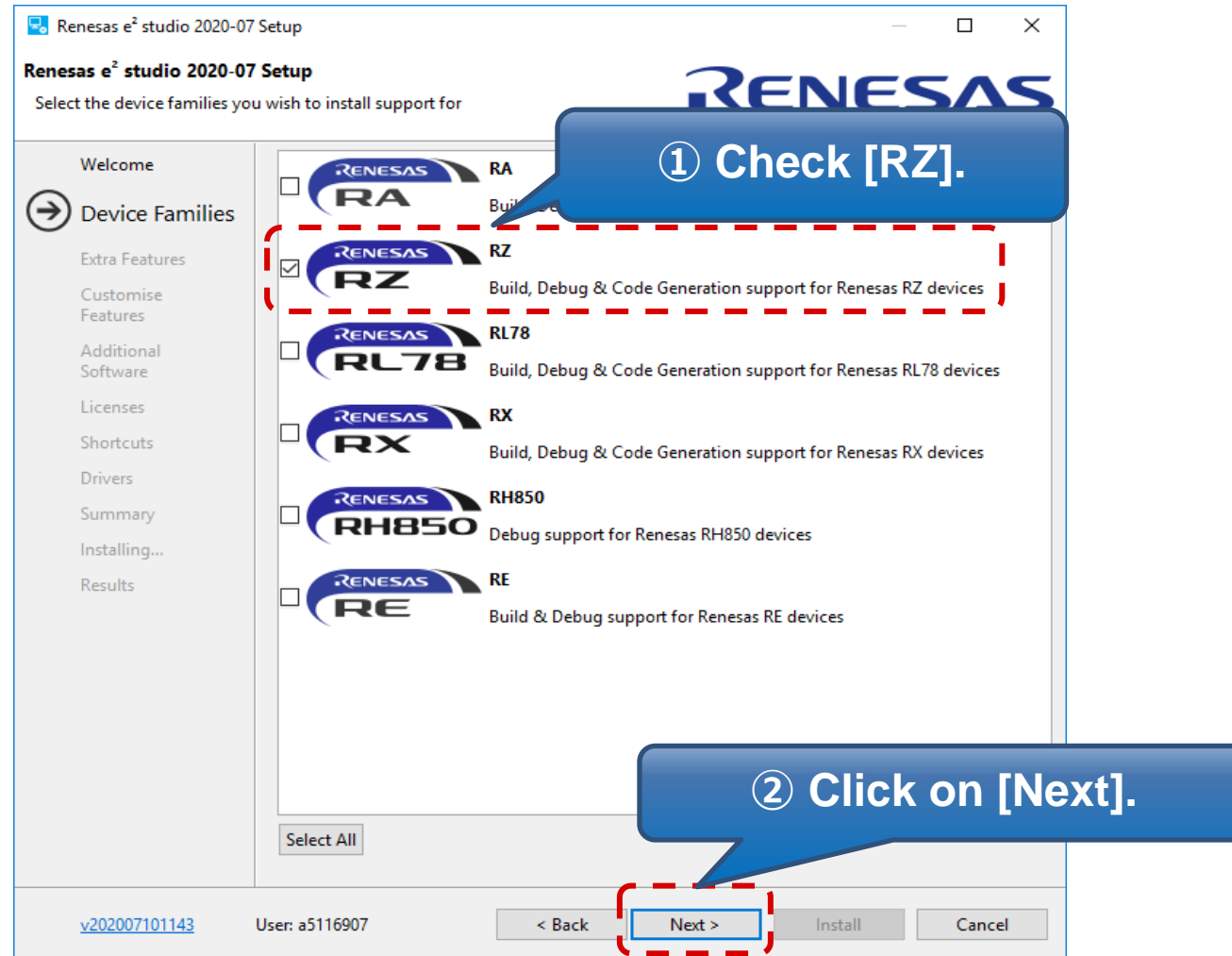
We will explain how to install e² studio 2020-07.



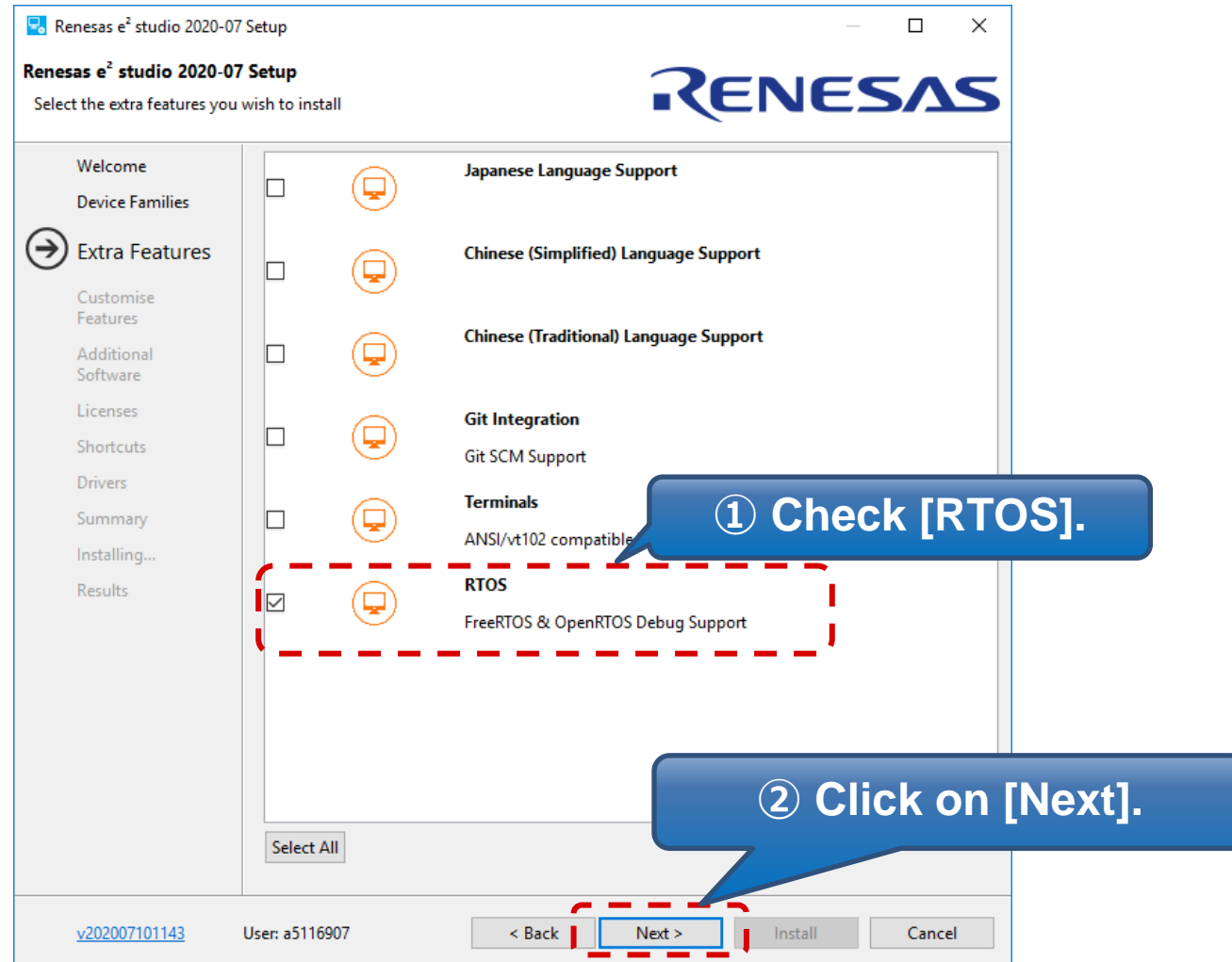
① Default installation folder is "C:\Renesas\e2_studio".

② Keep default settings and click on [Next].

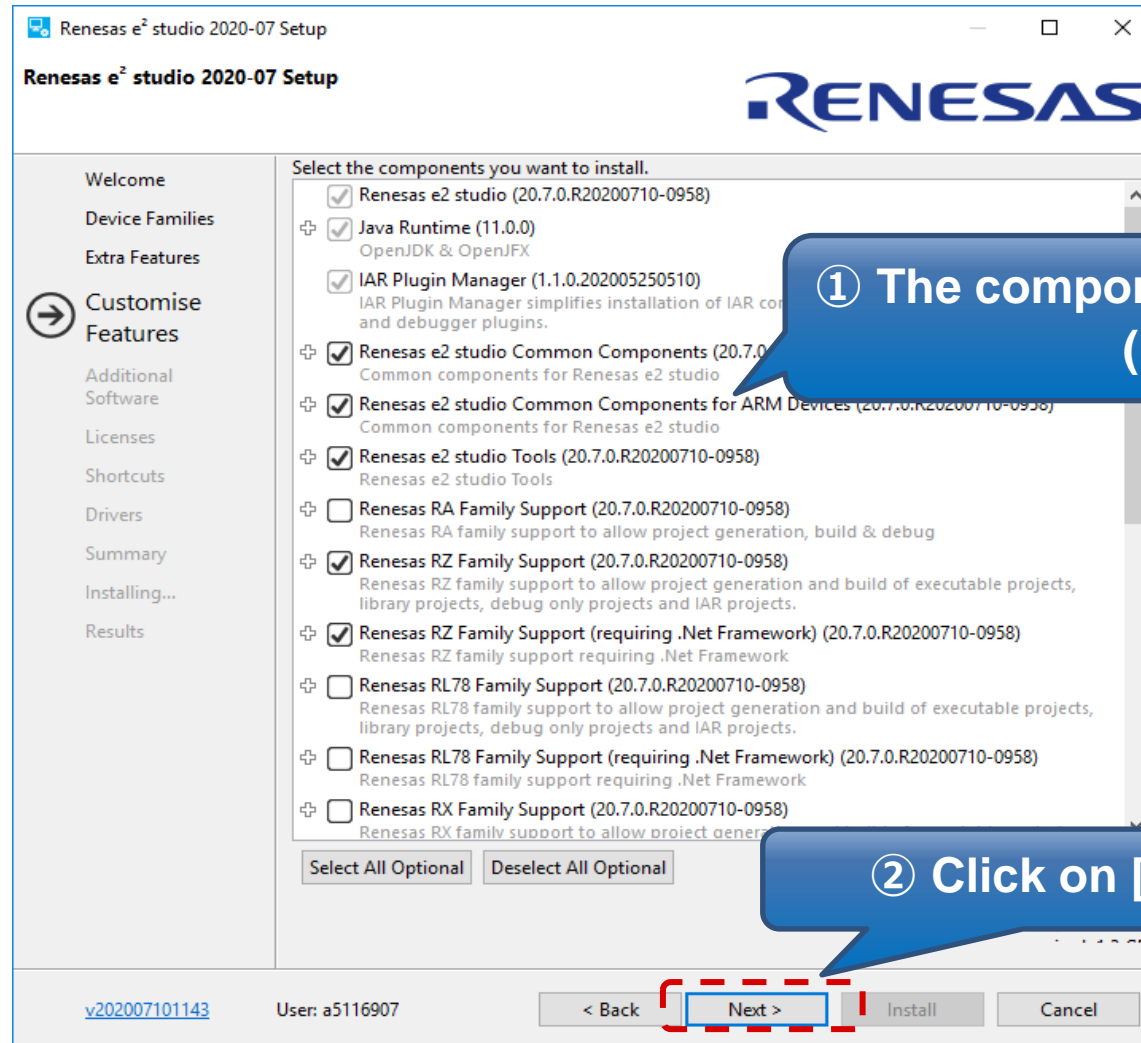
How to install e² studio (2/18)



How to install e² studio (3/18)



How to install e² studio (4/18)



① The components are automatically selected (No work required).

② Click on [Next].

How to install e² studio (5/18)

The image shows two sequential screenshots of the Renesas e² studio 2020-07 Setup wizard, illustrating the steps to select additional software.

