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MINI-PROJECT-O

EMBEDDED SYSTEM

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COMPUTTING ID: QNP9ME

Project Report (Mini Project 0):

This report is design for the Advance embedded system course requirements, The Aim of this report is to get familiar with TIVA Series C ARM Microcontroller TM4C123 and with Keil IDE. To get some basic knowledge about the control module, So, I have been used these steps to complete the hardware and software setup and required drivers for the TM4C123 Controller.

1st Step:

A. First Step is to download the Keil Micro Vision V5.34 software step form this link https://www.keil.com/download/product/ and then I have to install it in to my Machine, As Figure.1 shows the installation complete process of MDK ARM V5.35 Software and its working environments.
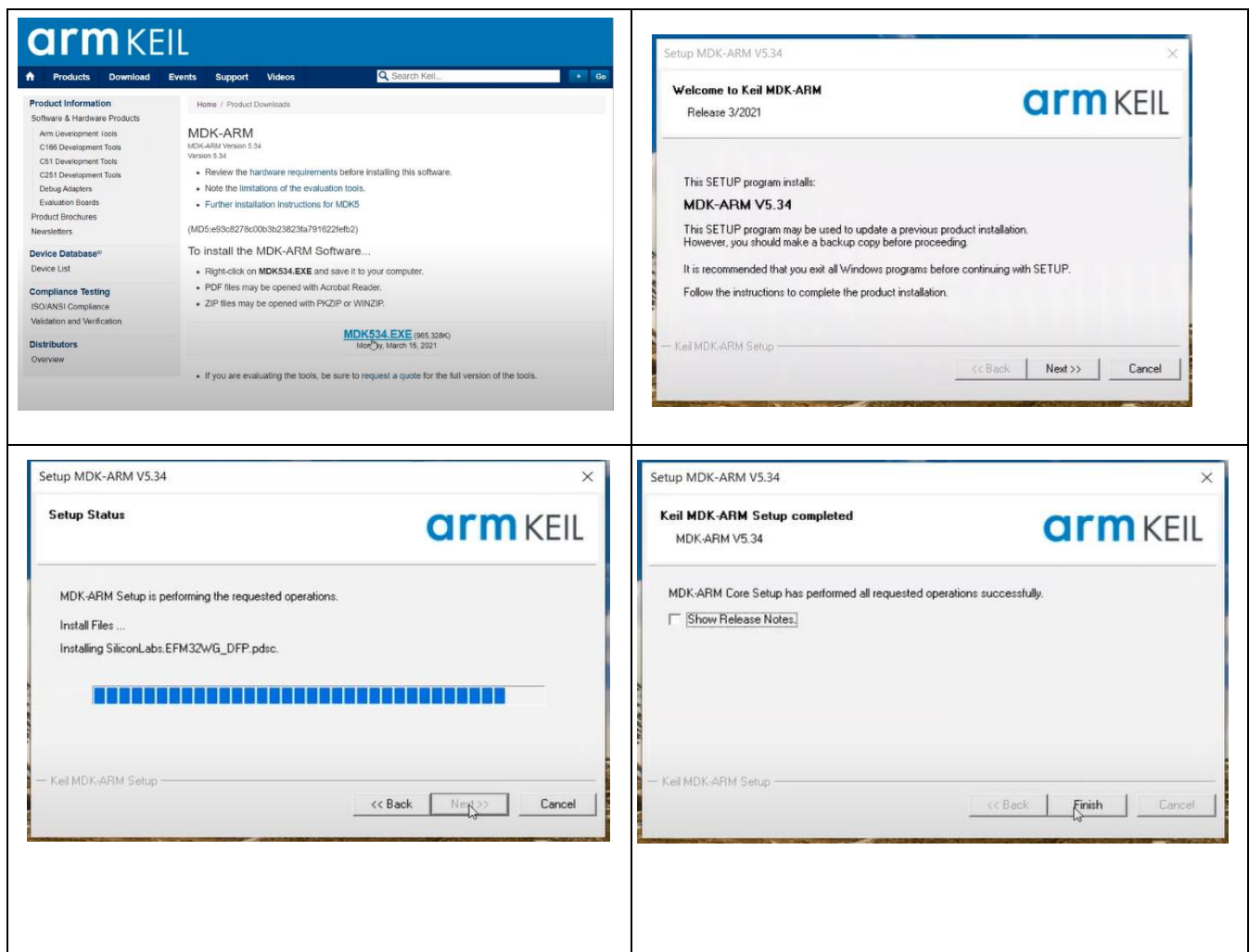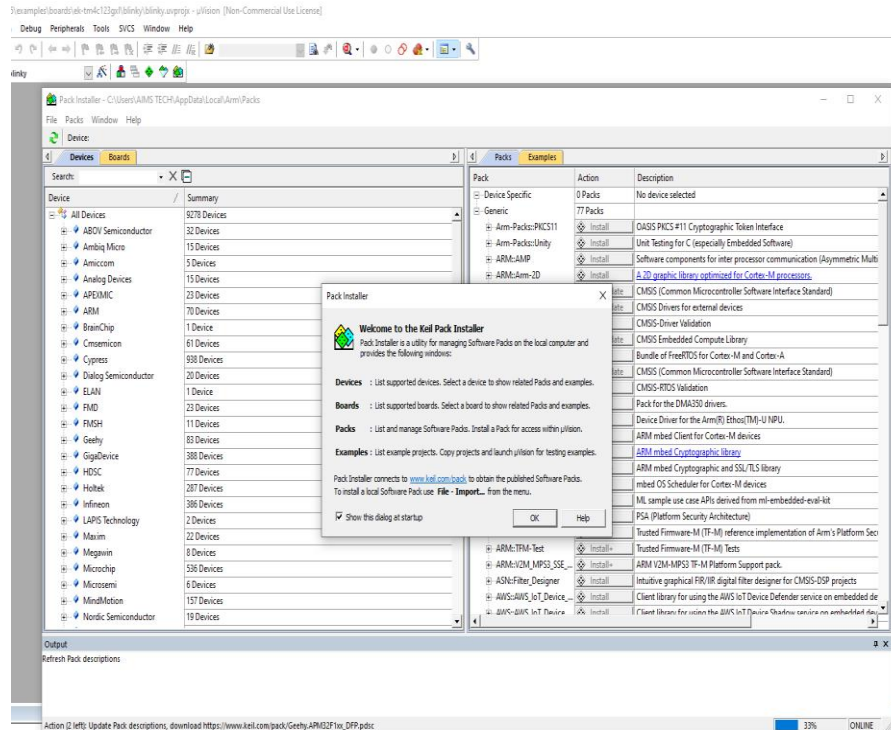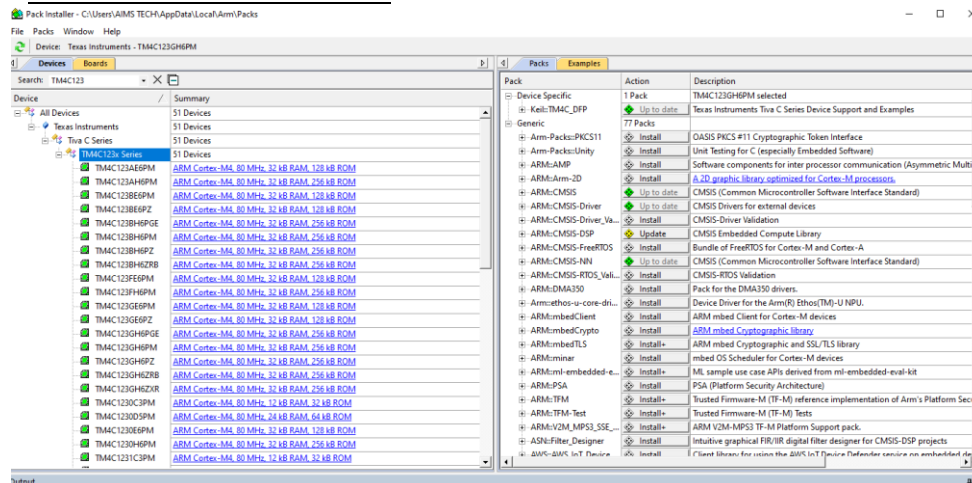

