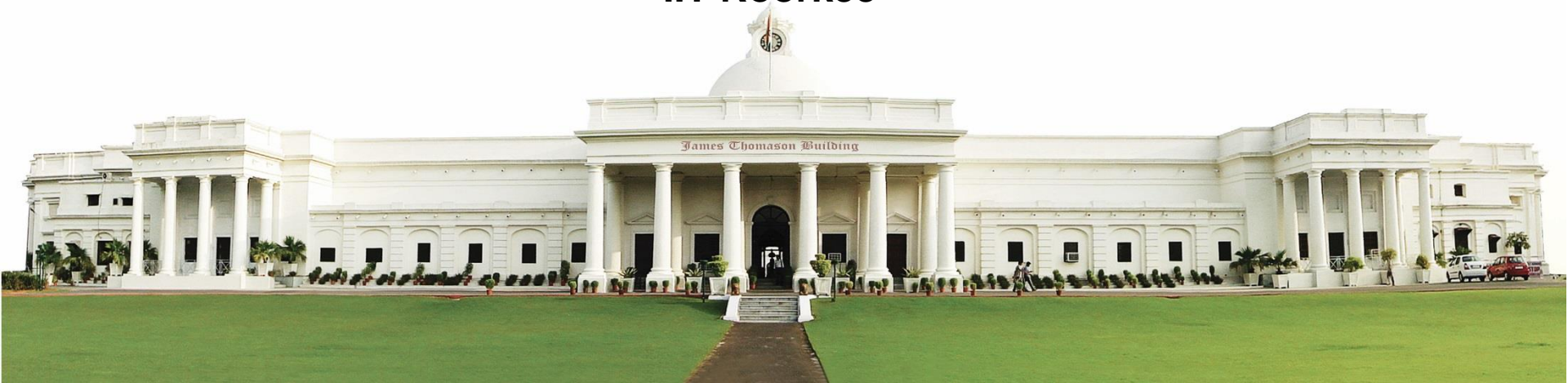


Getting Started with TIVA TM4C123G LaunchPad

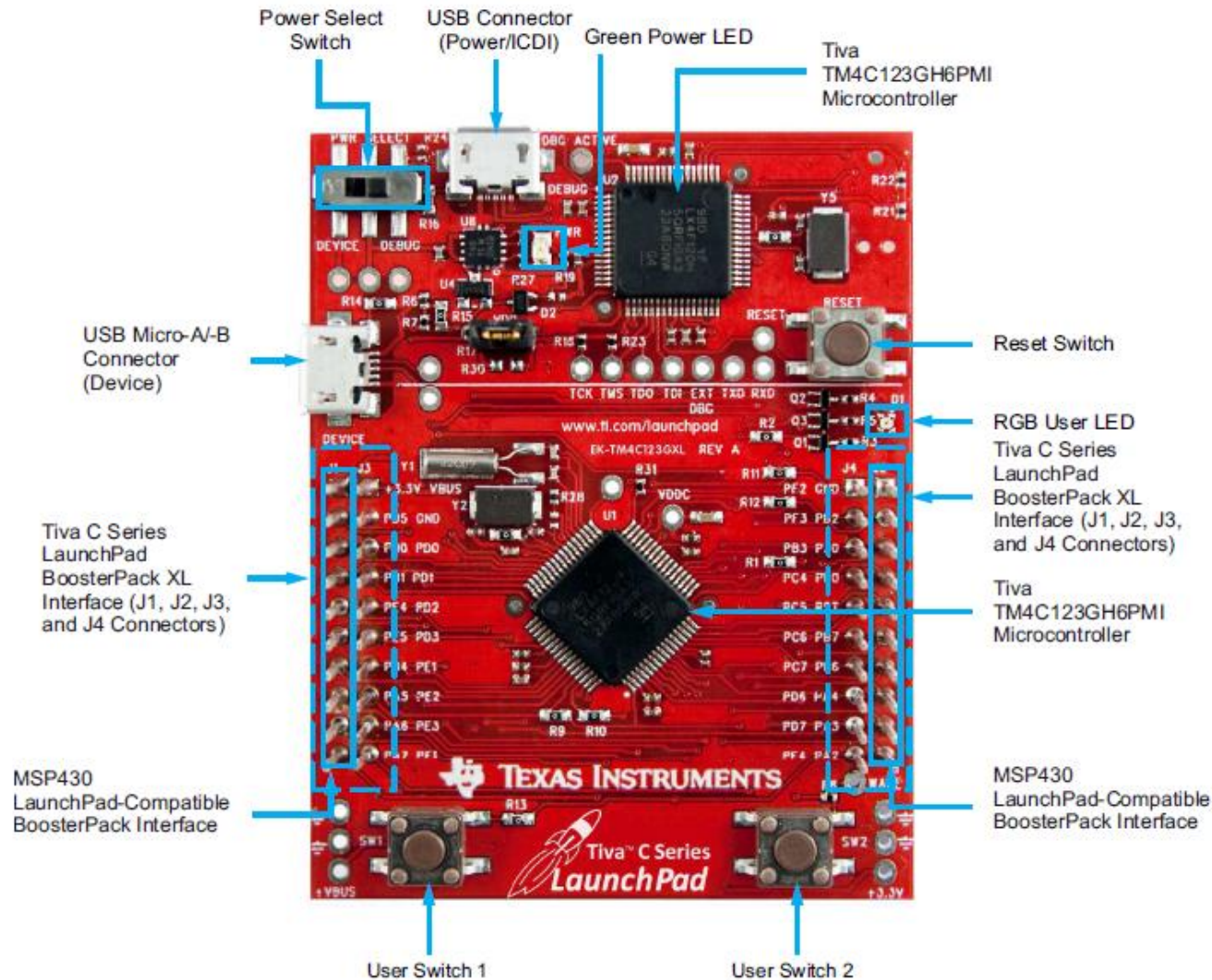
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IIT Roorkee



Types of Manuals

- **TIVA Launchpad manual**
 - Explains the board
- **TM4C123GH6PM manual**
 - Explains TIVA micro-controller
- **Cortex M4 processor manual**
 - Explains processor internals: registers, exceptions, instruction set etc
- **ARM Cortex v7-M architecture reference manual**
 - Explains Cortex M4 which is based on v7-M architecture