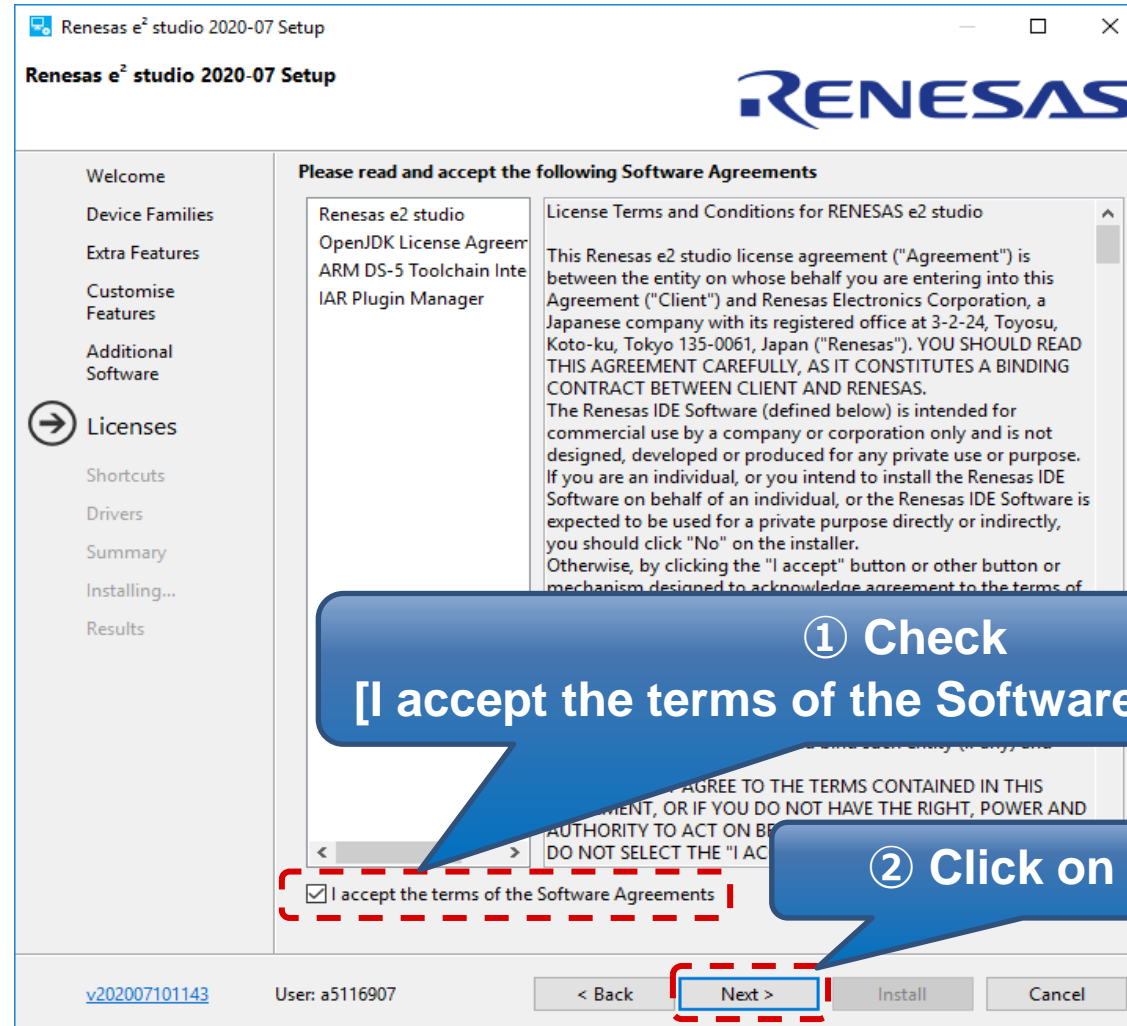
Step 1: The first screenshot shows the "GCC Toolchains & Utilities" tab selected. The "Renesas Utilities" section lists two self-checking programs: "Renesas E2 Self-Checking Program V1.01.00" and "Renesas E1, E20 Self-Checking Program V1.01.00". A red dashed box highlights the "GCC Toolchains & Utilities" tab.

Step 2: The second screenshot shows the "GCC Toolchains & Utilities" tab selected. The "GNU ARM Embedded" section lists two items: "GNU ARM Embedded 6 2017q2" and "LibGen for GNU ARM Embedded". Both are checked. A red dashed box highlights this section.

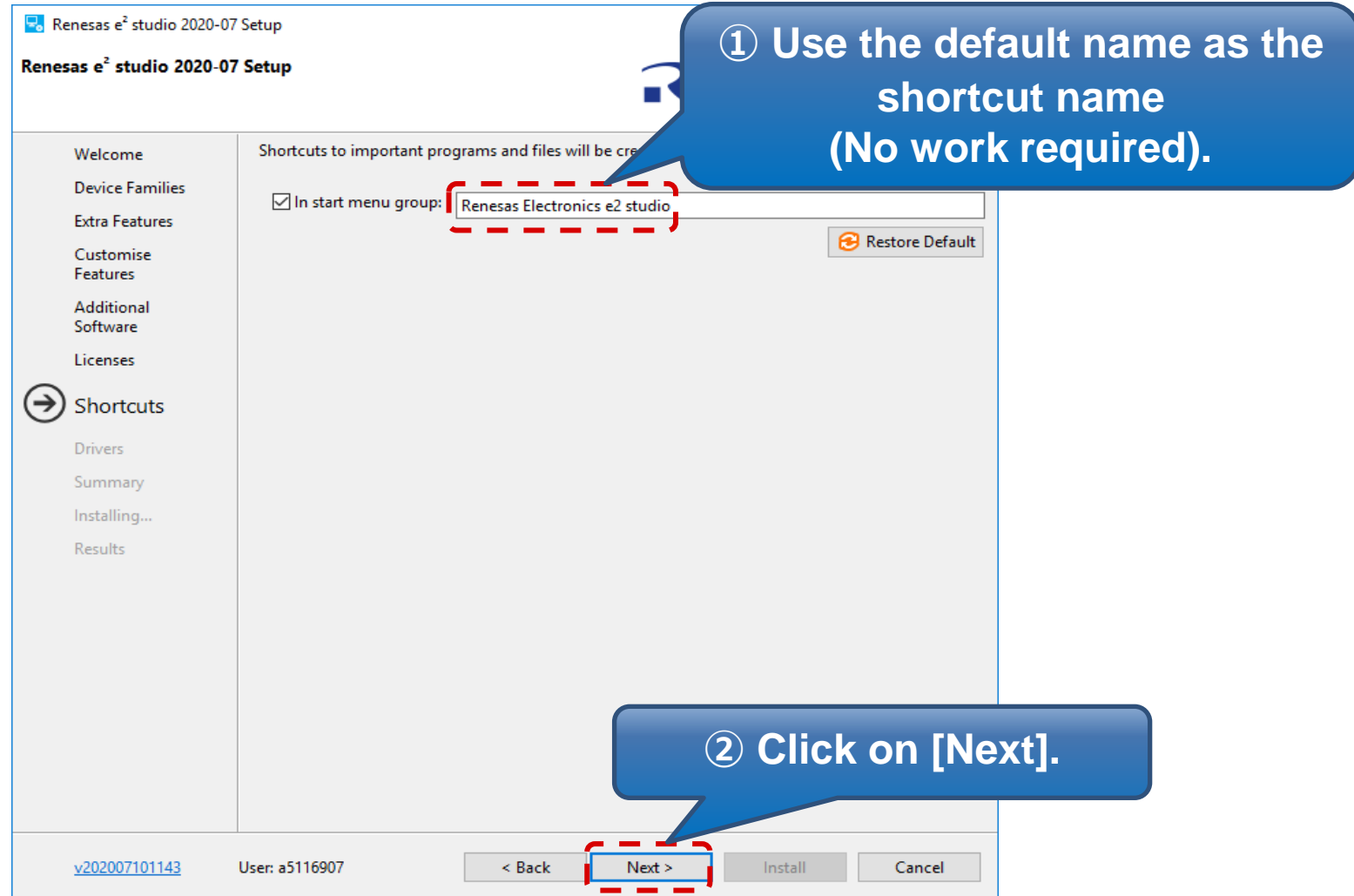
Step 3: A blue callout bubble points to the "Next >" button at the bottom of the wizard, indicating the next step.

Both screenshots show the "Additional Software" section on the left sidebar and the "90.2 MB download required" status at the bottom.

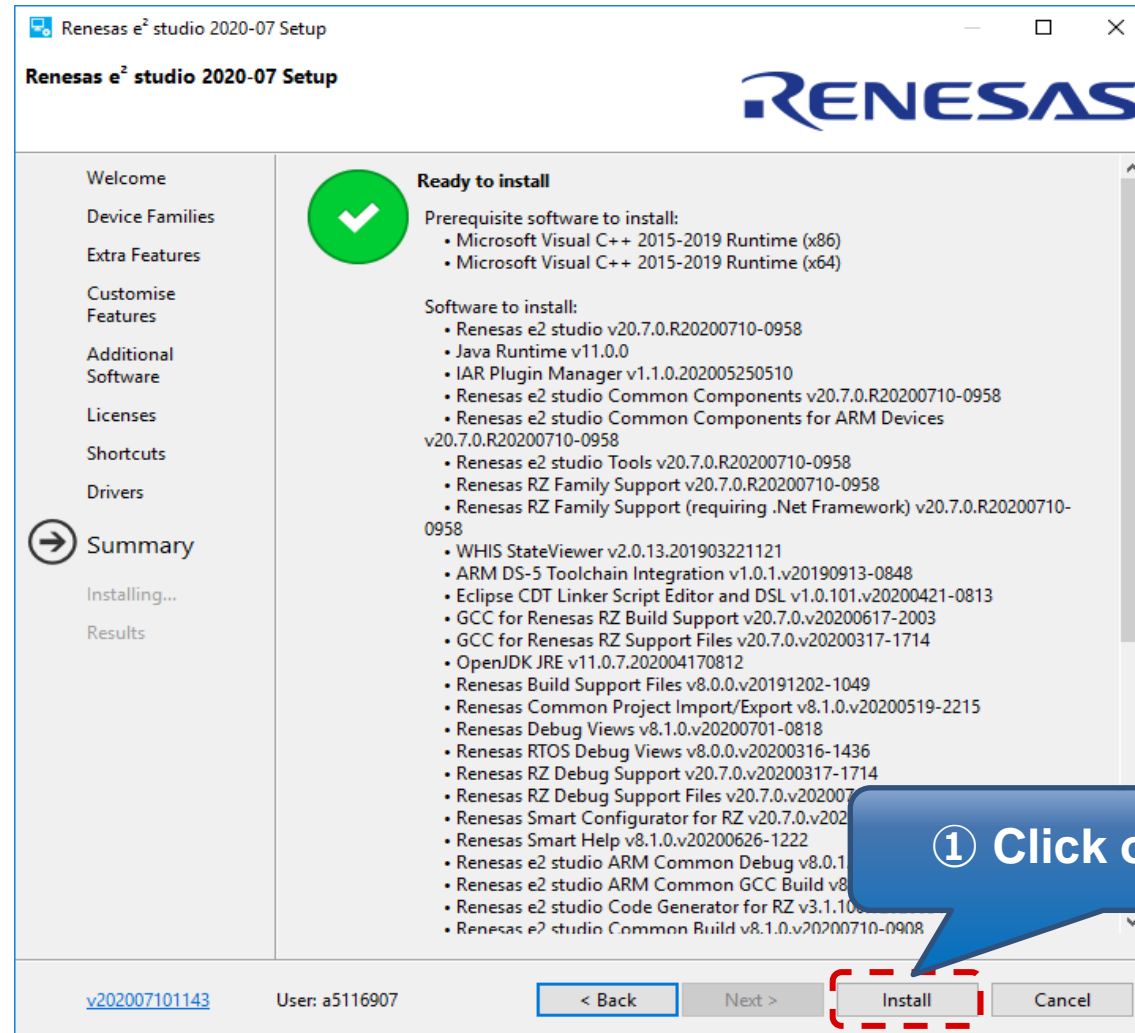
How to install e² studio (6/18)



How to install e² studio (7/18)



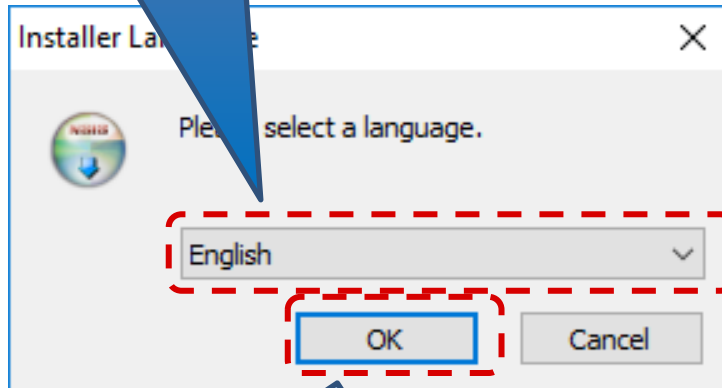
How to install e² studio (8/18)



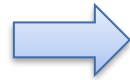
How to install e² studio (9/18)

During the installation of e² studio, download and installation of the toolchain will start in parallel.

① Select [English].

