Renode Example Guide

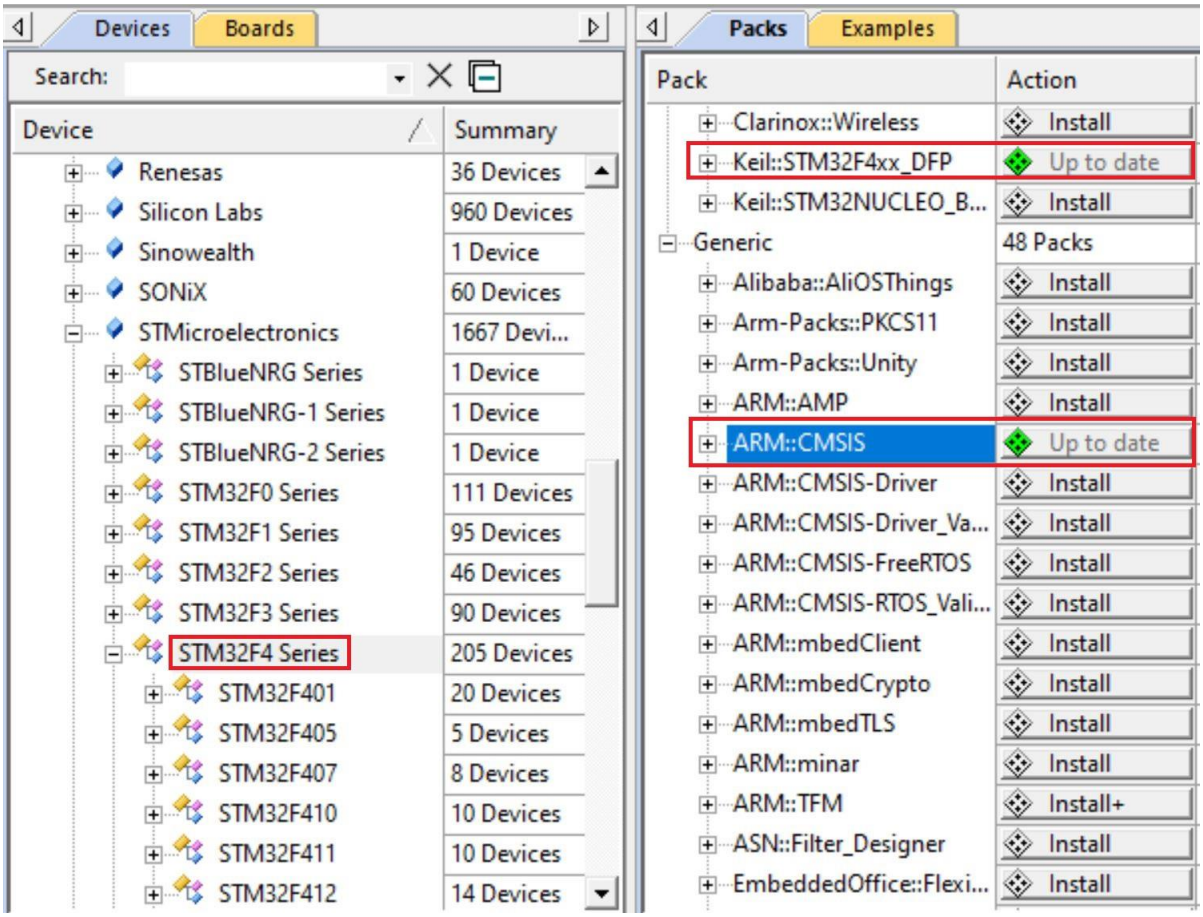
Introduction

This guide introduces how to emulate applications on Renode, the following platform is used
Renode platform: STM32F4_discovery kit
Microcontroller: STM32F407xx
CPU: Cortex® -M4 with FPU core