TIVA Launchpad



Getting Started with Keil μ Vision5

INTRODUCTION

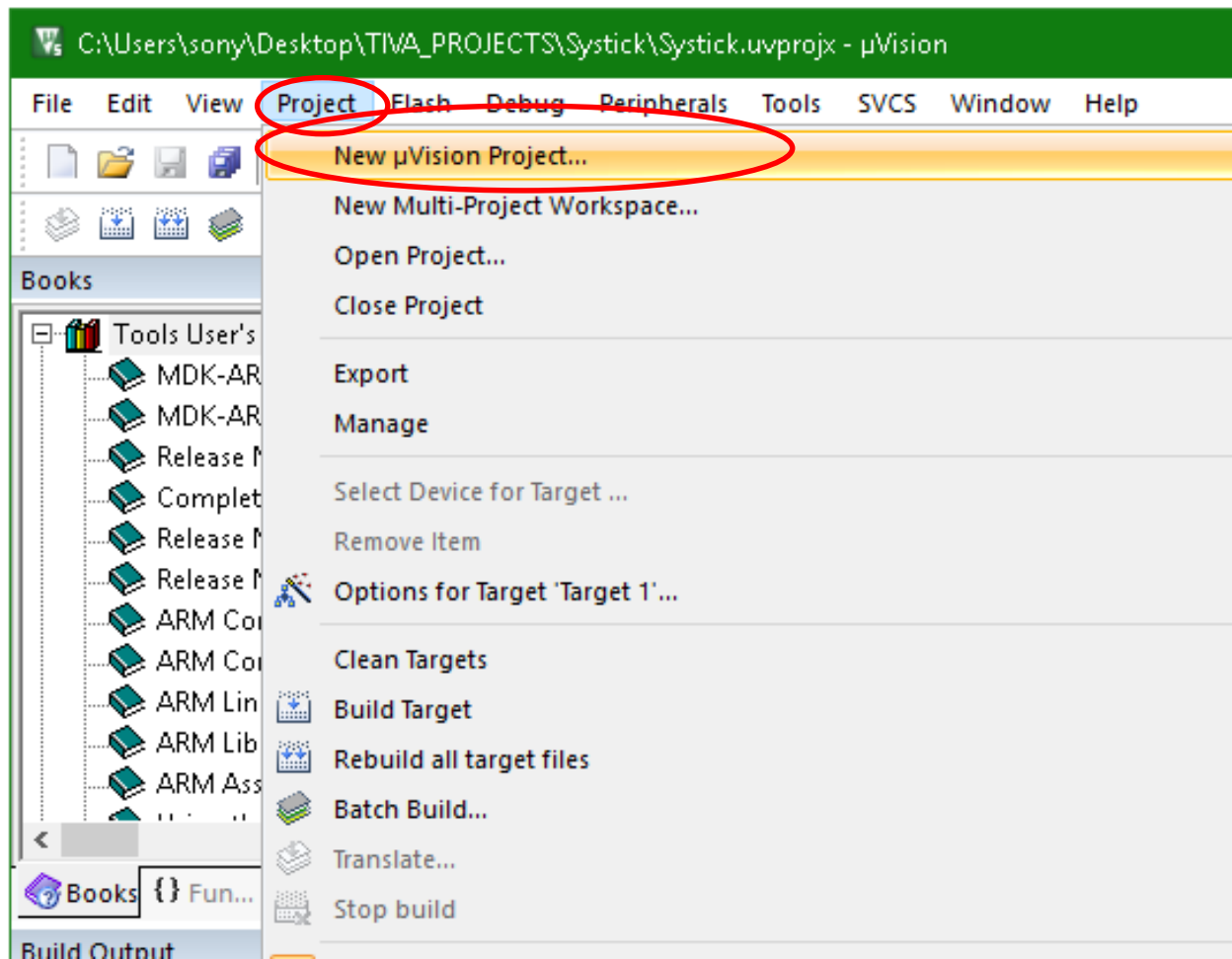
- ❑ Keil uVision is an IDE (Integrated Development Environment)
- ❑ Helps you build and compile programs.
- ❑ Keil uVision works both as an assembler and a compiler
- ❑ Code can be written in Assembly or C Language.
- ❑ Downloaded from ARM official website by filling a simple form
- ❑ <https://www.keil.com/demo/eval/arm.htm#/DOWNLOAD>

OBJECTIVES

- ☐ **Create a Project using Keil μ Vision5**
- ☐ **Create your source files in C/C++ or Assembly**
- ☐ **Build your application with the Project Manager**
- ☐ **Debug and correct errors in source files, verify and optimize your application**
- ☐ **Download your code to Flash ROM or SRAM and test the linked application**

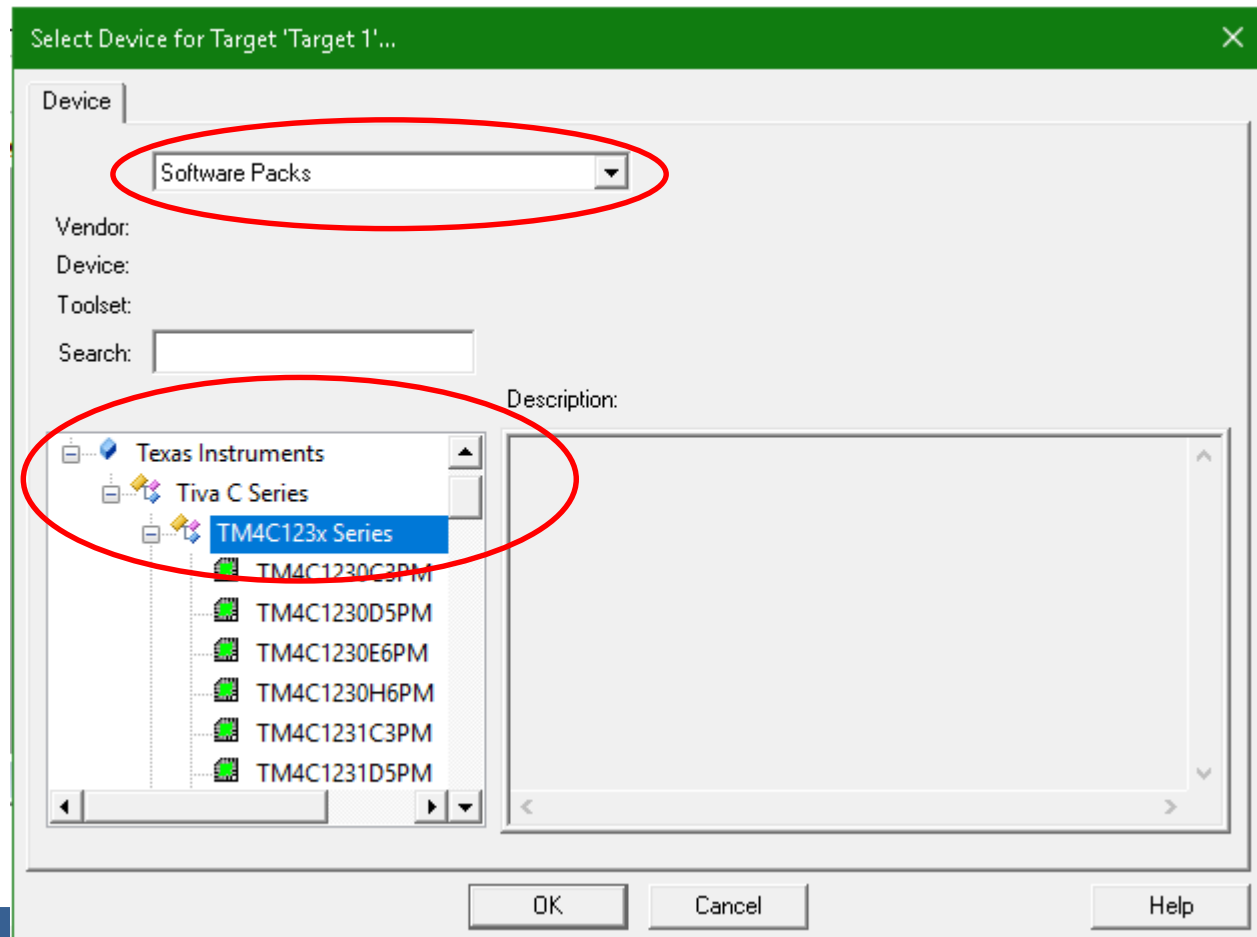
CREATING A NEW PROJECT

- ❑ Launch Keil uVision
- ❑ From menu, select Project → New uVision Project.