Figure1: Keil Step Installation Process.

2nd Step:

B. Install /Update the Software Packages in Keil Micro Vision, I have been performed these steps to complete the Setup for the TM4C123 series.
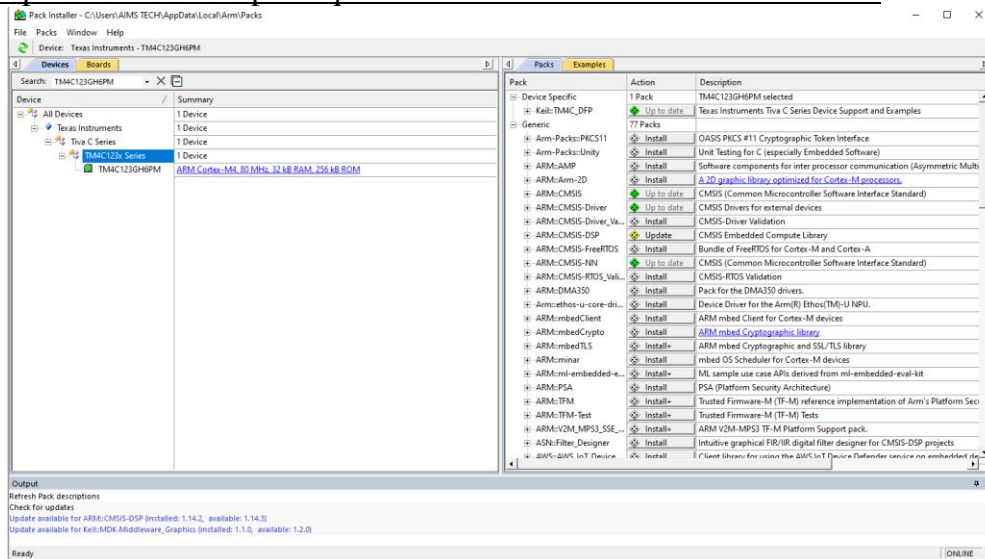
1. Click on the Pack Installer tools:
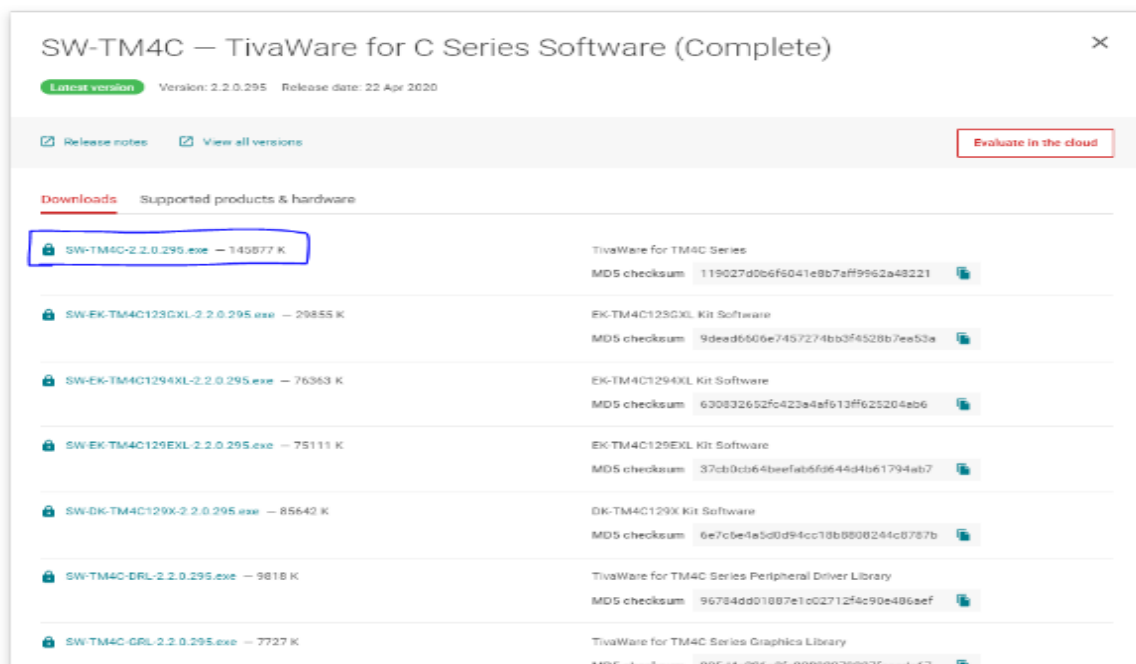