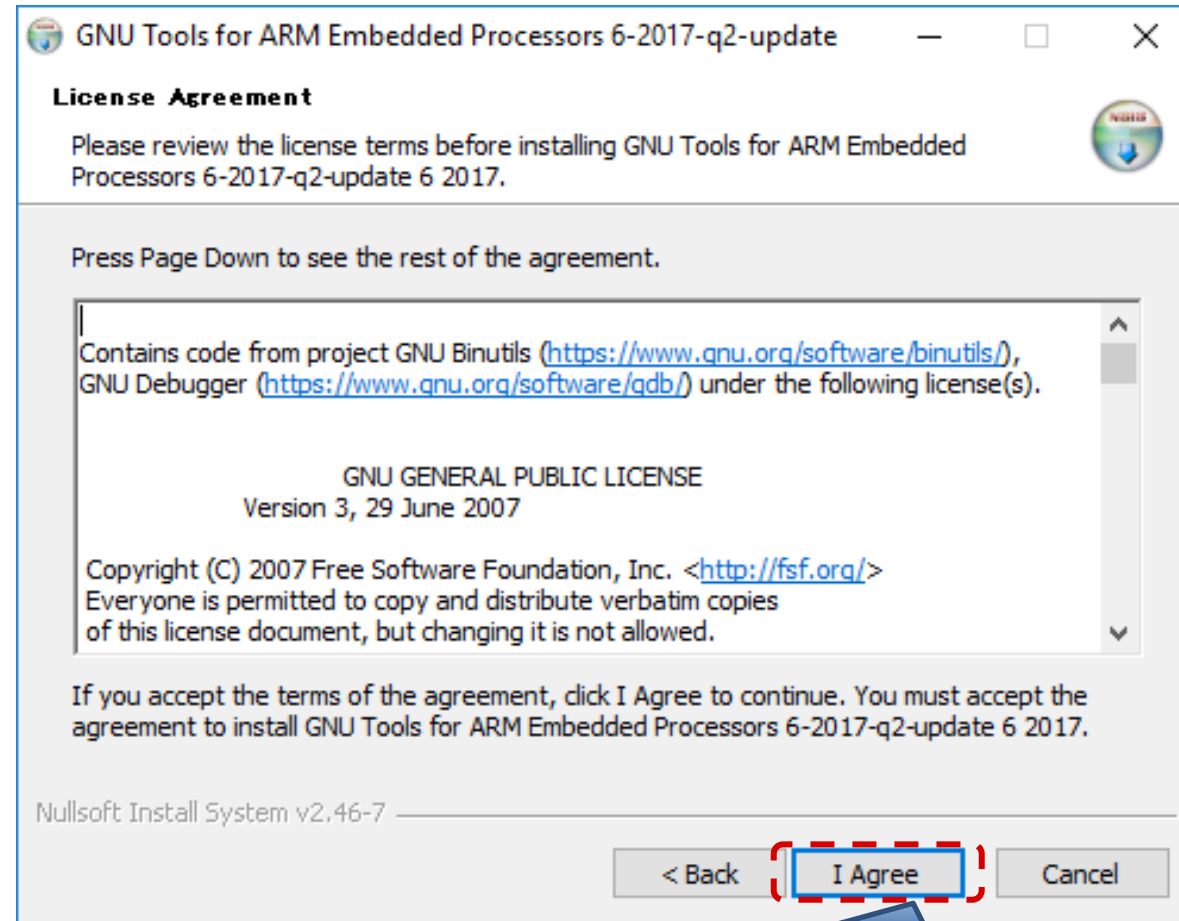


② Click on [OK].



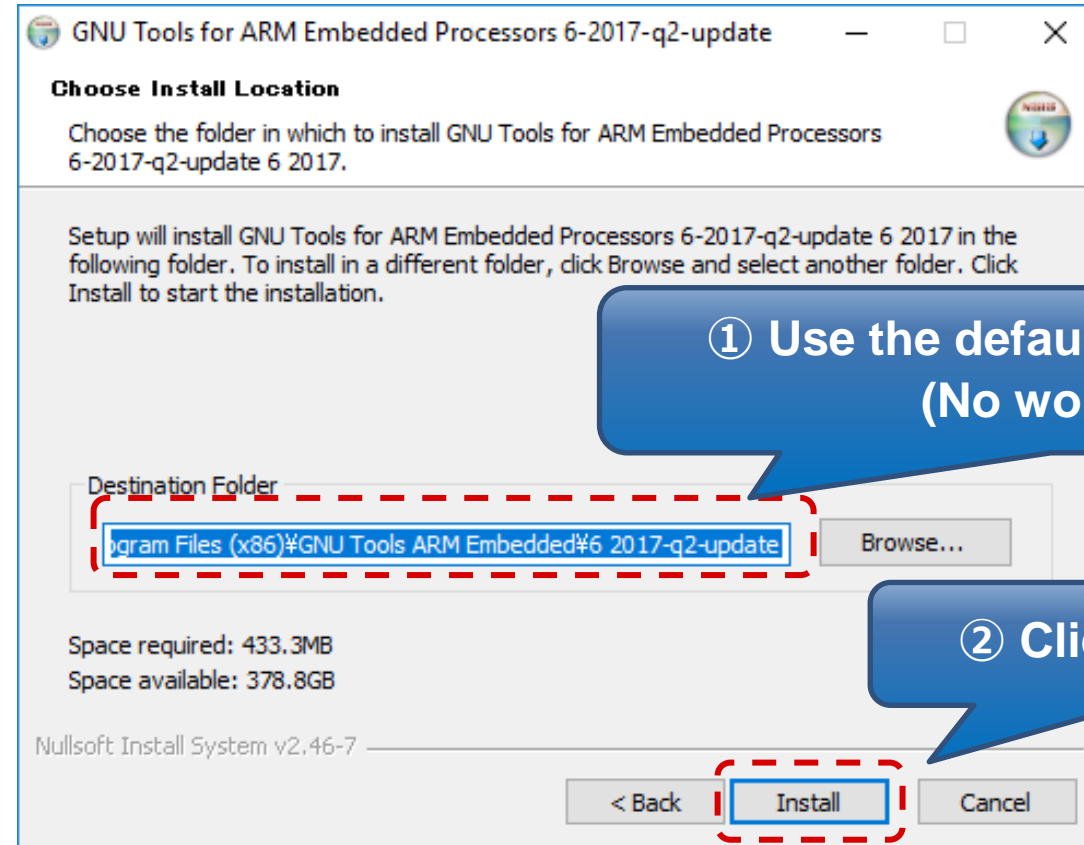
③ Click on [Next].

How to install e² studio (10/18)

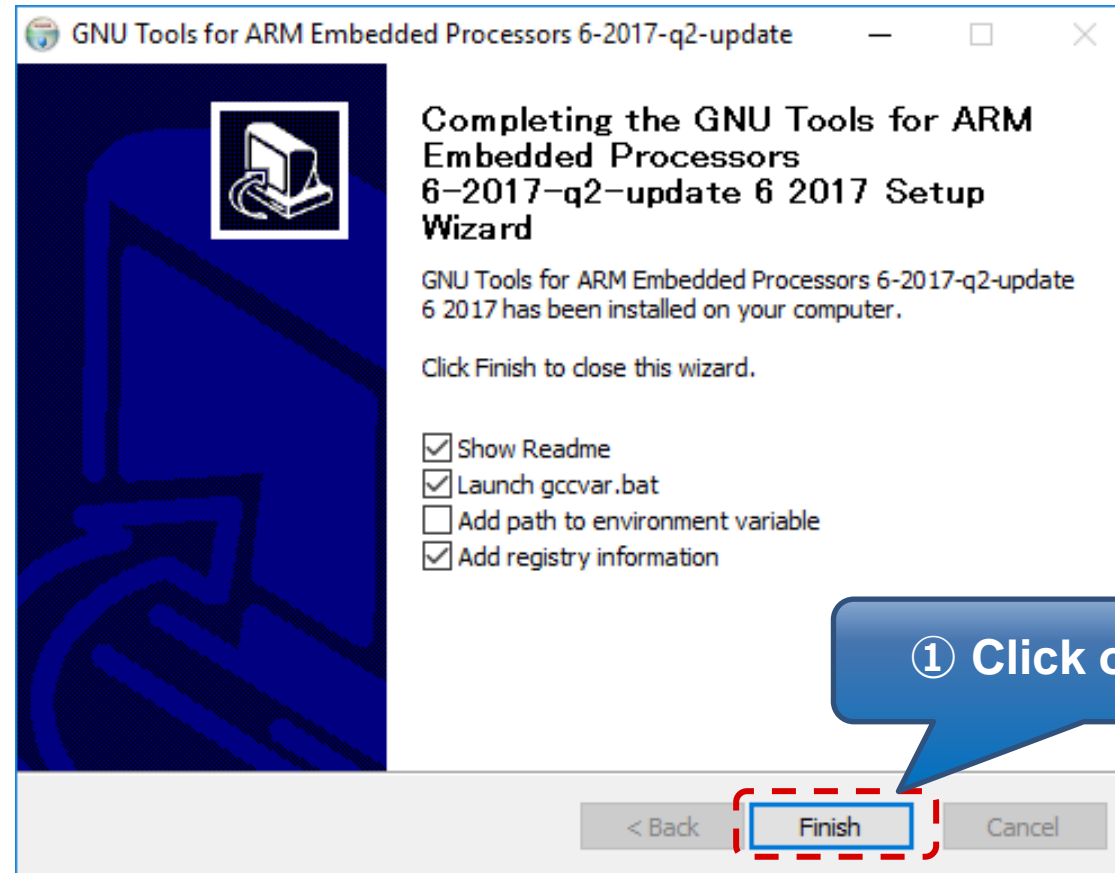


① Click on [I Agree].

How to install e² studio (11/18)



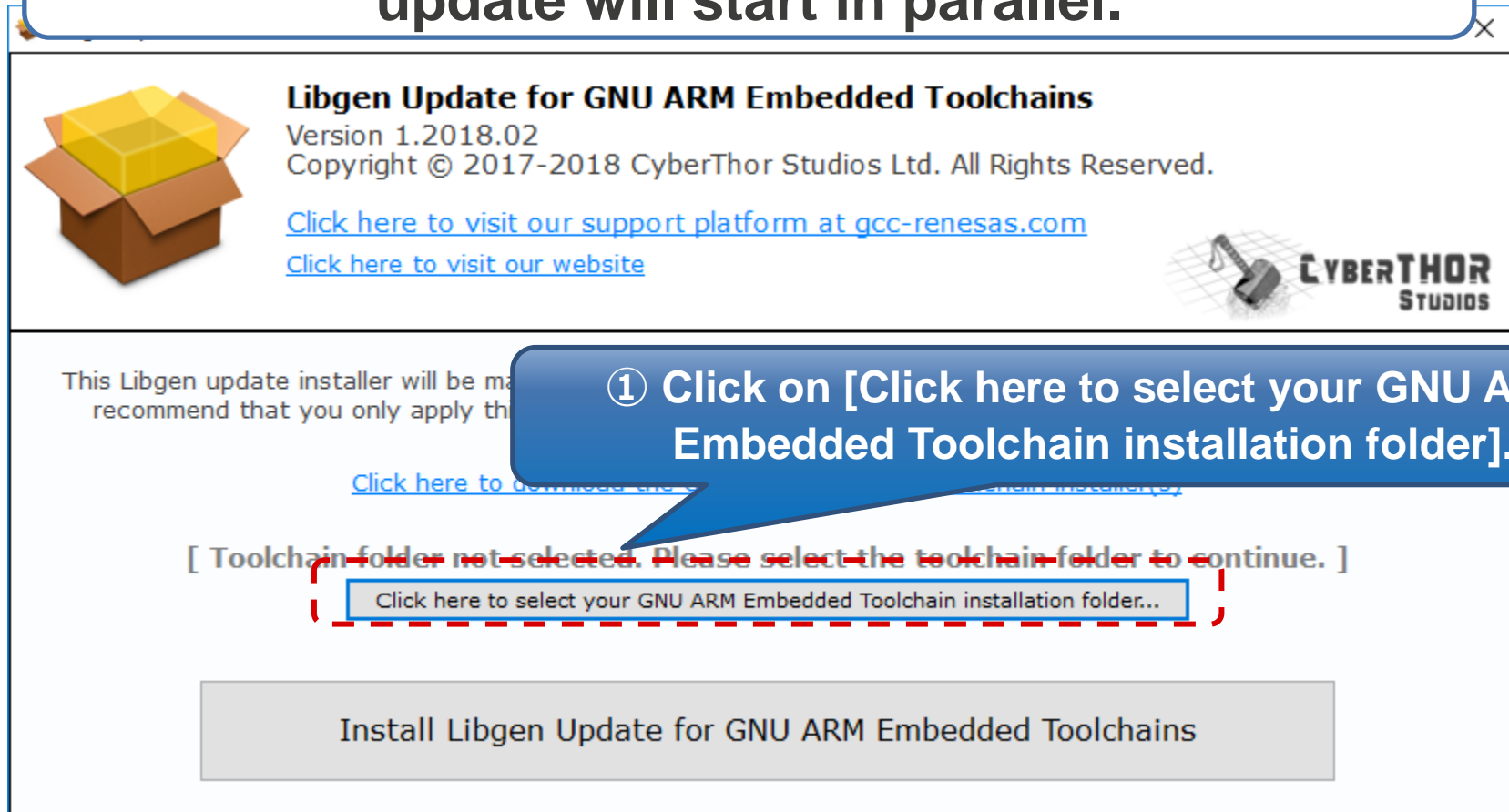
How to install e² studio (12/18)