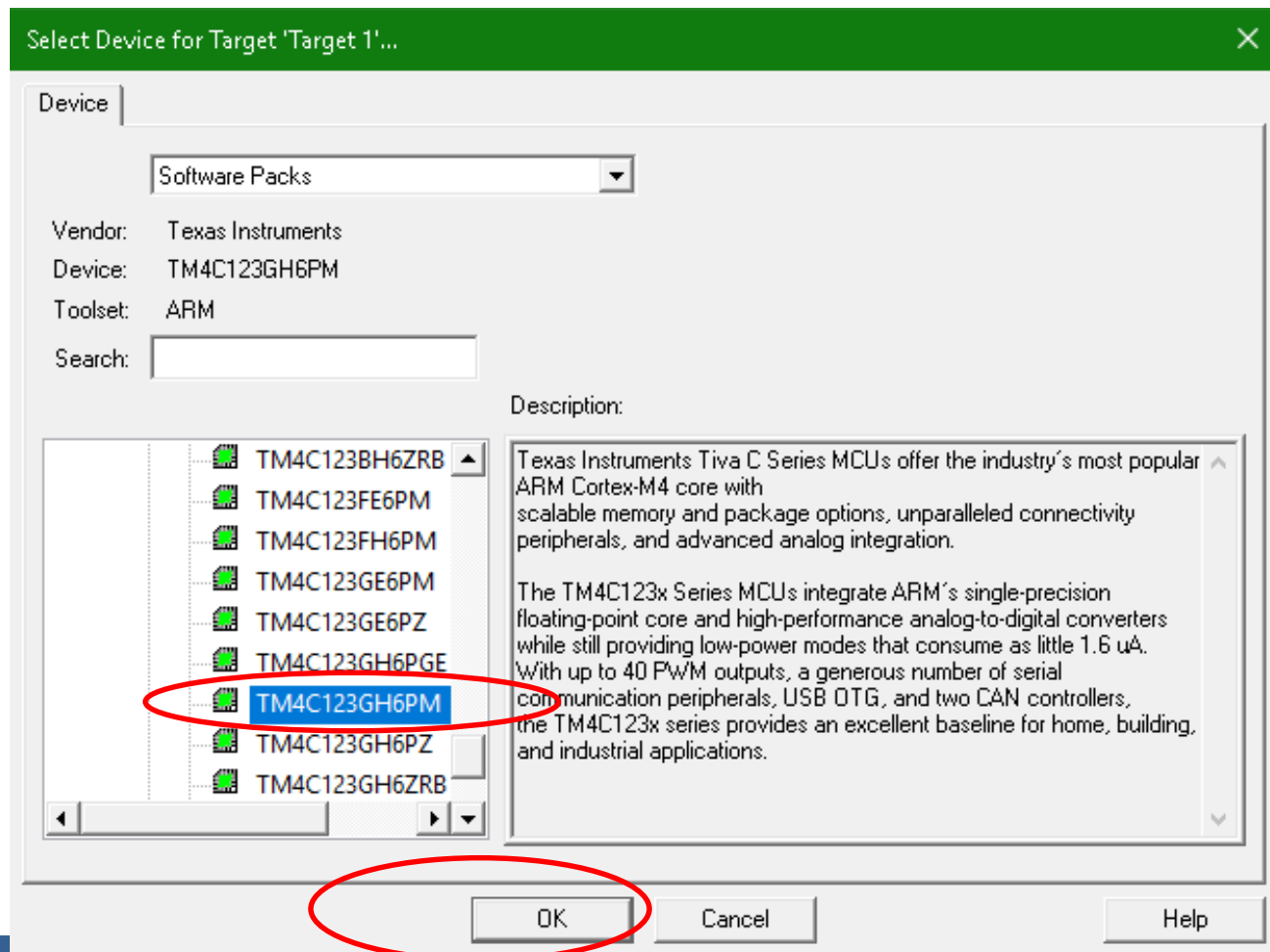
Cont....

- ❑ Always create a new project in a separate folder
- ❑ Select the Required Microcontroller from pop-up window



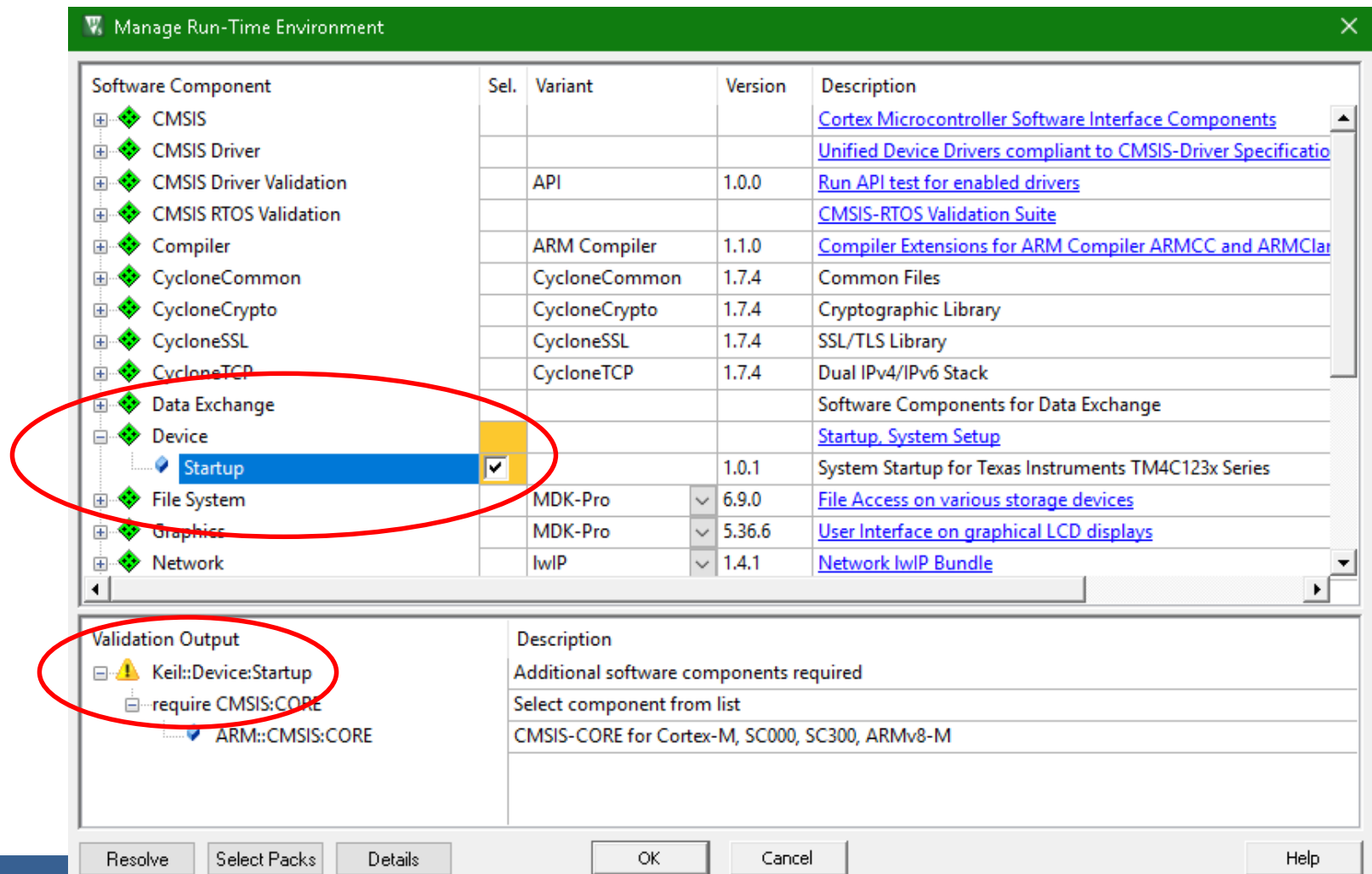
Cont....