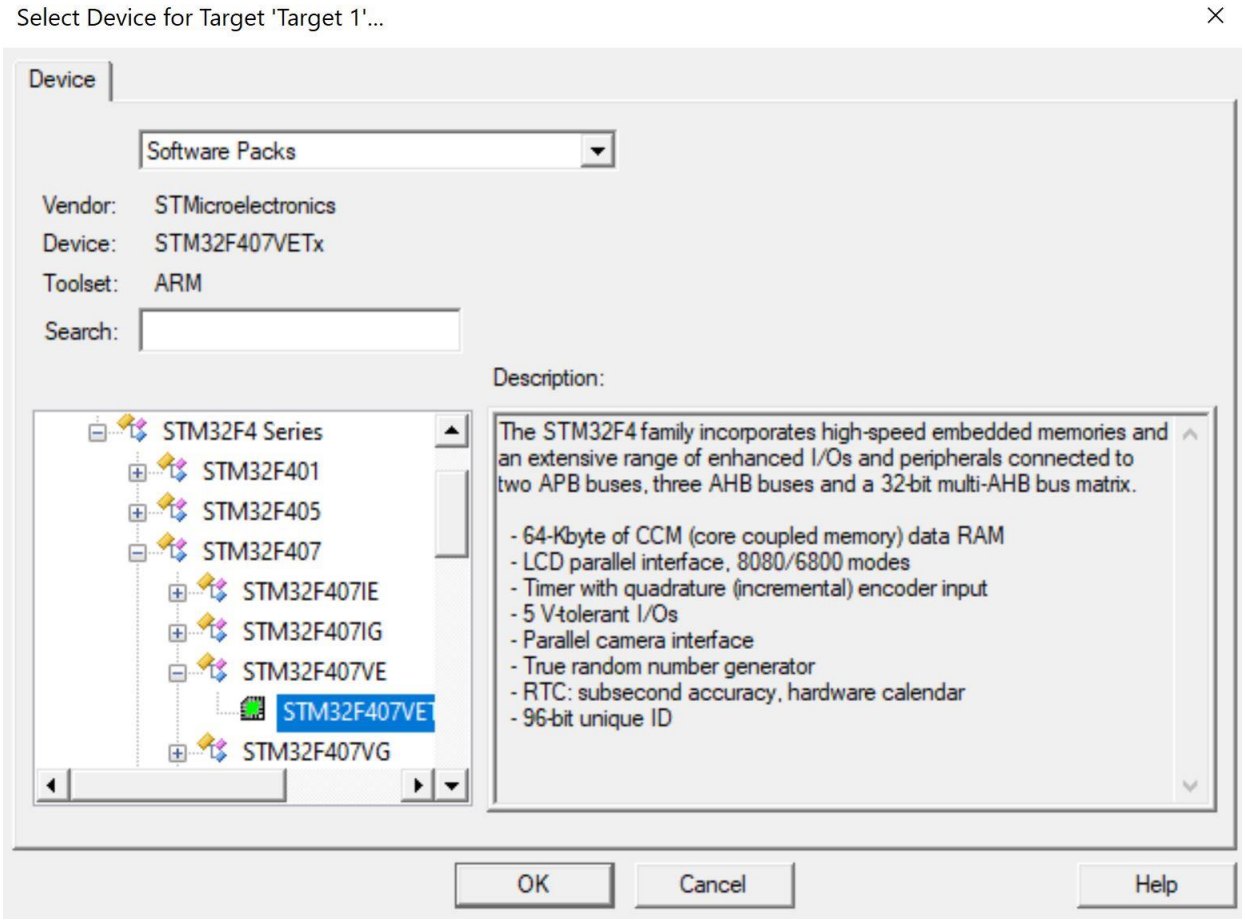
The guide starts with describing how to setup the development environment of the application on Keil. Then it describes how to run the application over Renode.