2. Search the TM4C123 Pack :

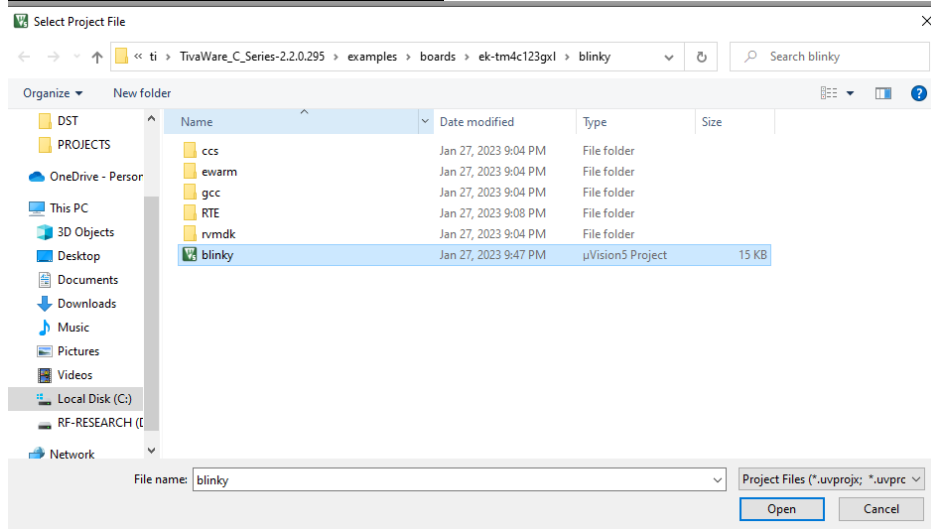3. Update the Pack as per required : TM4C123GH6PM and Installed it:

3rd Step:

C. This step is to install the TIVAWire for C series , Use this link to find the required drivers for the this step : https://www.ti.com/tool/SW-TM4C , First I have create the Account to download the setup and used these steps to complete installation process for Tiva Wire Series.

1. **Here we can download it :**

2. Installed the setup :

3. Then I Goes to MyPC and flow this directory to verify the boards that I have been installed in my PC "C: ti\TivaWare_C_Series-2.2.0.295\examples\boards\ek-tm4c123gxl".

4th Step:

D. This step is to install the Device Family Package (DFP) for the TIVA C series module, first we have to open the **Keil Software** and create the **new project** and then goes myPC to open the blinking code and flows these instruction to compete the process.