- ❑ Select the Required Microcontroller from pop-up window
- ❑ Click “OK”



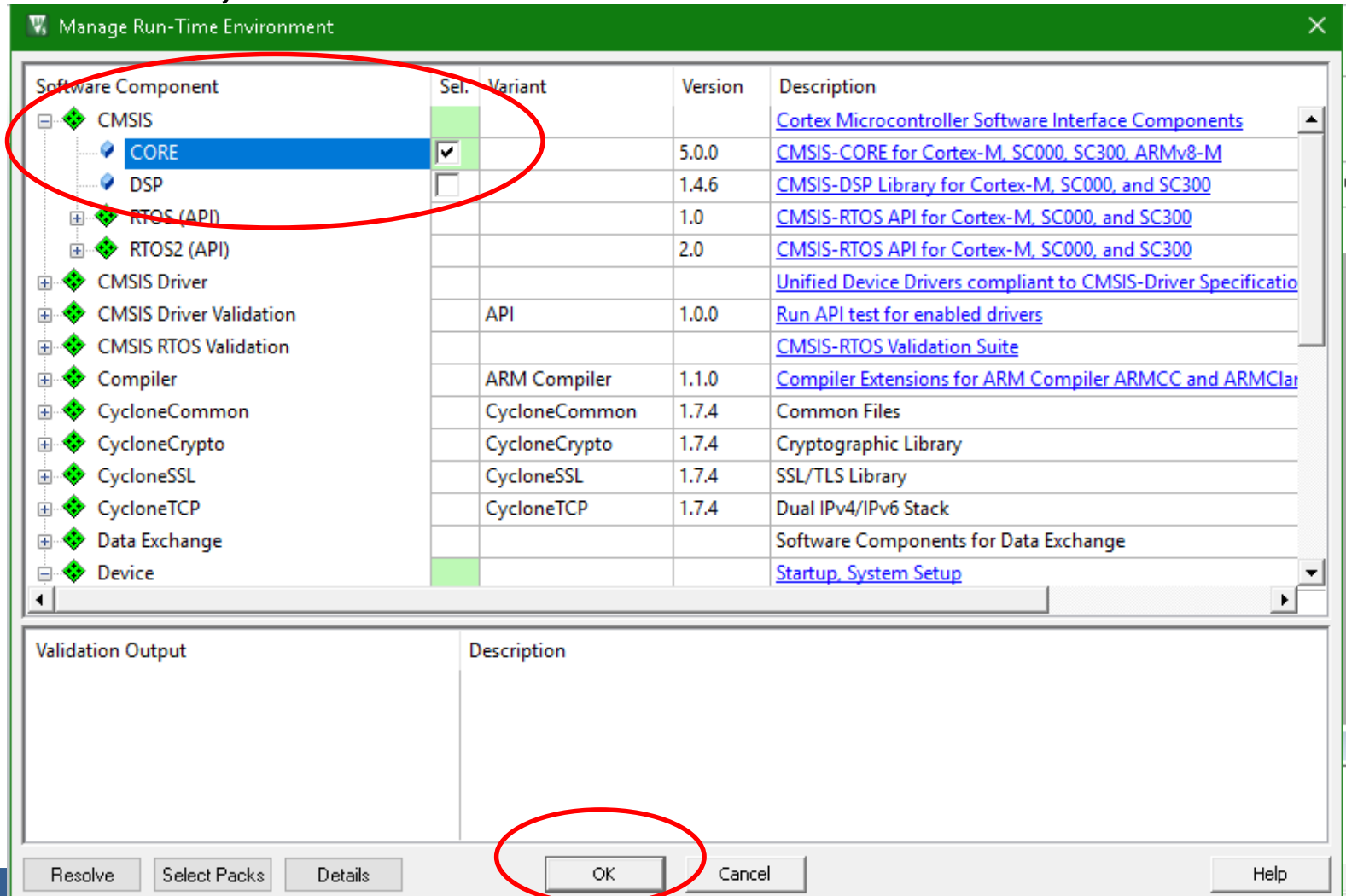
Cont....

- ❑ Manage run time environment pop-up window will be opened
- ❑ Expand “Device”, Select “startup”



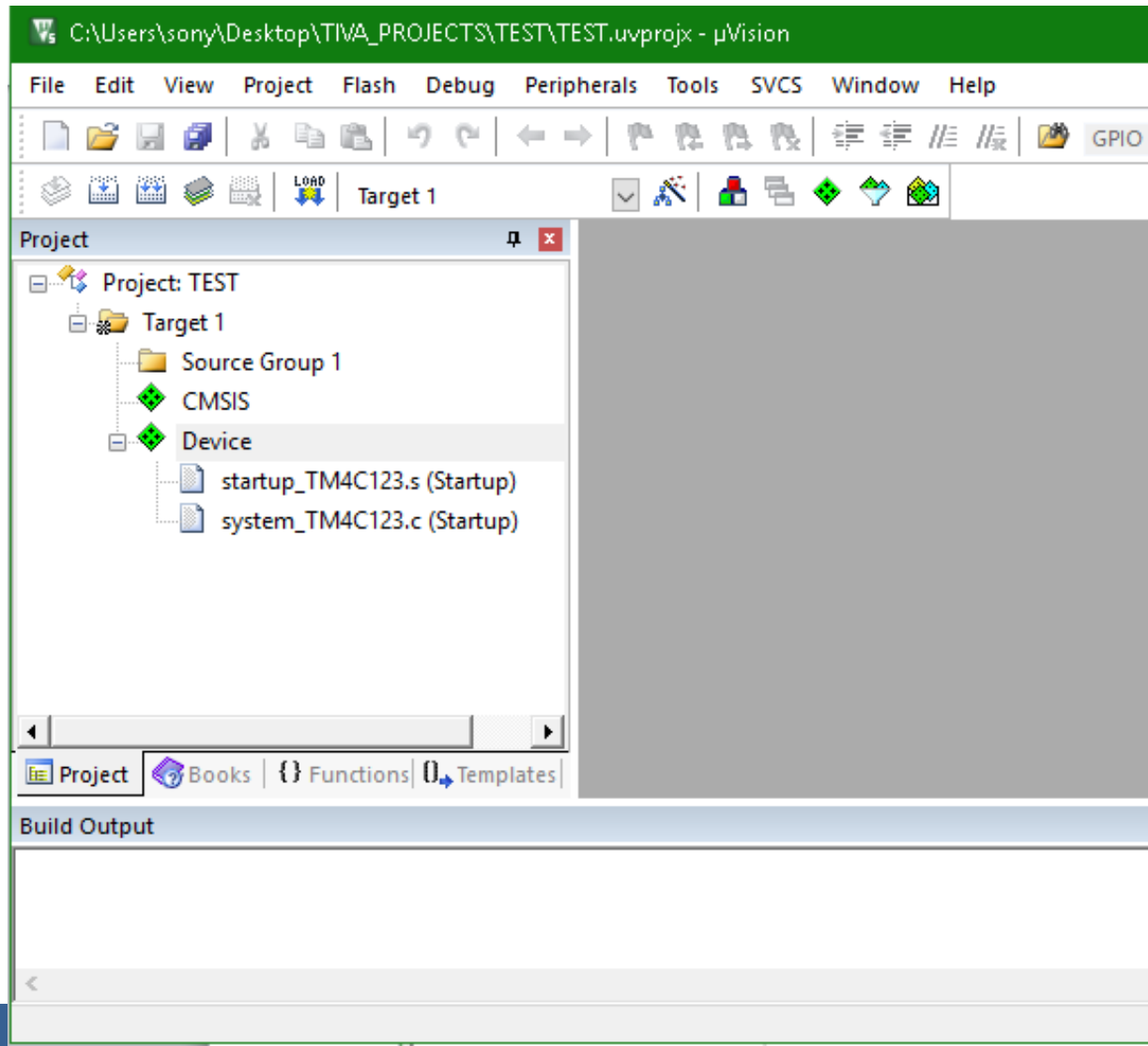
Cont....