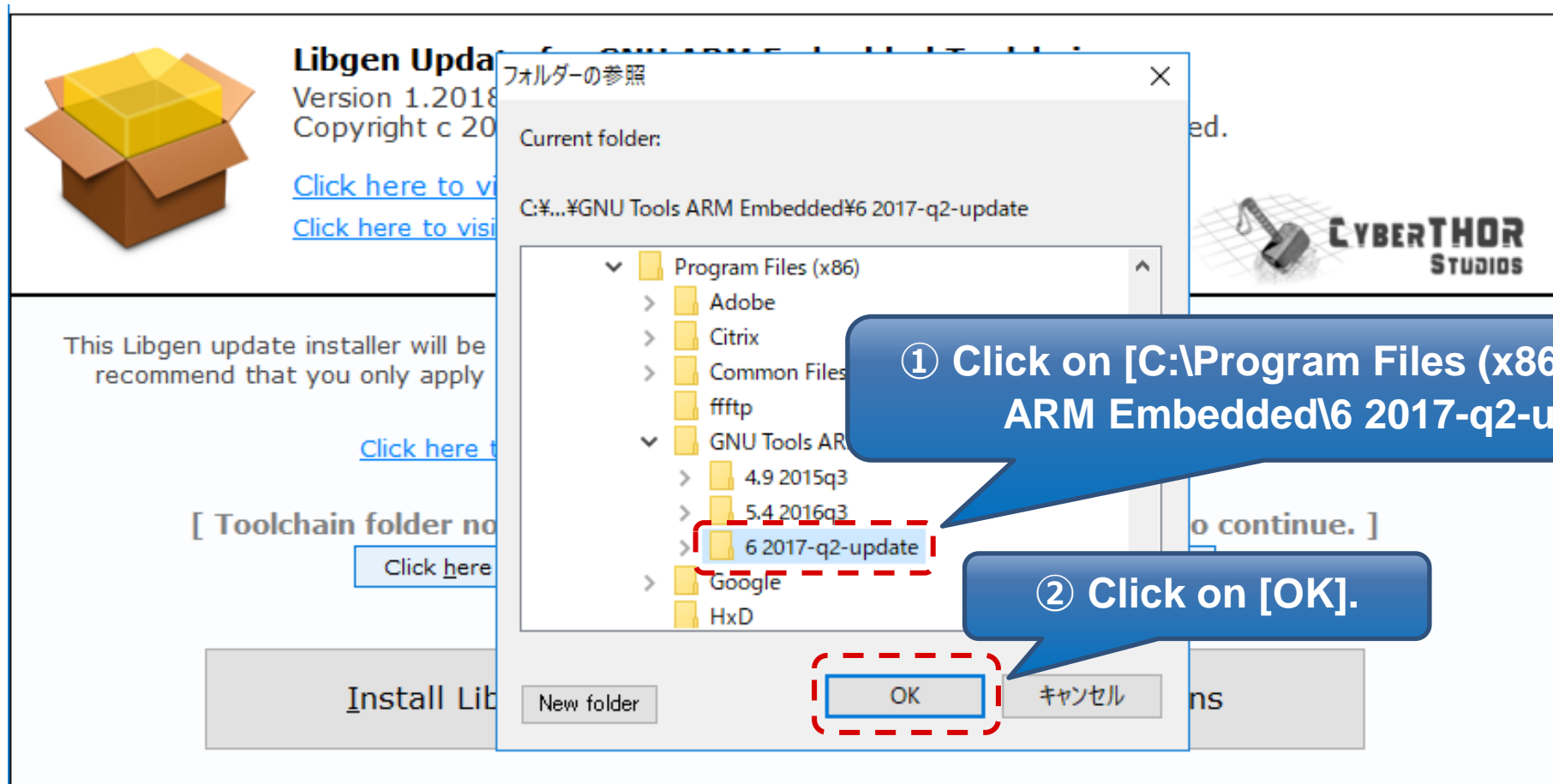
① Click on [Finish].

How to install e² studio (13/18)


During the installation of e² studio, the Libgen update will start in parallel.



How to install e² studio (14/18)




How to install e² studio (15/18)



Libgen Update for GNU ARM Embedded Toolchains

Version 1.2018.02
Copyright c 2017-2018 CyberThor Studios Ltd. All Rights Reserved.

[Click here to visit our support platform at gcc-renesas.com](#)
[Click here to visit our website](#)



This Libgen update installer will be making changes to your existing GNU ARM Embedded Toolchain installation(s). We recommend that you only apply this update to GNU ARM Embedded Toolchain installation(s) that are compatible with this update.

[Click here to download the GNU ARM Embedded Toolchain update](#)

C:\Program Files (x86)\GNU Tools ARM Embedded\6 2017-q2-update

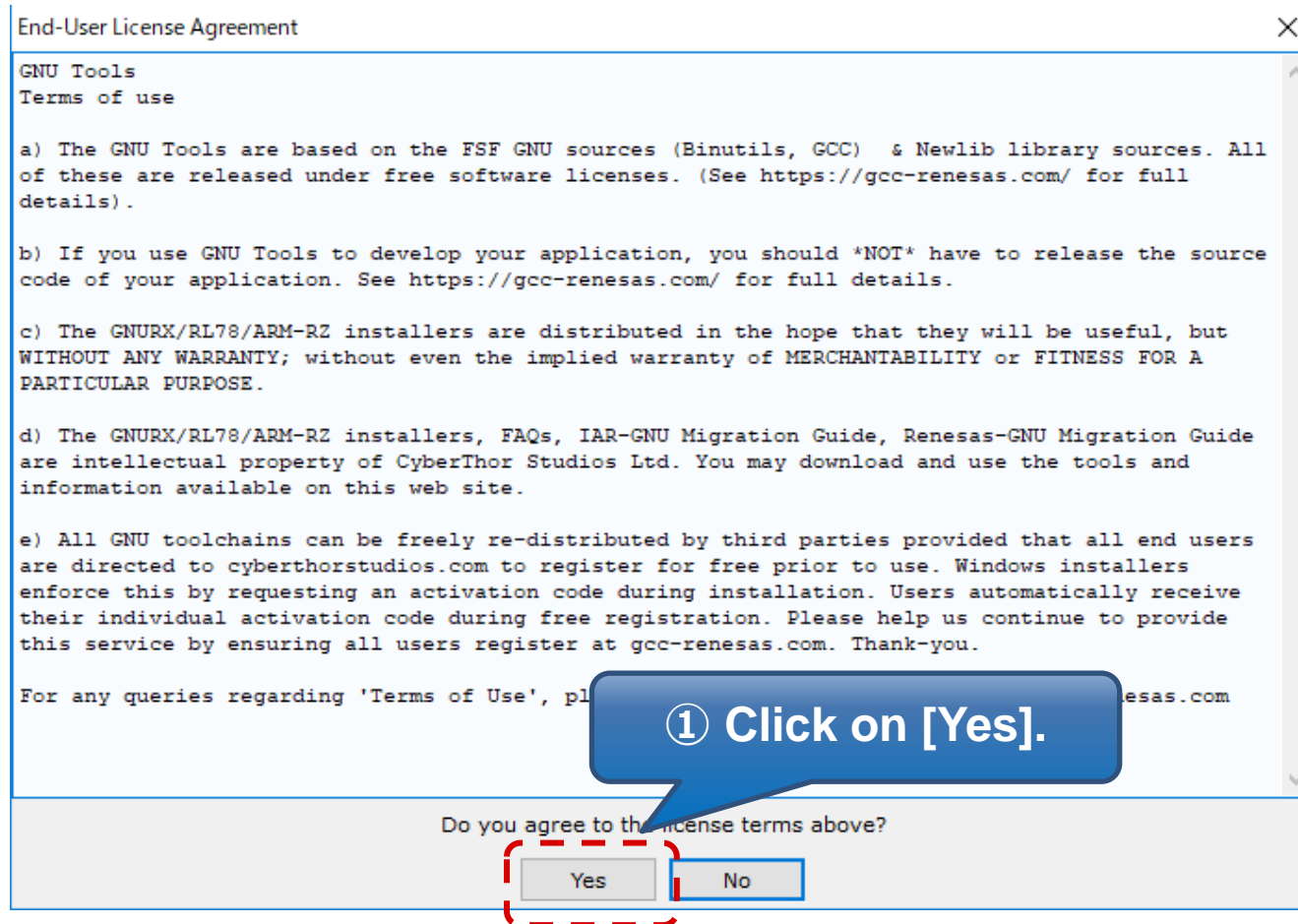
[Click here to select your GNU ARM Embedded Toolchain installation folder...](#)

Install Libgen Update for GNU ARM Embedded Toolchains

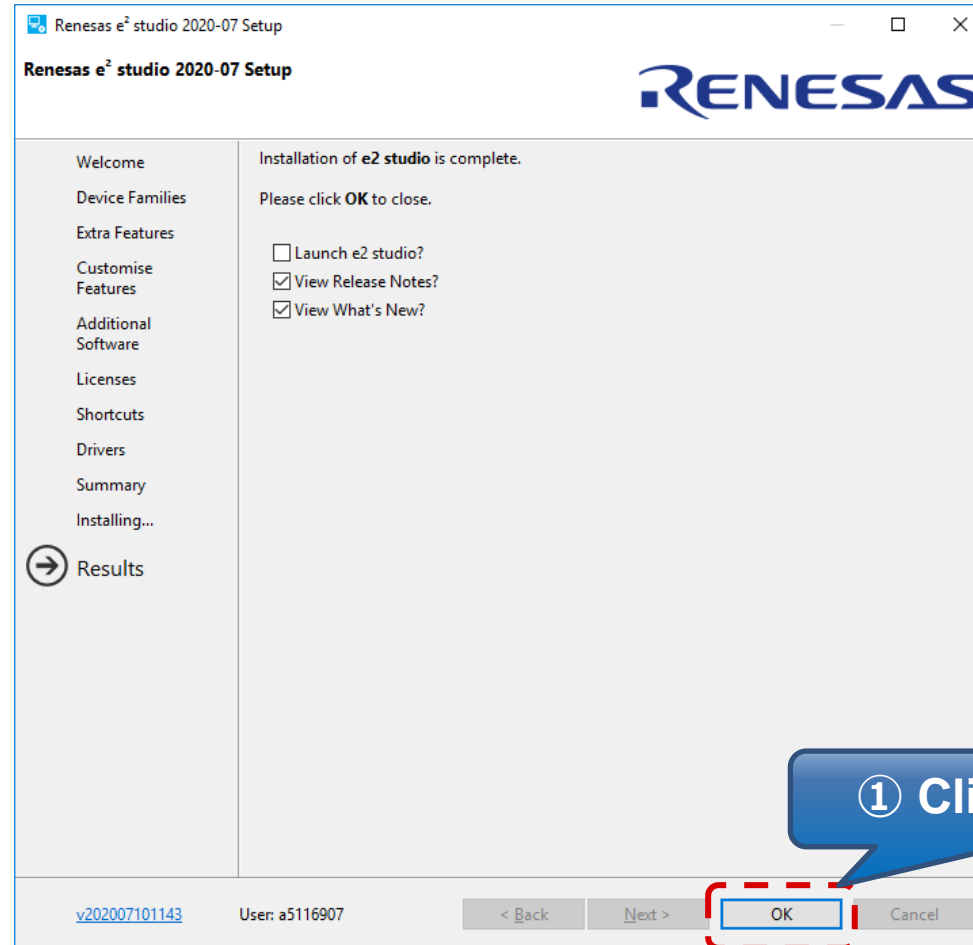
① Make sure the selected folder is displayed.

② Click on [Install~].