Development Environment

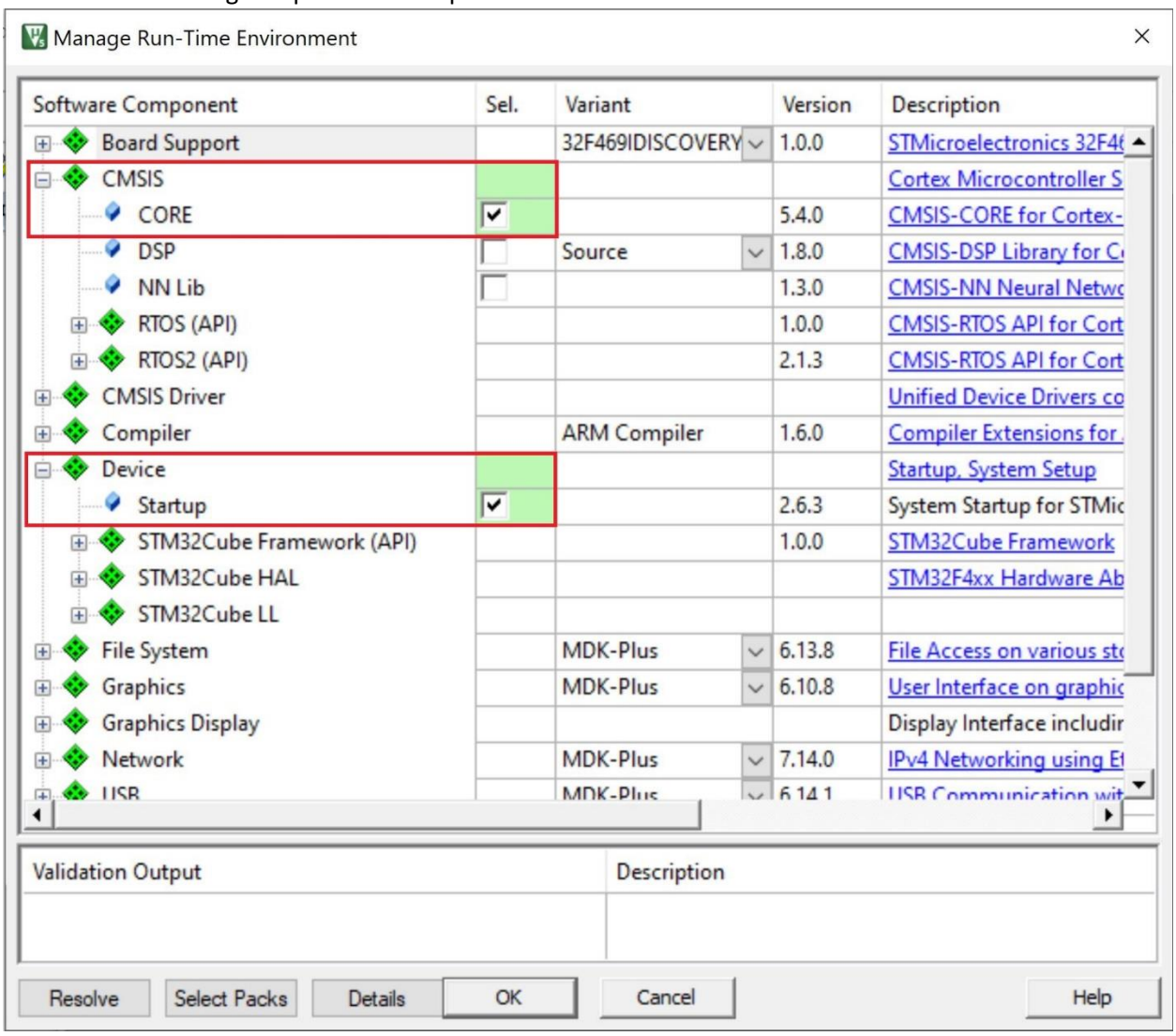
1. Open Keil, then open package manager and make sure that STM32F4 series and CMSIS core packages are installed. (Same steps as done in Lab)