- ❑ In Manage run time environment window
- ❑ Expand “CMSIS”, Select “CORE”



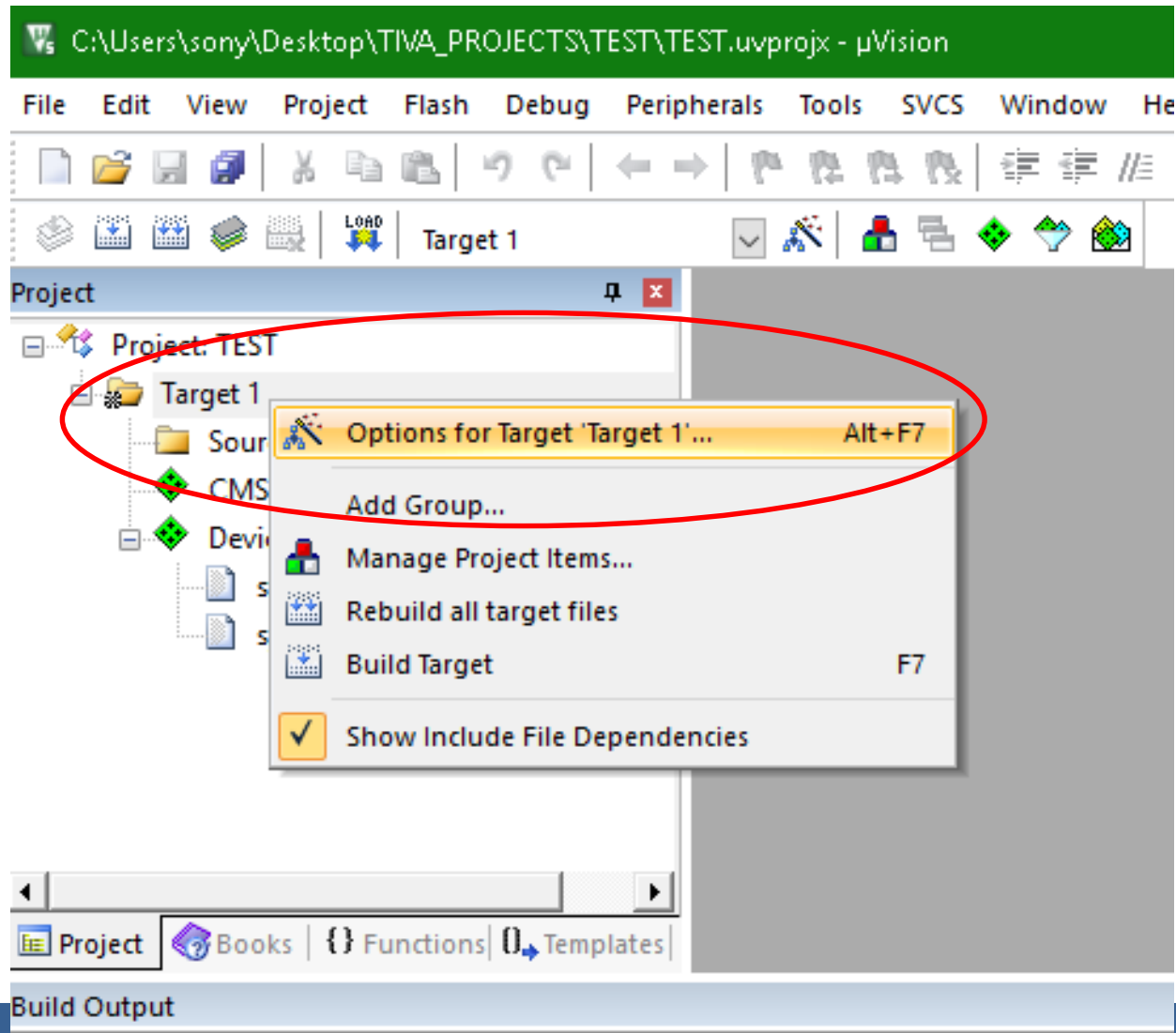
Cont....

❑ Now window should be as shown in Fig below



Cont....

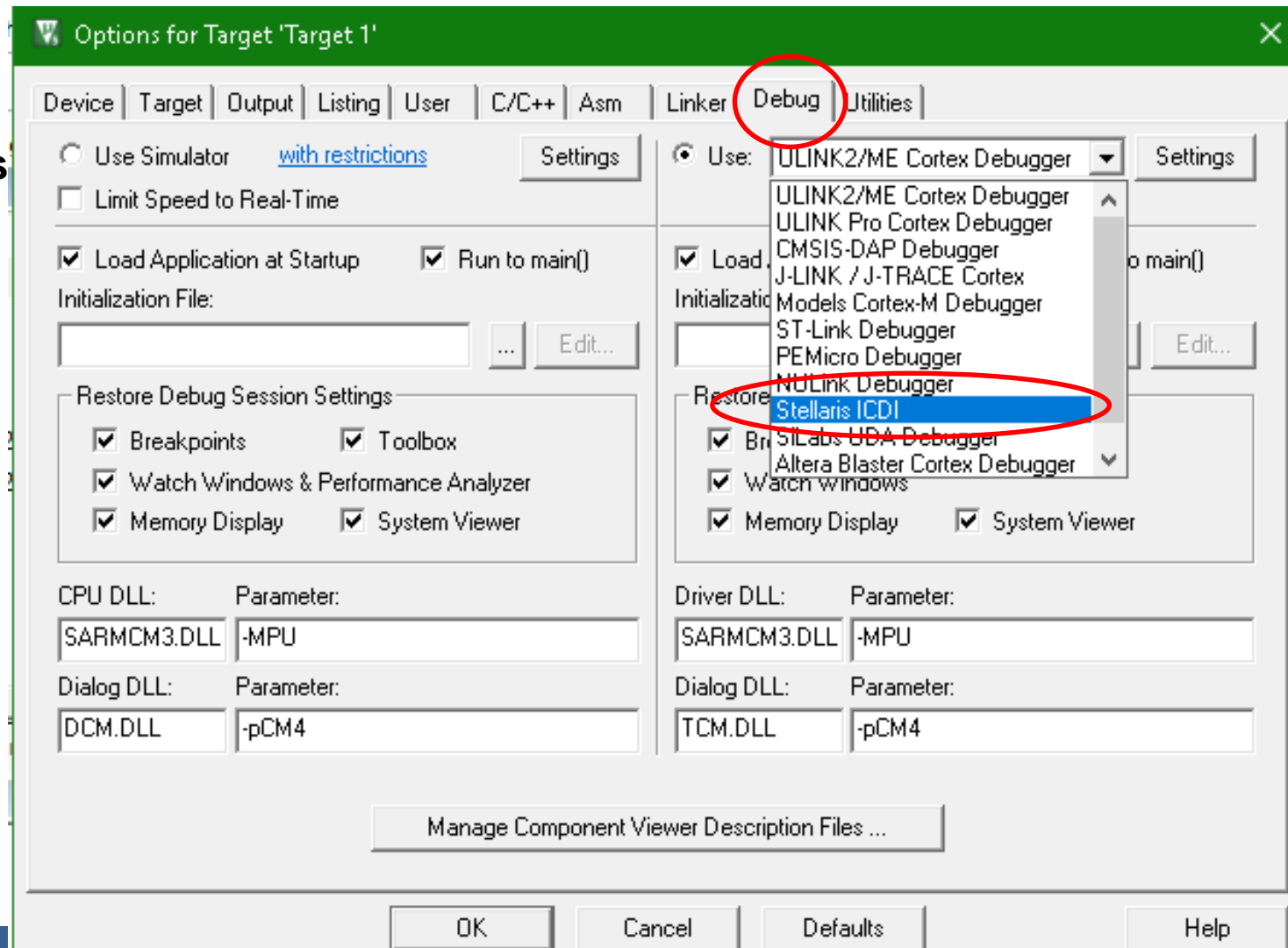
- ❑ Right click on “Target1” and select options for Target “Target1”



Cont....