How to install e² studio (16/18)



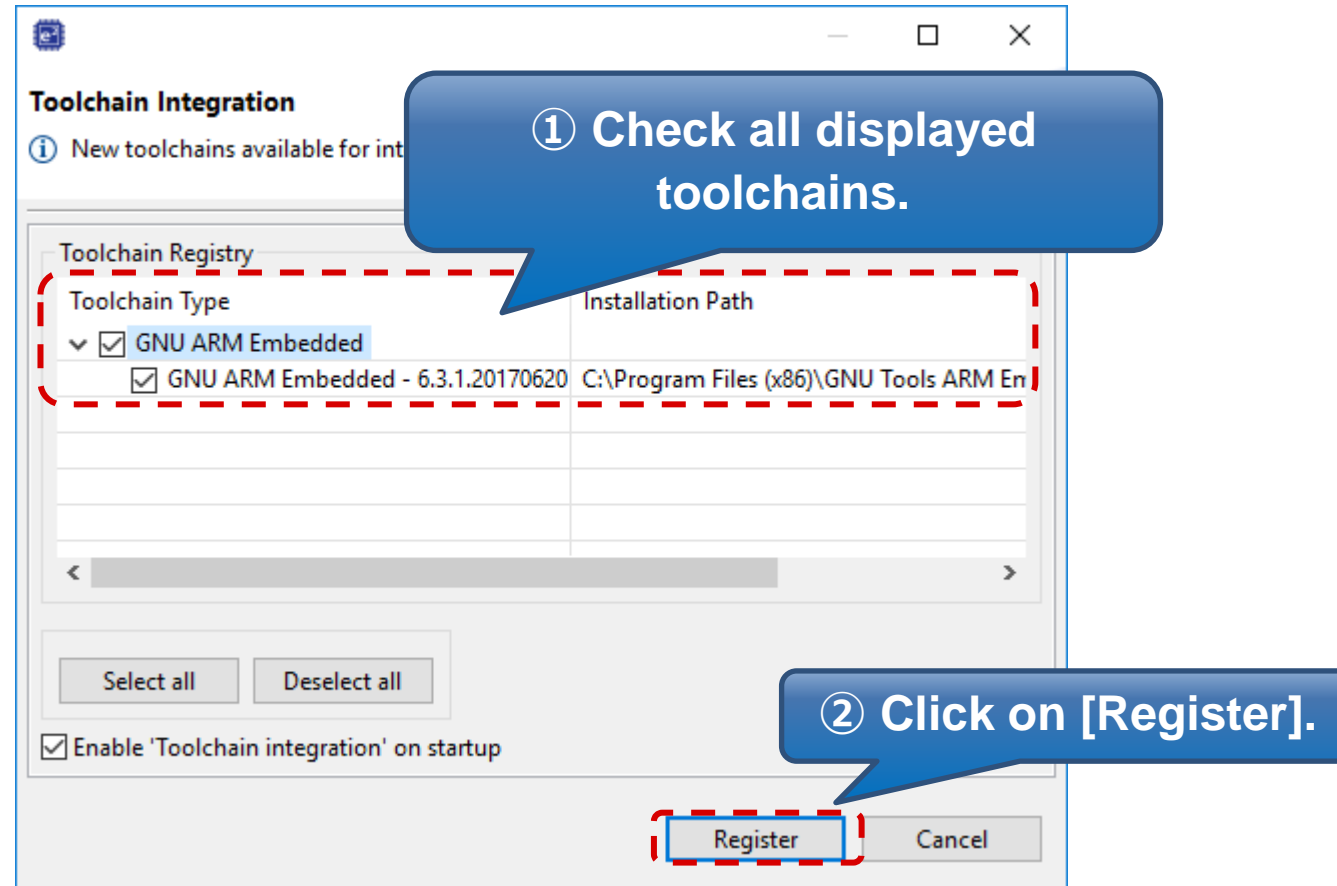
How to install e² studio (17/18)



This completes the installation of e² studio.

How to install e² studio (18/18)

When you start e² studio for the first time, the toolchain registration screen will appear, so register it.

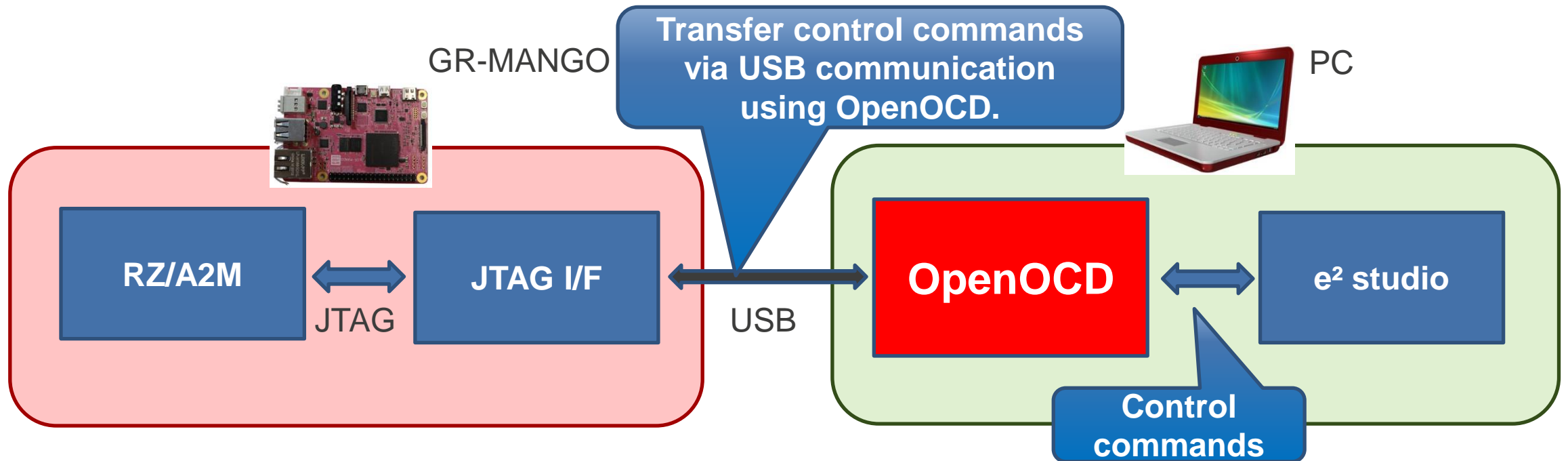


HOW TO INSTALL OPEN OCD

What is OpenOCD?

Open source On-Chip Debugger software that can be used in common with ARM processors.

- OpenOCD absorbs the differences in hardware and controls it so that debug can be performed.



How to install OpenOCD (1/15)

Download GNU ARM Eclipse OpneOCD(※2) from Github(※1).

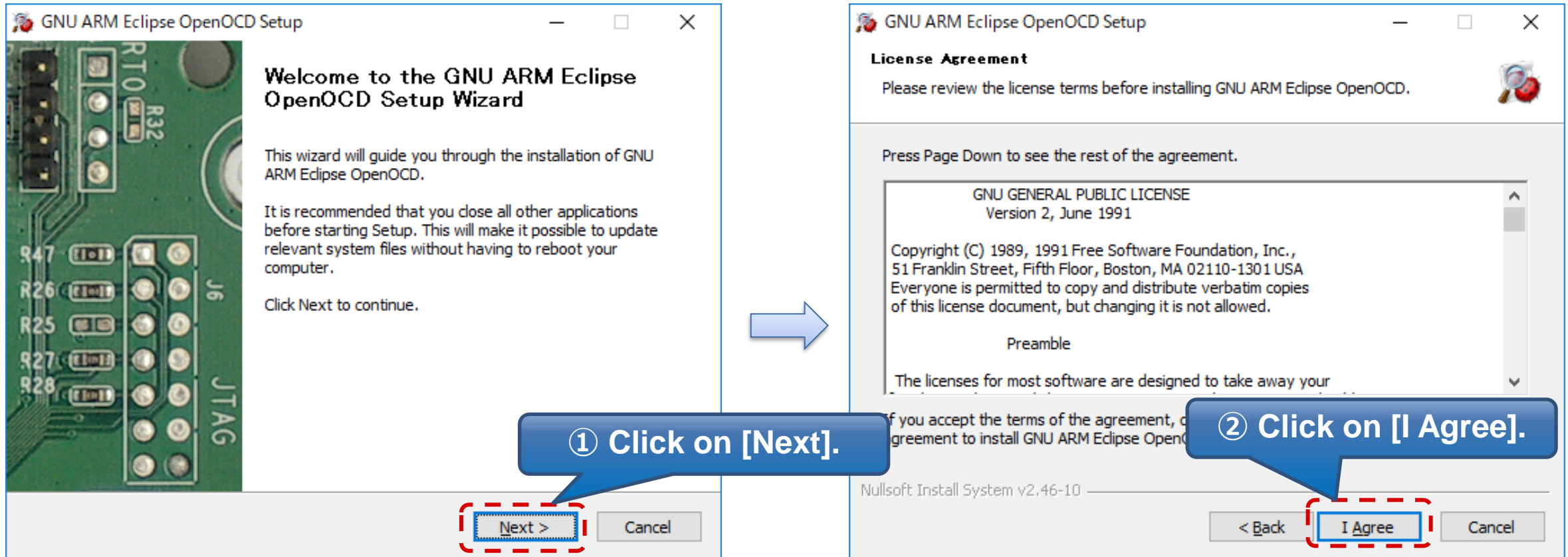
(※1)<https://github.com/ilg-archived/openocd/releases/tag/gae-0.10.0-20160110>

(※2)OpenOCD for Eclipse

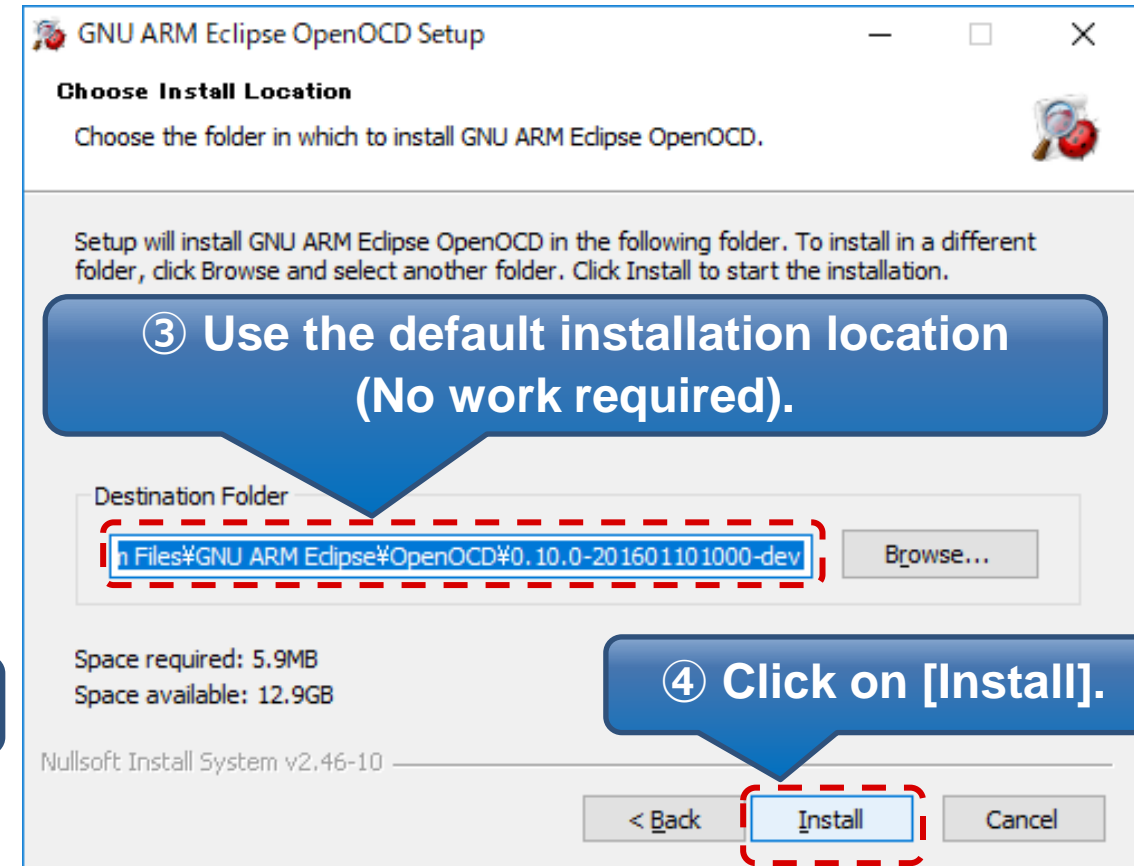
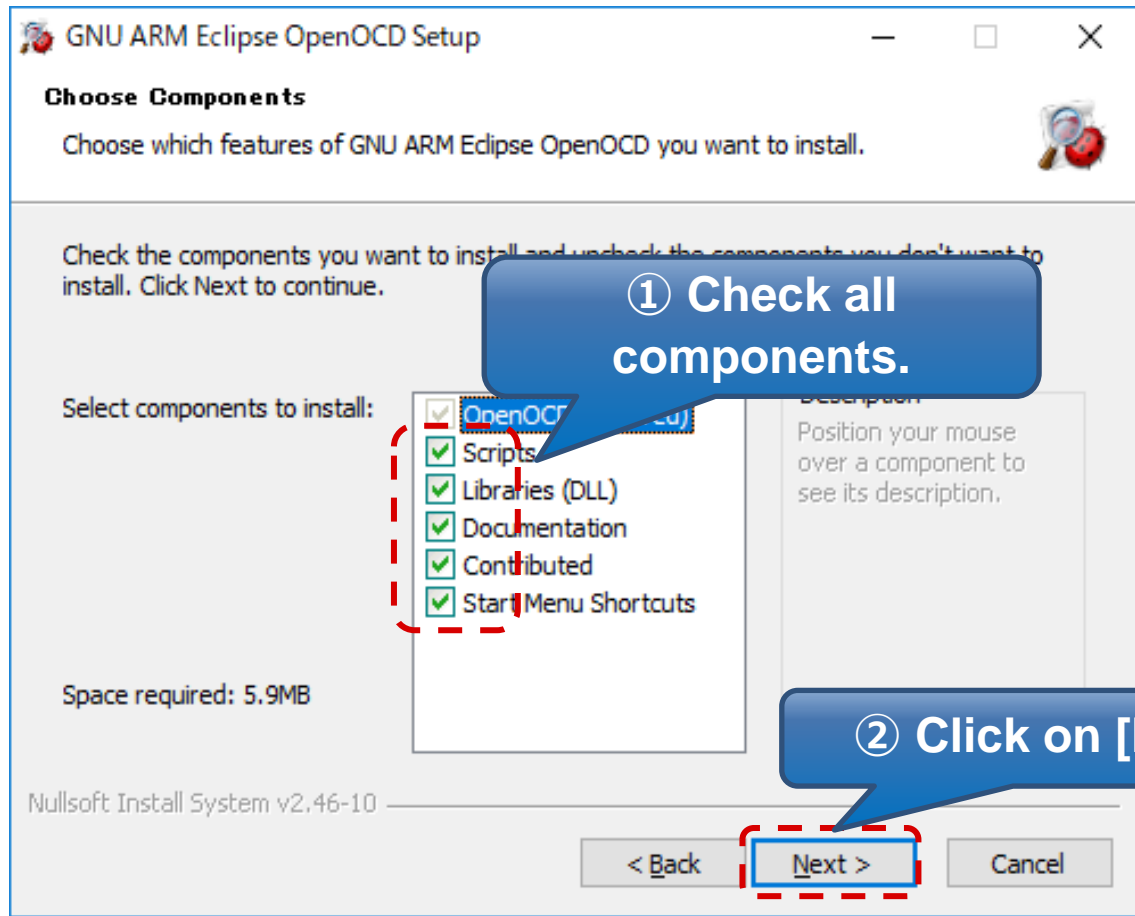