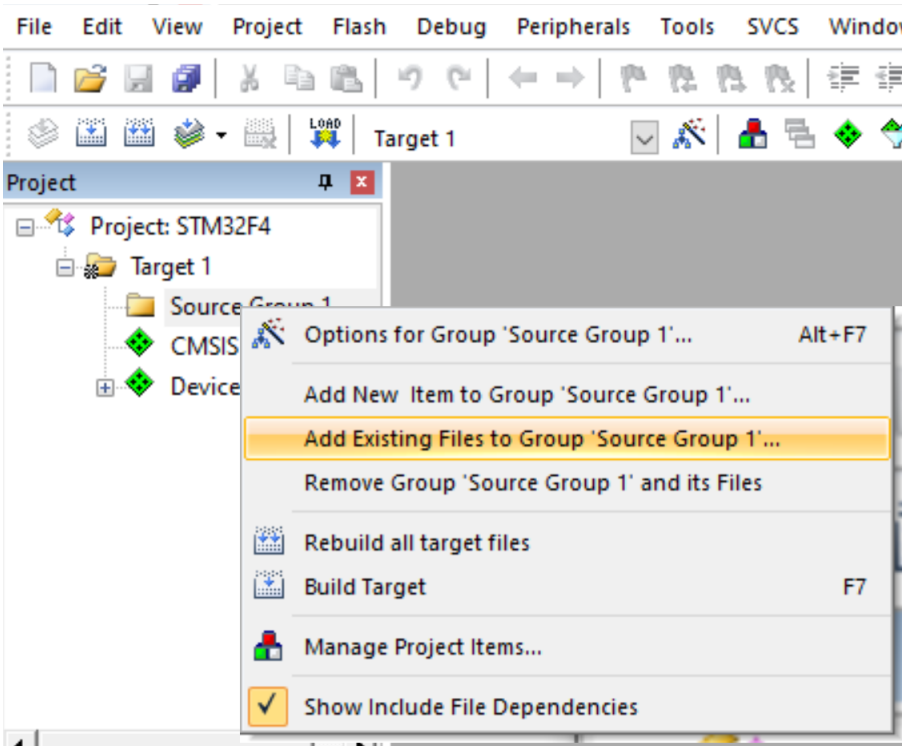
2. Create new project and select device as shown then press OK.



3. Choose the following components then press OK



4. Choose to add existing item to project as below and add main.c file



5. Build target. No errors should be shown and application binary < Keil_Project_Name >.axf should be generated in < Keil_Project_Path >\Objects folder

Now the development environment is ready, next step is to run the application using Renode.

Running Applications on Renode

1. After installing Renode, open single node scripts folder which exists in <Renode_Installation_Path>\scripts\single-node
2. Open stm32f4_discovery.resc using any text editor
3. Change the value of $bin to the path of the application binary as shown below (the path of the application binary is <Keil_Project_Path>\Objects\<Keil_Project_Name>.axf)
4. Make sure showAnalyzer command uses sysbus.uart2

```
:name: STM32F4 Discovery
:description: This script runs Contiki on STM32F4 Discovery.

using sysbus
$name?="STM32F4_Discovery"
mach create $name
machine LoadPlatformDescription @platforms/boards/stm32f4_discovery-kit.repl

cpu PerformanceInMips 125

$bin?=@C:/STM32F4/Objects/STM32F4.axf

showAnalyzer sysbus.uart2

### Set random board UNIQUE ID ###

python "import _random"
python "rand = _random.Random()"

$id1 = `python "print rand.getrandbits(32)"`
$id2 = `python "print rand.getrandbits(32)"`
$id3 = `python "print rand.getrandbits(32)"`
macro reset
"""
    sysbus LoadELF $bin

    sysbus WriteDoubleWord 0x1FFF7A10 $id1
    sysbus WriteDoubleWord 0x1FFF7A14 $id2
    sysbus WriteDoubleWord 0x1FFF7A18 $id3
"""

runMacro $reset
```

5. Open Renode.exe

6. In Renode monitor shell execute stm32f4_discovery script by typing the command **s @scripts/single-node/stm32f4_discovery.resc**