❑ Options for Target “Target1” Pop-up window will be opened

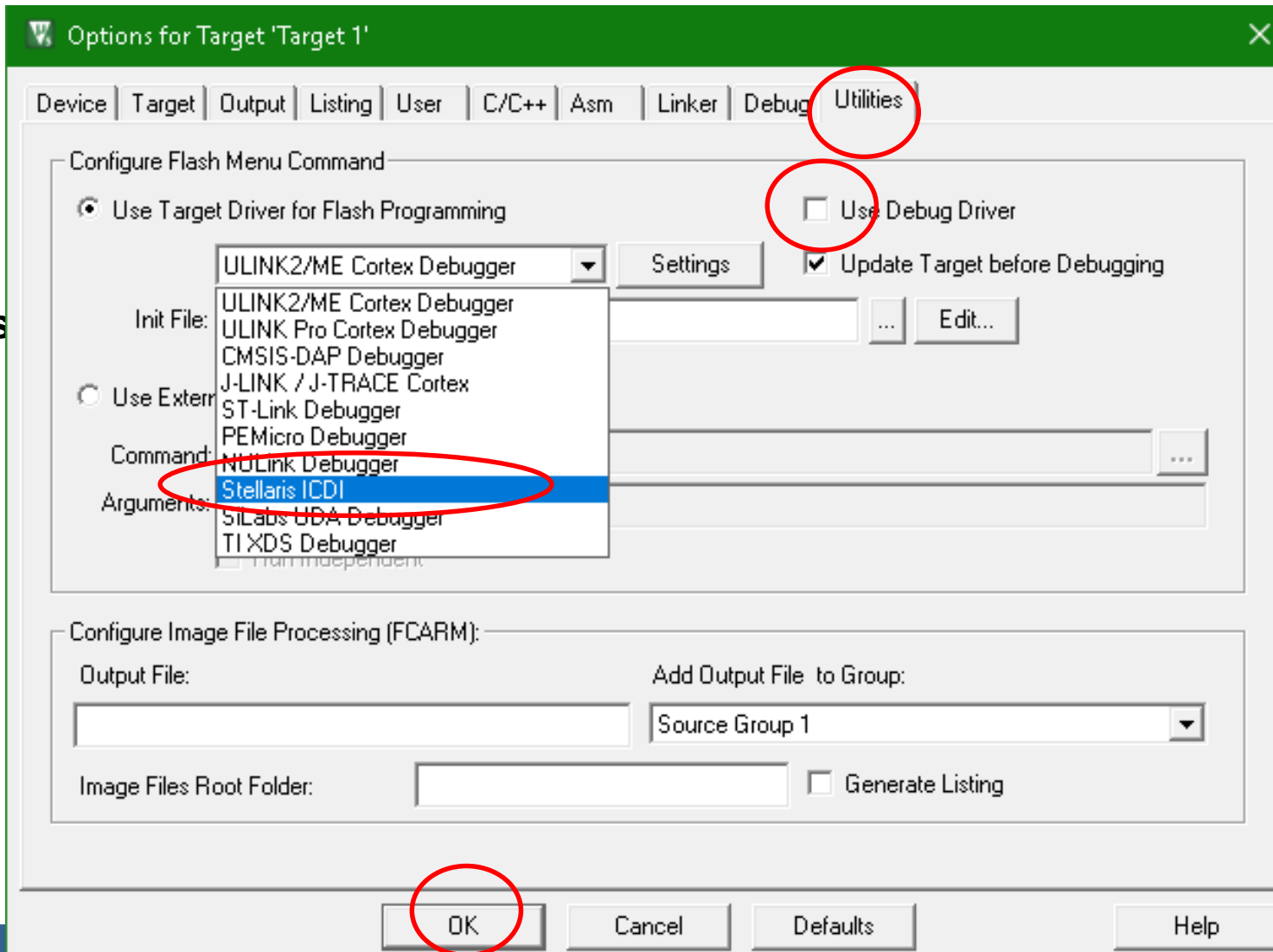
- Click on Debug
- Select “Stellaris ICDI”



Cont....

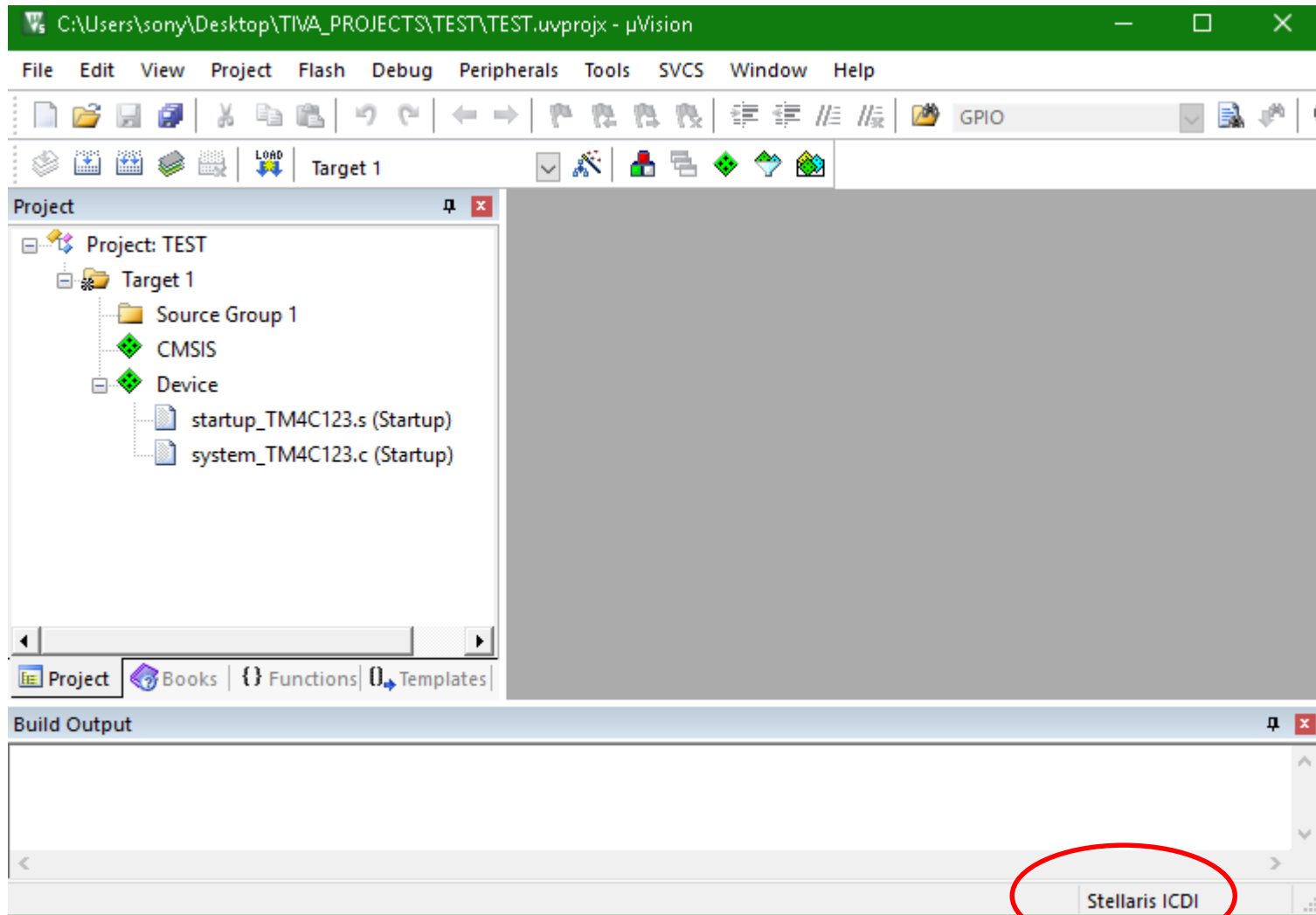
❑ In options for Target “Target1” Pop-up window

- Click on Utilities
- Un tick “ Use Debug Driver”
- Select “Stellaris ICDI”
- Click “OK”



Cont....