## 1. Open the blinking code in Keil :

## 2. Second process is to install "Migrate Device Pack" :
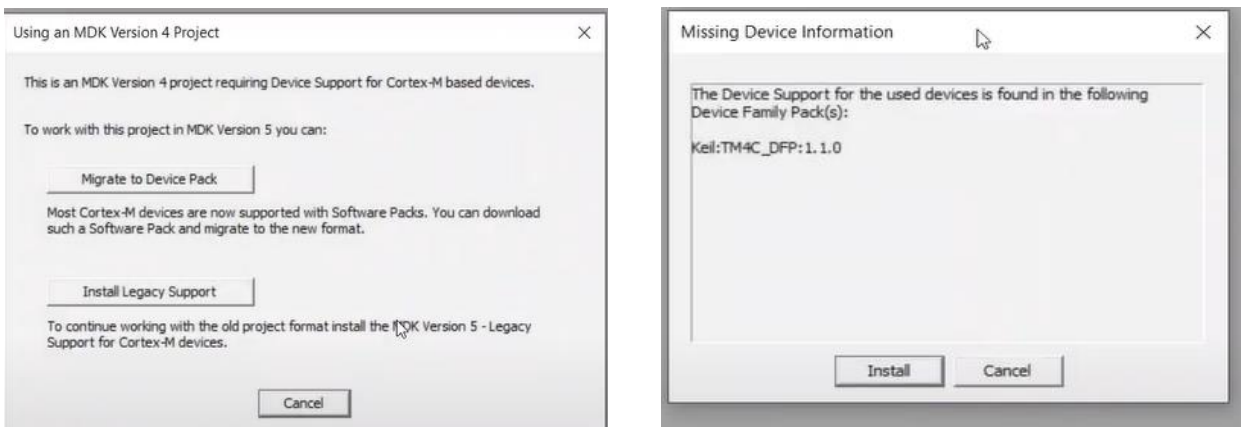
5th Step:

E. In this step I have been installed the Stellaris ICDI drives for TM4C123 Board for the port detection. So, I have used these steps to complete the required setup. Before we are going to do any process, first we have to download ICDI required drivers setup from the given link, https://www.ti.com/tool/STELLARIS_ICDI_DRIVERS and then install it.
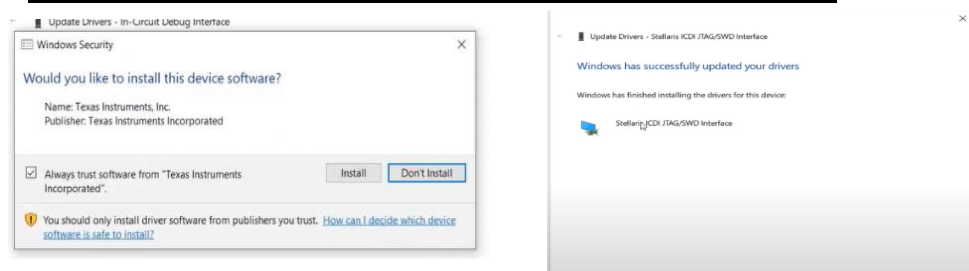
1. Open the device Manager PC : Here its shows that Drivers are Missing : So Installed it copy the given Directory from my PC :	
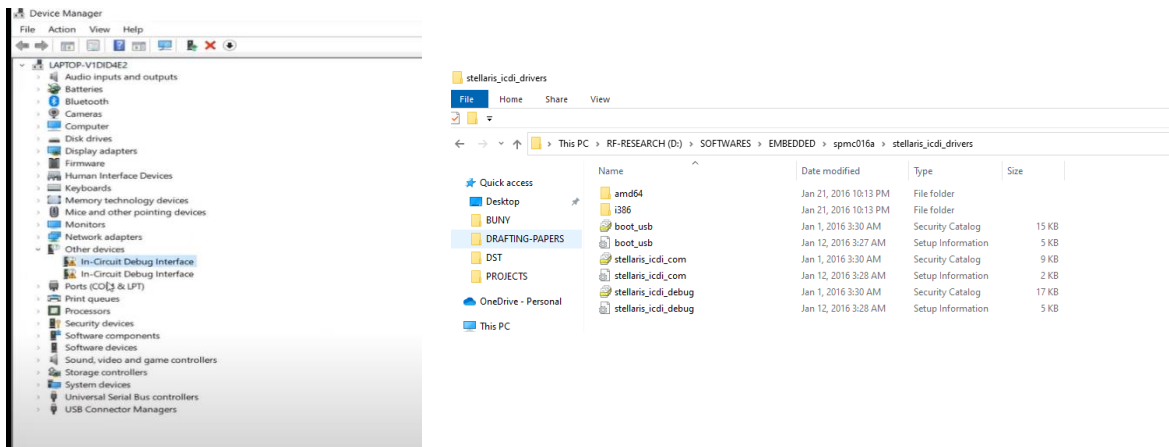
|	
2. Click on the "In-Circuit Debug Interface" driver and install the drivers as you can see blow:	
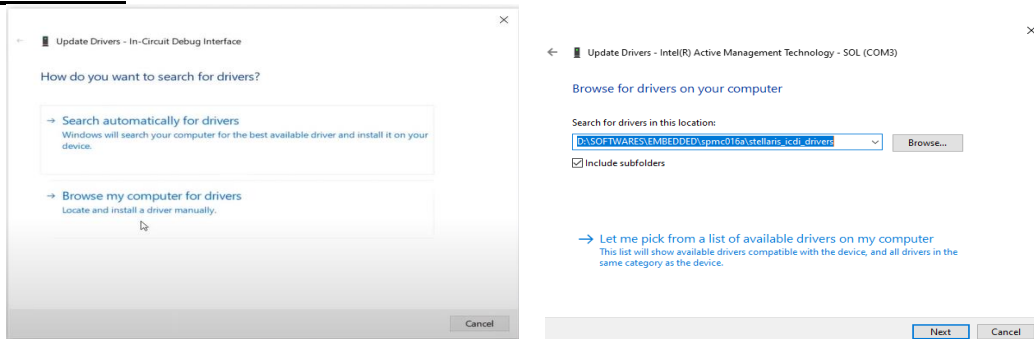
|	
3. Next step is install the drivers like this window and then click it for second driver we flow same process and then both are installed in my PC.	

6ᵗʰ Step:

F. In this step I have been installed the Stylus ICDI add-on for the micro vision Keil due to previous version of Keil has remove these drivers for the system. So I have download these driver form the given link: https://developer.arm.com/documentation/ka002280/latest . I have been used these steps to complete the whole step for TM4C123 module drivers process.