How to install OpenOCD (2/15)

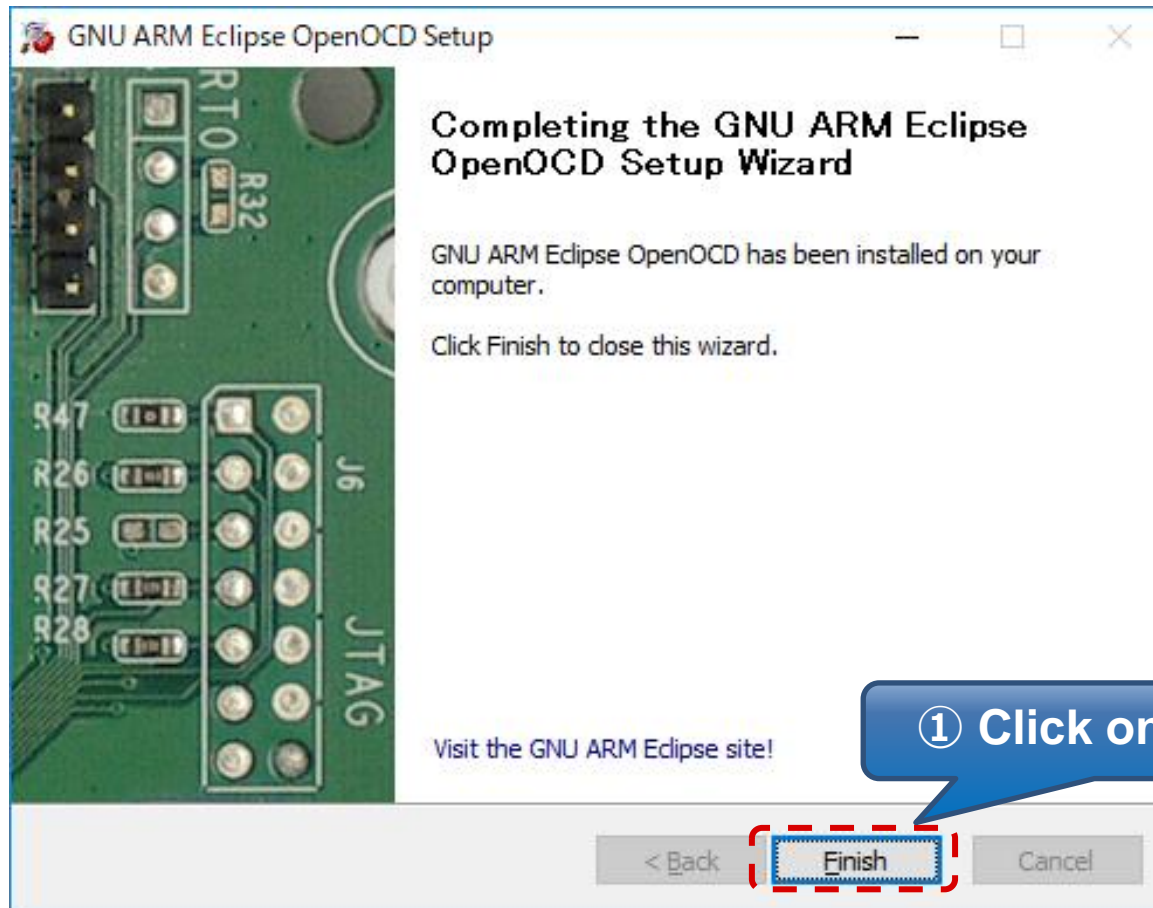
We will explain how to install GNU ARM Eclipse OpenOCD.



How to install OpenOCD (3/15)



How to install OpenOCD (4/15)



How to install OpenOCD (5/15)

Obtain the config file from ARM MBED wiki(※)

(※) <https://os.mbed.com/teams/Renesas/wiki/How-to-debug-with-e2-studio>

Associate GR-MANGO config with OpenOCD

Notice

Please copy the "renesas_gr.cfg" file to scripts\board directory included in the OpenOCD installation. The name of the file called "renesas_gr.cfg".

```
renesas_gr.cfg
1 # Renesas GR-PEACH (CMSIS-DAP)
2
3 source [find interface/cmsis-dap.cfg]
4
5 source [find target/swj-dp.tcl]
6
7 set _CHIPNAME rzal
8 swj_newdap $_CHIPNAME cpu -expected-id 0x3ba02477
9
10 set _TARGETNAME $_CHIPNAME.cpu
11 target create $_TARGETNAME cortex_a -chain-position $_TARGETNAME
12
13 adapter_khz 1000
14 reset_config trst_and_srst
15 debug_level 0
16 gdb_target_description enable
17 gdb_breakpoint_override hard
18 init
19 halt
20 cortex_a dbginit
```

According to the version of the windows operating system and the version of OpenOCD, it should be located as follows:

Windows OS(32bit), OpenOCD(32bit):

- C:\Program Files\GNU ARM Eclipse\OpenOCD\0.10.0-201601101000-dev\scripts\board

Windows OS(64bit), OpenOCD(32bit):

① Copy the text into a text editor and make "renesas_gr.cfg".

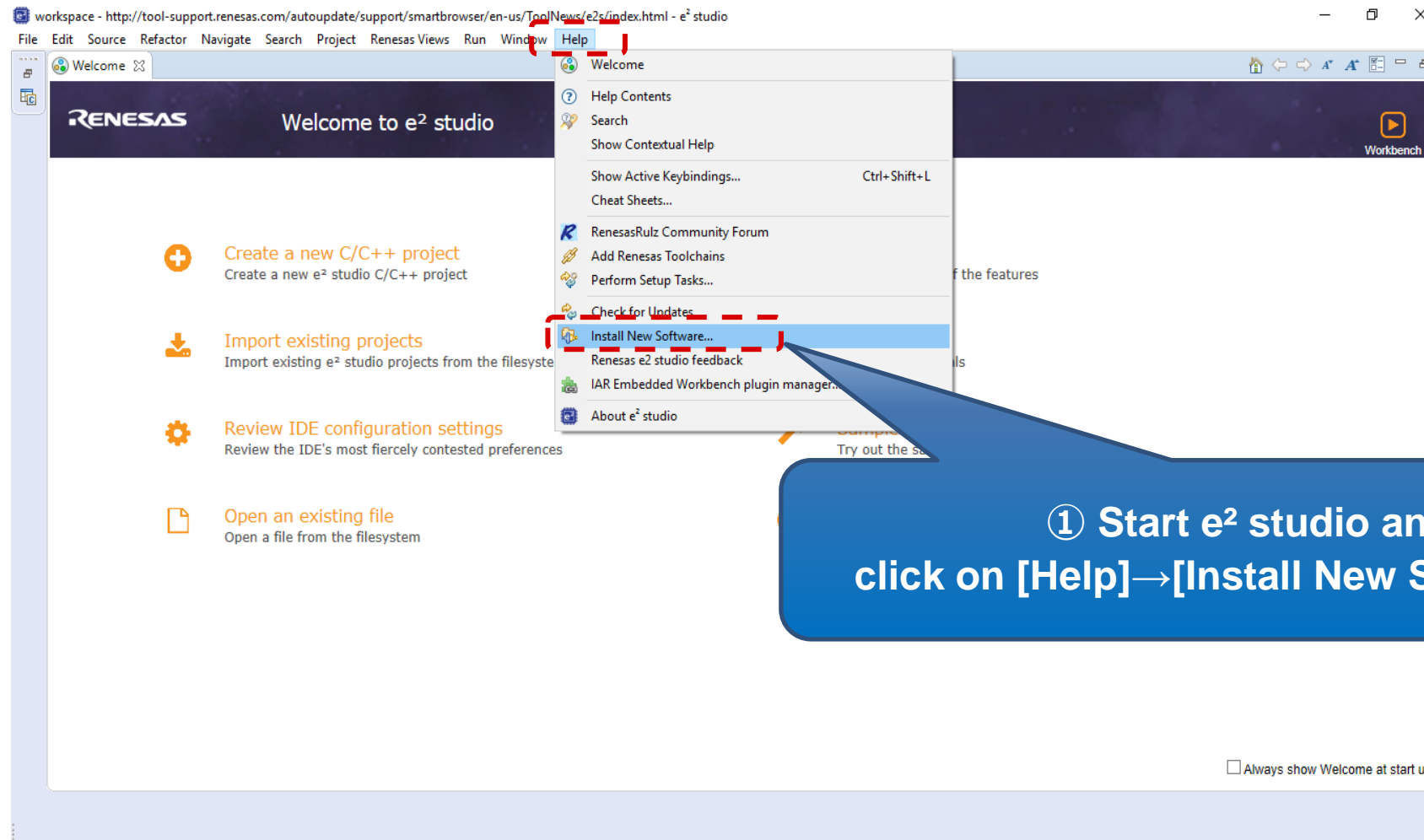
How to install OpenOCD (6/15)

1 Copy "renesas_gr.cfg" to "board" folder under OpenOCD installation folder.

renesas_gr.cfg

Name	Date modified	Type	Size
omap2420_n4.cfg	1/10/2016 7:14 PM	CFG File	
open-blcd.cfg	1/10/2016 7:14 PM	CFG File	
openrd.cfg	1/10/2016 7:14 PM	CFG File	
or1k_generic.cfg	1/10/2016 7:14 PM	CFG File	
osk5912.cfg	1/10/2016 7:14 PM	CFG File	
phone_se_j100i.cfg	1/10/2016 7:14 PM	CFG File	3 KB
phytec_lpc3250.cfg	1/10/2016 7:14 PM	CFG File	1 KB
pic-p32mx.cfg	1/10/2016 7:14 PM	CFG File	1 KB
pipistrello.cfg	1/10/2016 7:14 PM	CFG File	1 KB
propox_mmnet1001.cfg	1/10/2016 7:14 PM	CFG File	3 KB
pxa255_sst.cfg	1/10/2016 7:14 PM	CFG File	1 KB
quark_x10xx_board.cfg	1/10/2016 7:14 PM	CFG File	1 KB
redbee.cfg	1/10/2016 7:14 PM	CFG File	1 KB
renesas_dk-s7g2.cfg	1/10/2016 7:14 PM	CFG File	1 KB
renesas_gr.cfg	10/23/2020 4:47 PM	CFG File	1 KB
rsc-w910.cfg	1/10/2016 7:14 PM	CFG File	2 KB
sheevaplug.cfg	1/10/2016 7:14 PM	CFG File	5 KB
smdk6410.cfg	1/10/2016 7:14 PM	CFG File	1 KB
spansion_sk-fm4-176l-s6e2cc.cfg	1/10/2016 7:14 PM	CFG File	1 KB
spansion_sk-fm4-u120-9b560.cfg	1/10/2016 7:14 PM	CFG File	1 KB
spear300evb.cfg	1/10/2016 7:14 PM	CFG File	2 KB
spear300evb_mod.cfg	1/10/2016 7:14 PM	CFG File	2 KB

How to install OpenOCD (7/15)



How to install OpenOCD (8/15)

1 Enter
“http://gnuarmclipse.sourceforge.net/updates”
in [Work with].

2 Click on [Add].

Install

Available Software
Check the items that you wish to install.