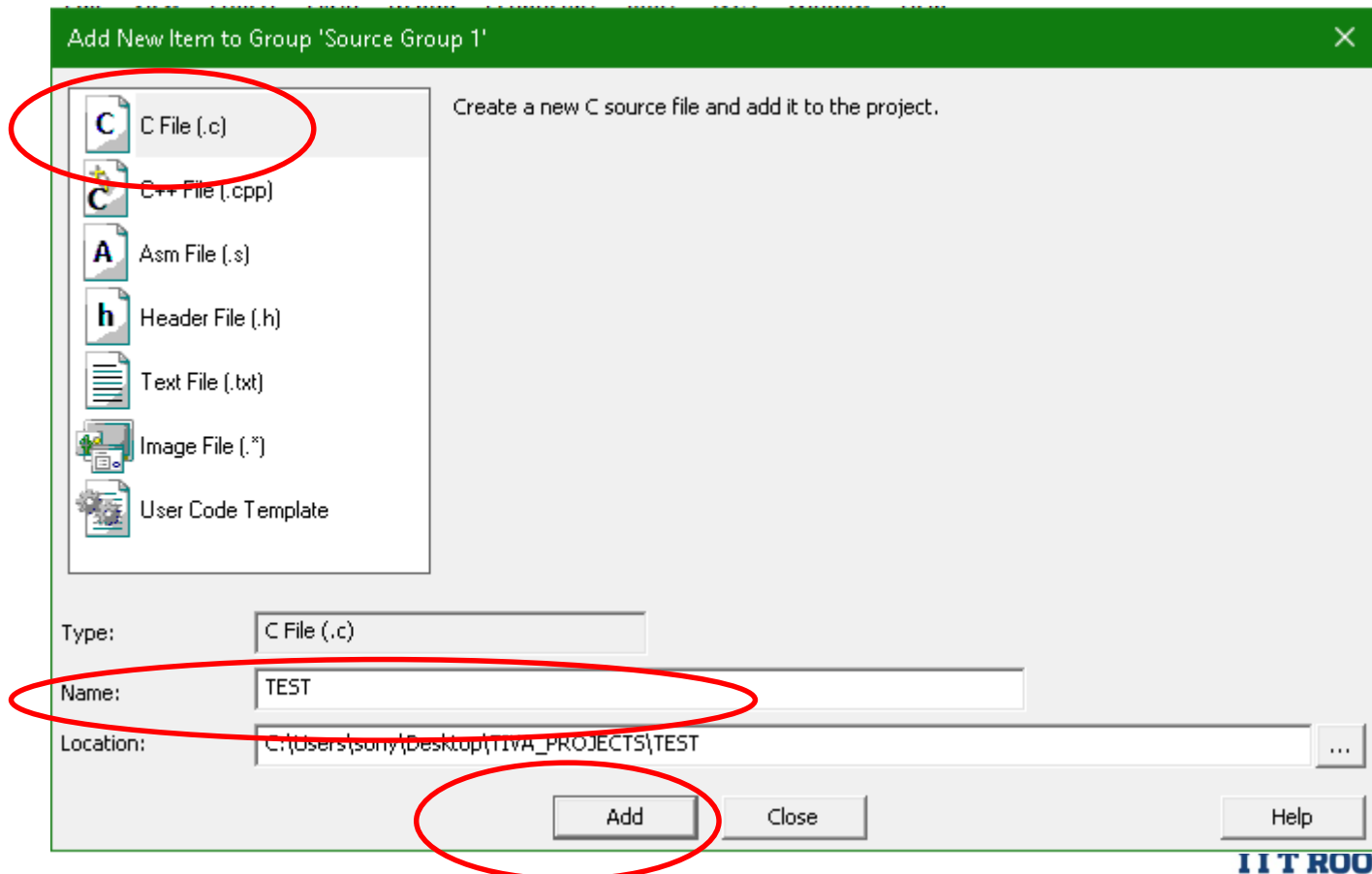
❑ Now window should be as shown in Fig below



Cont....

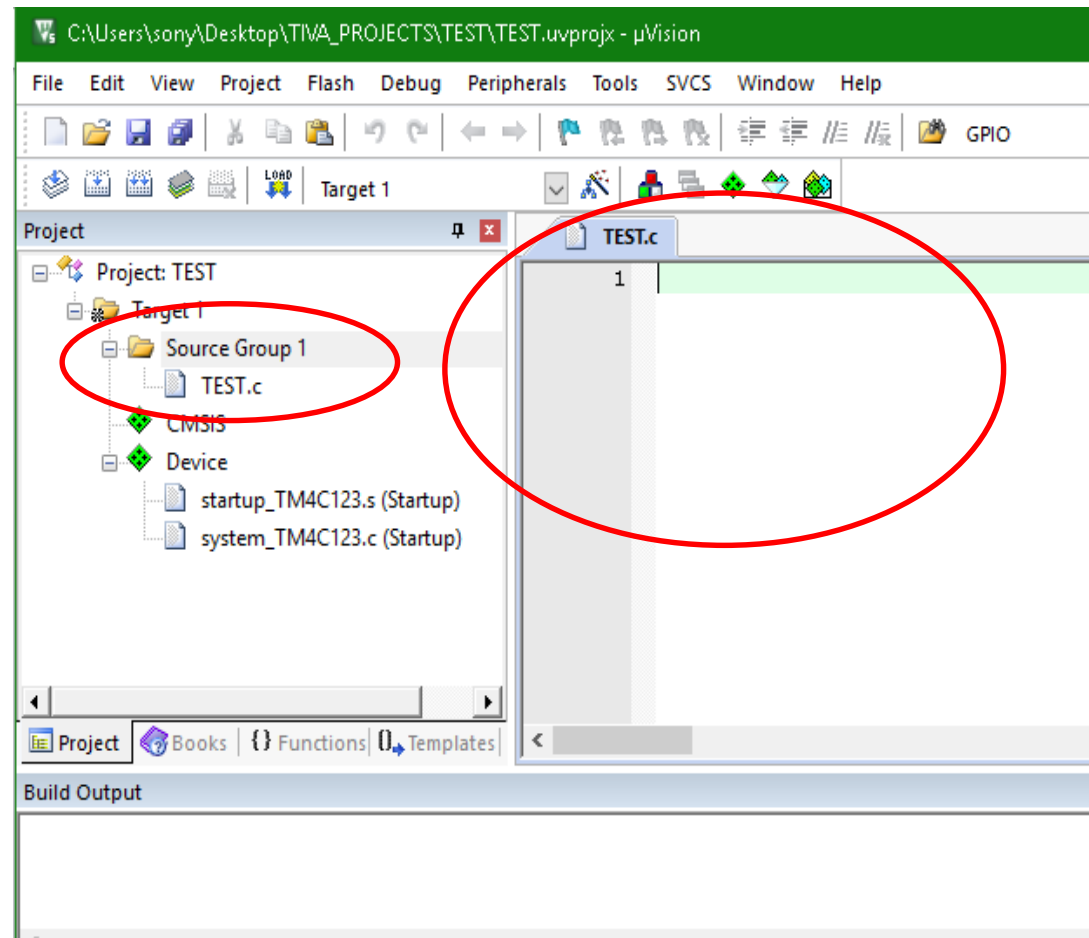
In Add New item to Group “Source Group1” pop-up window

- ❑ Select C file
- ❑ Name the file by writing in the field “Name” & click “Add”



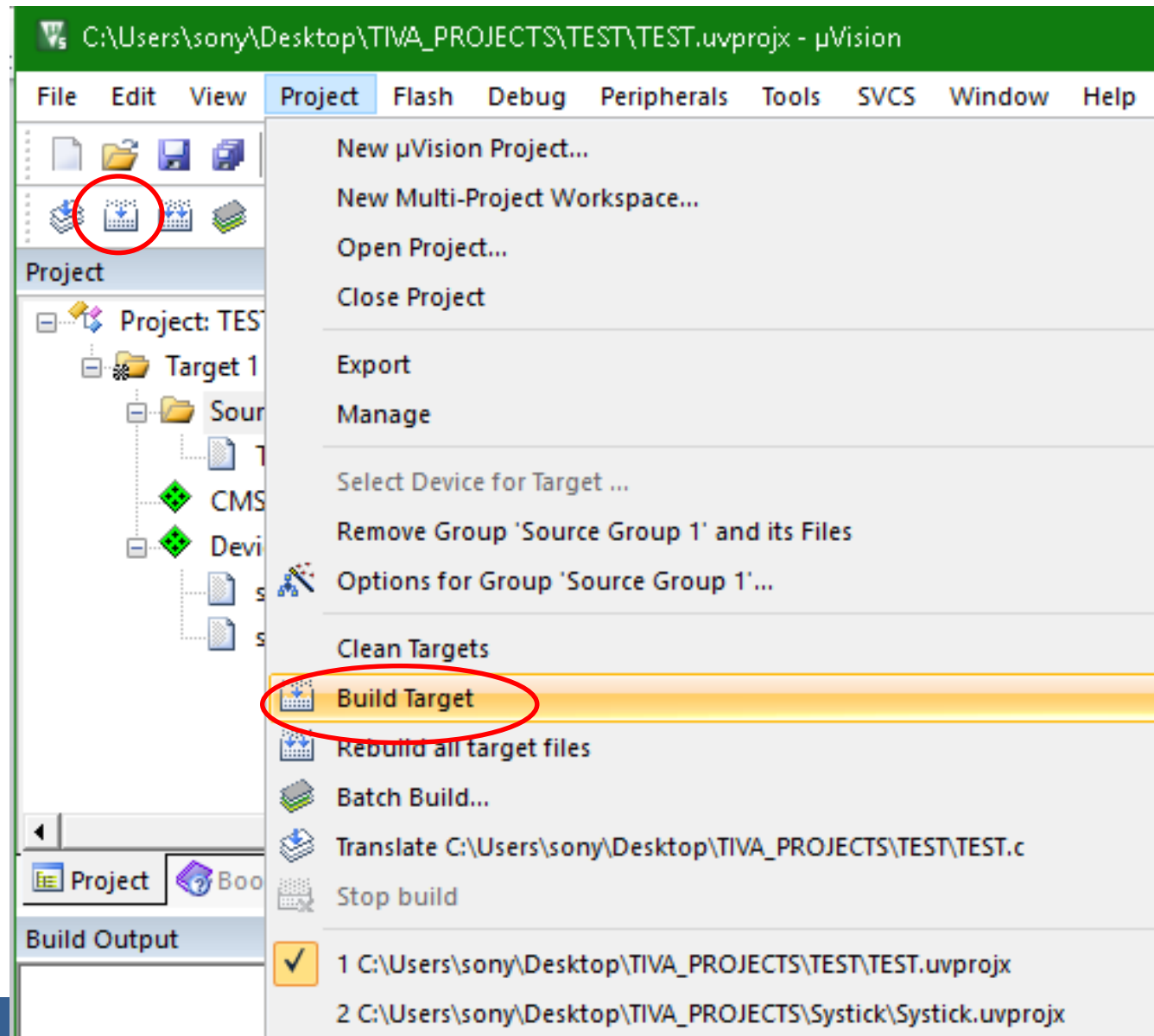
Cont....

- ❑ Now window should be as shown in Fig below
- ❑ Write the program using the editor



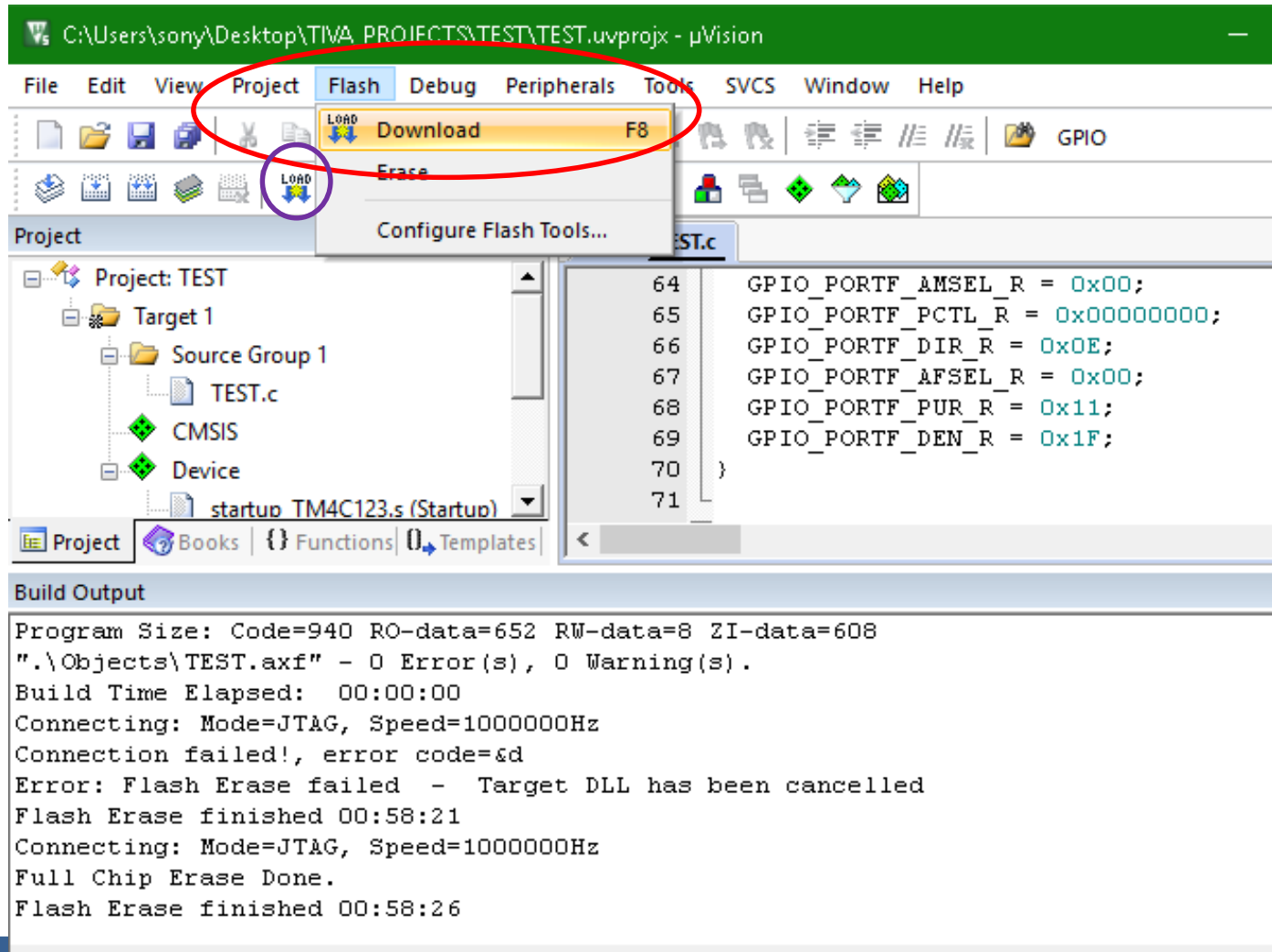
Build the Project

- ❑ Click on Project
→ Build Target



Download the Project

❑ Click on Flash → Download



The screenshot displays the µVision IDE interface. The 'Flash' menu is open, and the 'Download' option is highlighted. The 'Project' window shows a project named 'TEST' with a target 'Target 1' and source files 'TEST.c', 'CMSIS', and 'startup_TM4C123.s (Startup)'. The 'Build Output' window shows the build process results, including 'Flash Erase failed' and 'Full Chip Erase Done'.

```
64  GPIO_PORTF_AMSEL_R = 0x00;
65  GPIO_PORTF_PCTL_R = 0x00000000;
66  GPIO_PORTF_DIR_R = 0x0E;
67  GPIO_PORTF_AFSEL_R = 0x00;
68  GPIO_PORTF_PUR_R = 0x11;
69  GPIO_PORTF_DEN_R = 0x1F;
70  }
71
```

Build Output

```
Program Size: Code=940 RO-data=652 RW-data=8 ZI-data=608
".\Objects\TEST.axf" - 0 Error(s), 0 Warning(s).
Build Time Elapsed: 00:00:00
Connecting: Mode=JTAG, Speed=1000000Hz
Connection failed!, error code=4d
Error: Flash Erase failed - Target DLL has been cancelled
Flash Erase finished 00:58:21
Connecting: Mode=JTAG, Speed=1000000Hz
Full Chip Erase Done.
Flash Erase finished 00:58:26
```