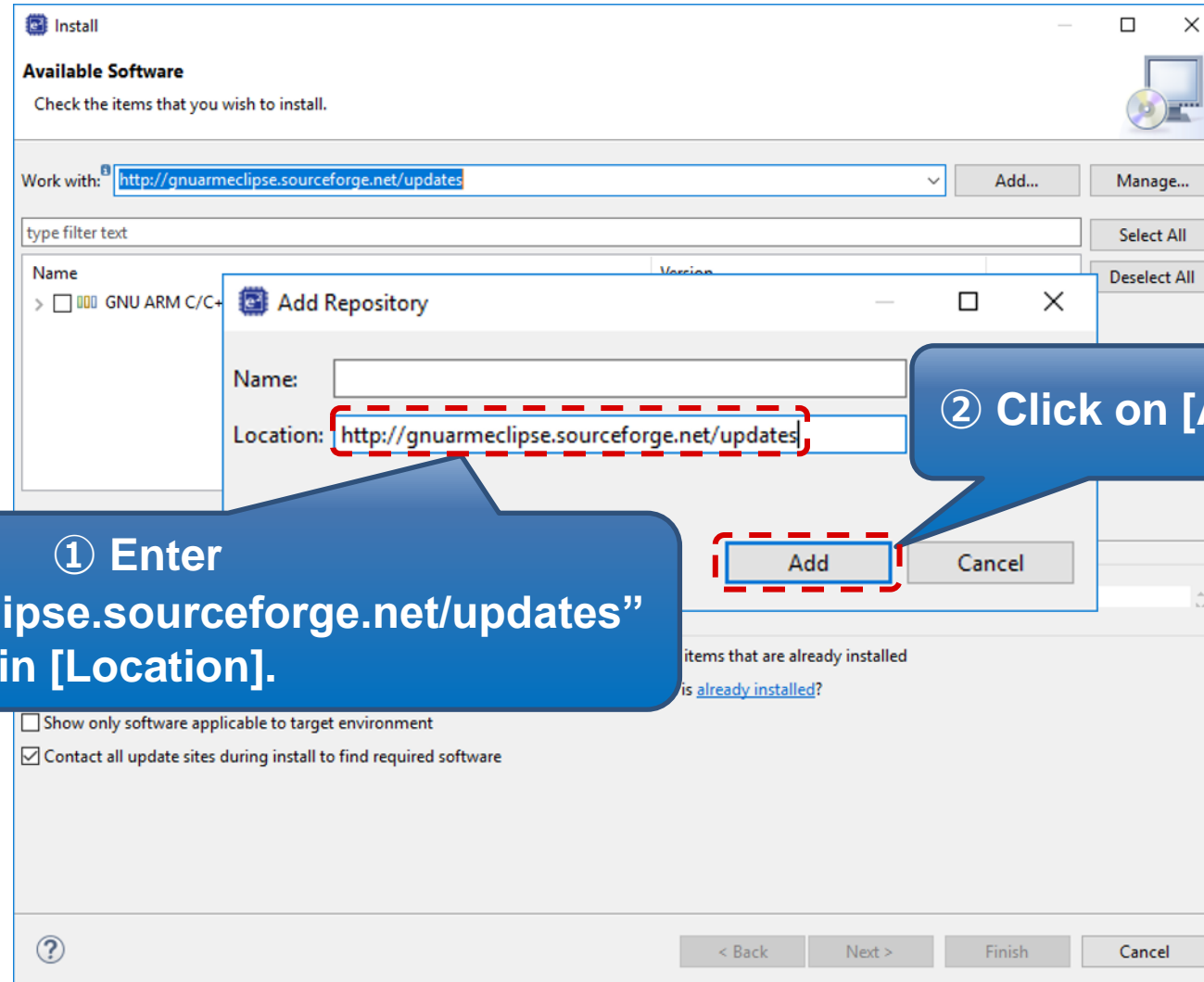
Work with: <http://gnuarmclipse.sourceforge.net/updates> Add... Manage...

Details

- ☒ Show only the latest versions of available software
- ☒ Group items by category
- ☐ Show only software applicable to target environment
- ☒ Contact all update sites during install to find required software
- ☒ Hide items that are already installed
What is [already installed?](#)

< Back Next > Finish Cancel

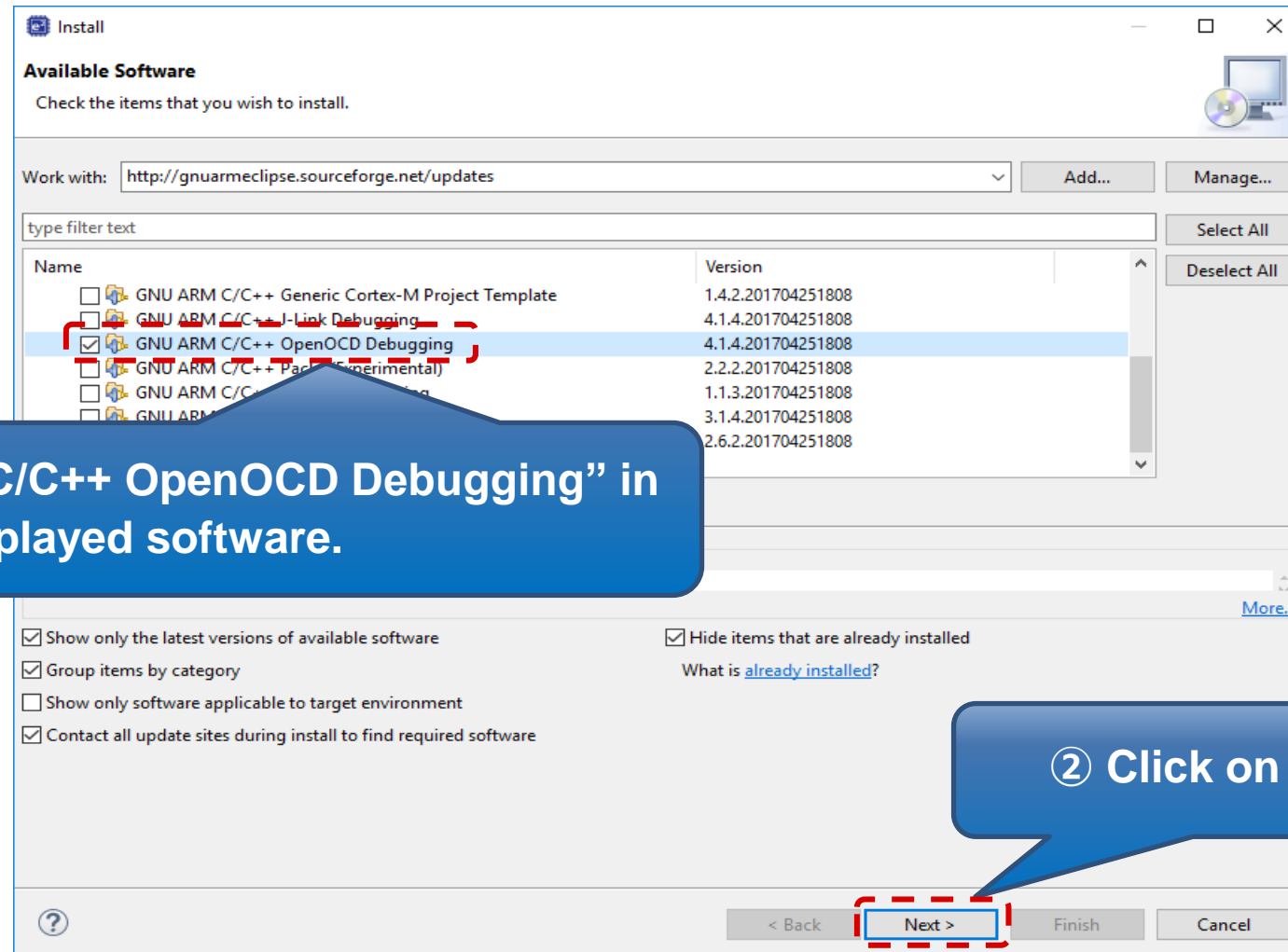
How to install OpenOCD (9/15)



① Enter
“http://gnuarmclipse.sourceforge.net/updates”
in [Location].

② Click on [Add].

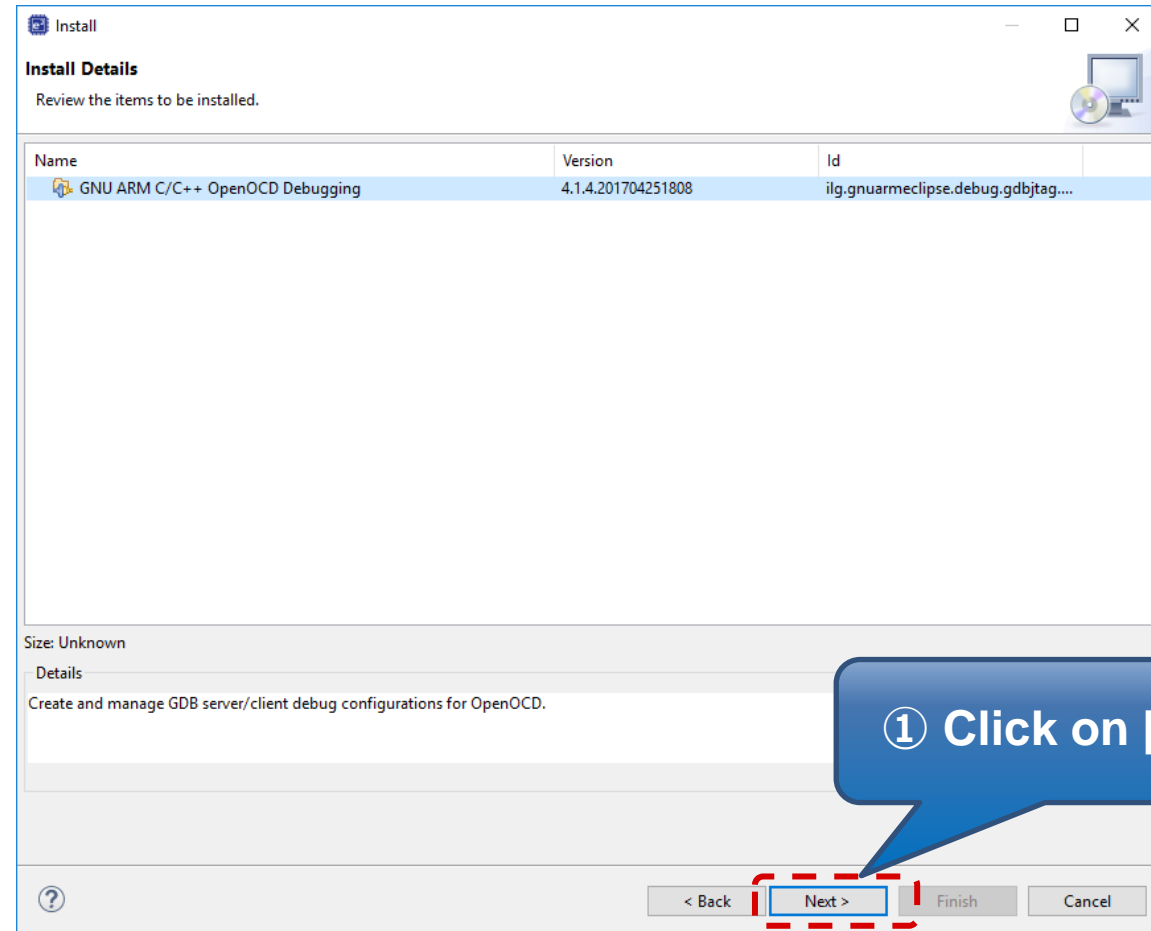
How to install OpenOCD (10/15)



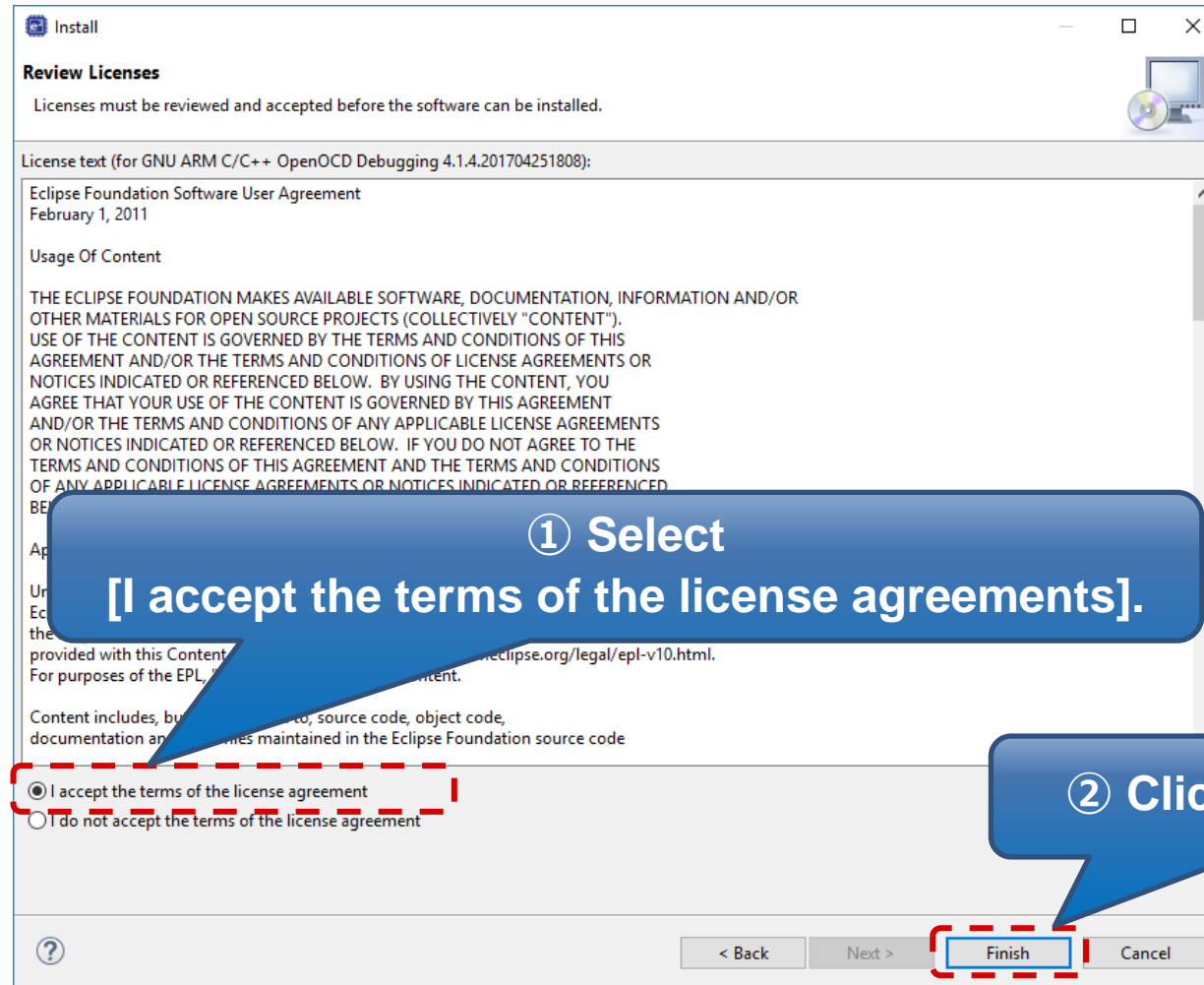
① Check "GNU ARM C/C++ OpenOCD Debugging" in the displayed software.

② Click on [Next].

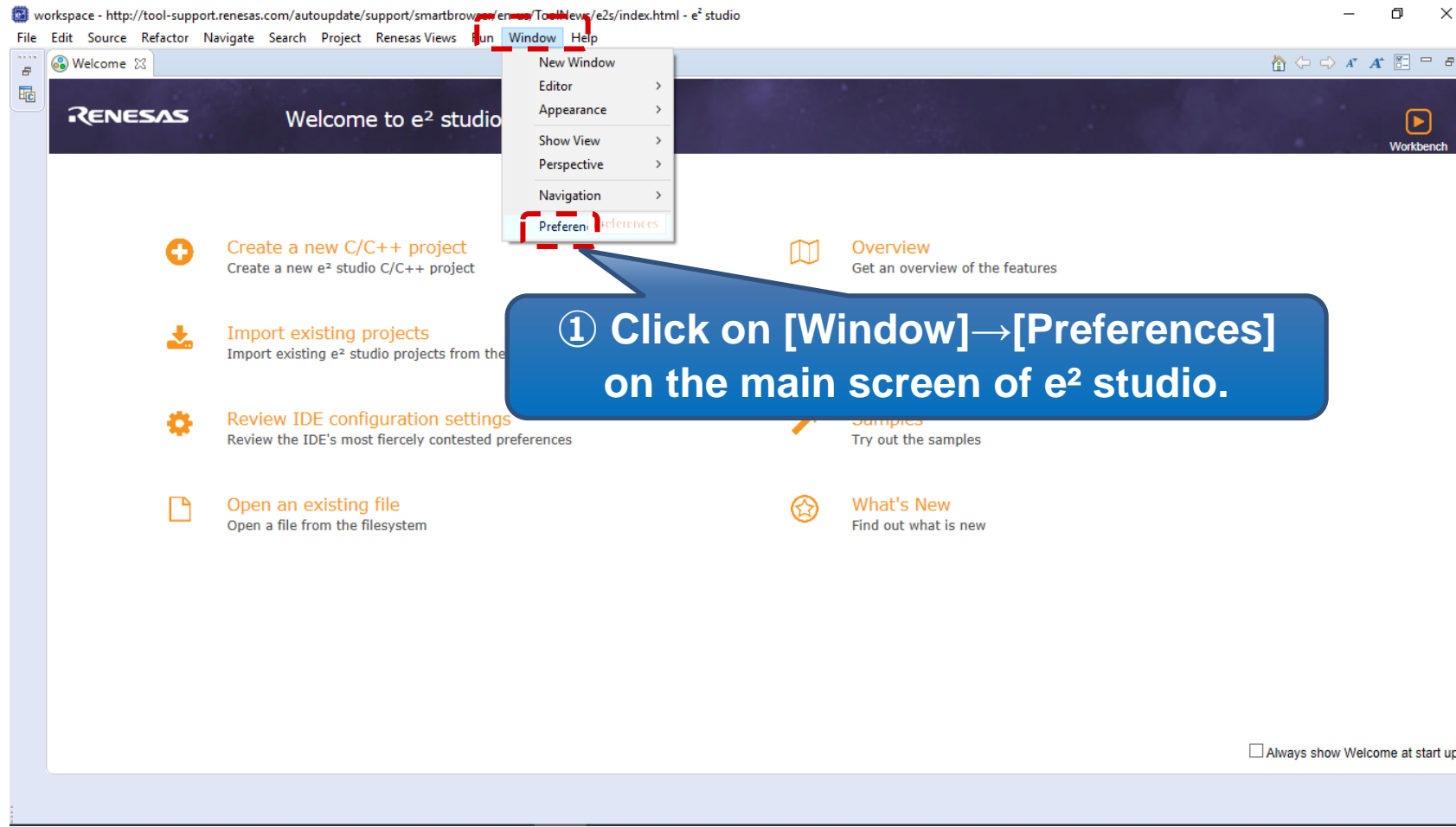
How to install OpenOCD (11/15)



How to install OpenOCD (12/15)



How to install OpenOCD (13/15)



How to install OpenOCD (14/15)

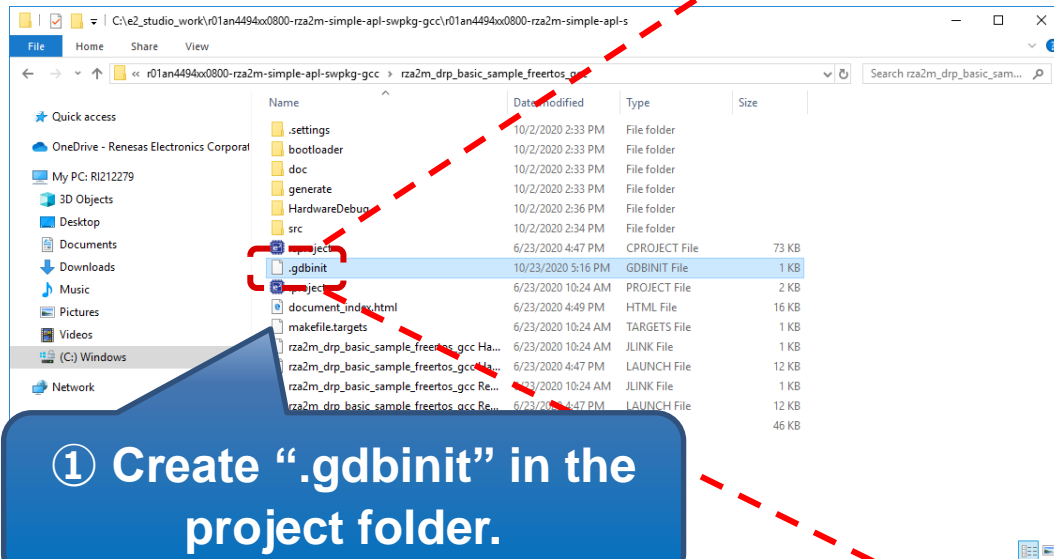
① Click on [MCU]→[Global OpenOCD Path].

② Set "openocd.exe".

③ Set "C:\Program Files\GNU ARM Eclipse\OpenOCD\0.10.0-201601101000-dev\bin".

How to install OpenOCD (15/15)

① Create “.gdbinit” in the project folder.



```
.gdbinit - Notepad
File Edit Format View Help
define hook-step
mon cortex_a maskisr on
end

define hook-stepi
mon cortex_a maskisr on
end

define hook-next
mon cortex_a maskisr on
end

define hook-nexti
mon cortex_a maskisr on
end

define hook-finish
mon cortex_a maskisr on
end

define hook-stop
mon cortex_a maskisr off
end

define hook-kill
mon reset init
end
```

② Write the following contents to “.gdbinit” with a text editor.

```
define hook-step
mon cortex_a maskisr on
end
```

```
define hook-stepi
mon cortex_a maskisr on
end
```

```
define hook-next
mon cortex_a maskisr on
end
```

```
define hook-nexti
mon cortex_a maskisr on
end
```

```
define hook-finish
mon cortex_a maskisr on
end
```

```
define hook-stop
mon cortex_a maskisr off
end
```

```
define hook-kill
mon reset init
end
```

```
set mem inaccessible-by-default off
```

This completes the installation of GNU ARM Eclipse OpneOCD.

APPENDIX

Installation guide of e² studio

Renesas official web page has videos and introductory guides that explain how to install e² studio, and how to build and debug.

- **Installation of e2 studio and compiler**

<https://www.renesas.com/support/videos/e2studio-v7-installation.html>

- **Build and Debug**

<https://www.renesas.com/support/videos/e2studio-v7-create-build-debug.html>

- **e2 studio Getting Started Guide**

<https://www.renesas.com/us/en/doc/products/tool/doc/016/r20ut4535ej0101-e2studio.pdf>

Installation guide of Mbed studio

Please refer to the following for how to install Mbed studio.

- **Getting Started**

<https://os.mbed.com/teams/Renesas/wiki/GR-MANGO-Getting-Started>

- **Introduction of GR-MANGO Mbed**

<https://os.mbed.com/platforms/Renesas-GR-MANGO/>

Renesas.com