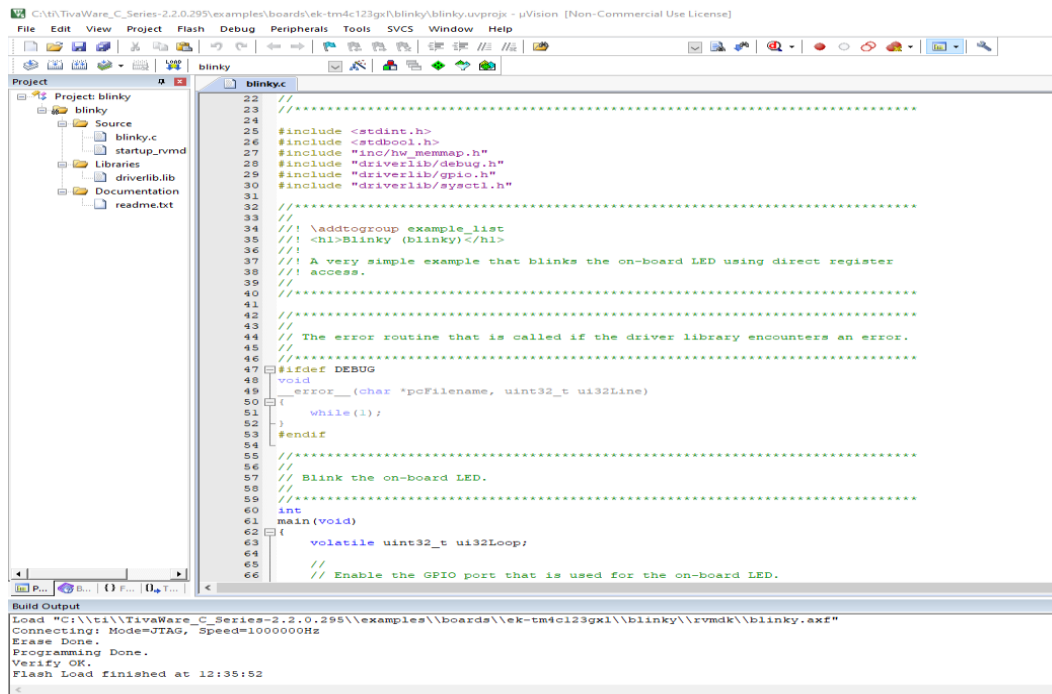1. **Download the Driver and used these instruction to Install it in pc :**
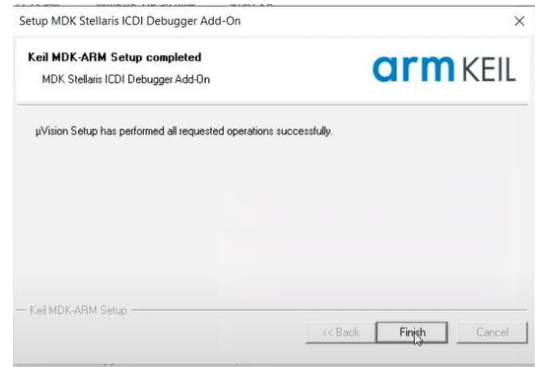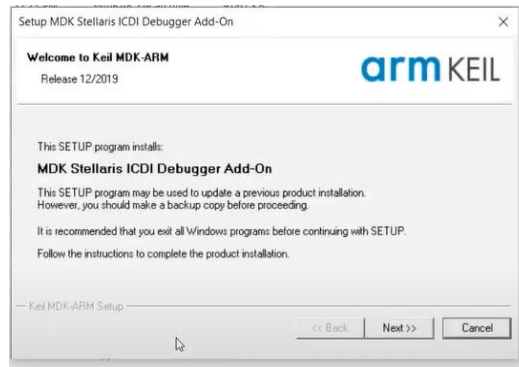
2. **Now again the device manager as you can see the instructions and install it.**
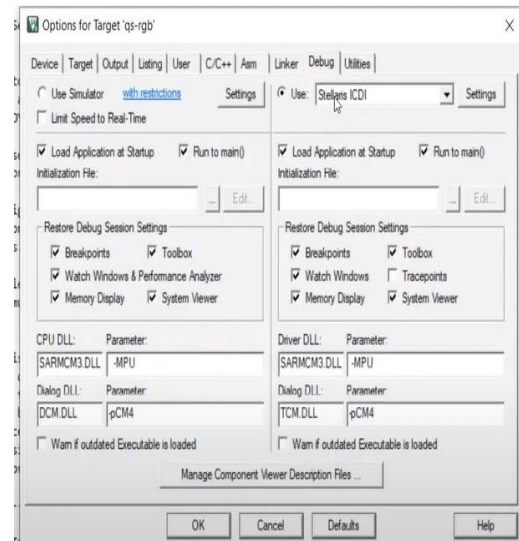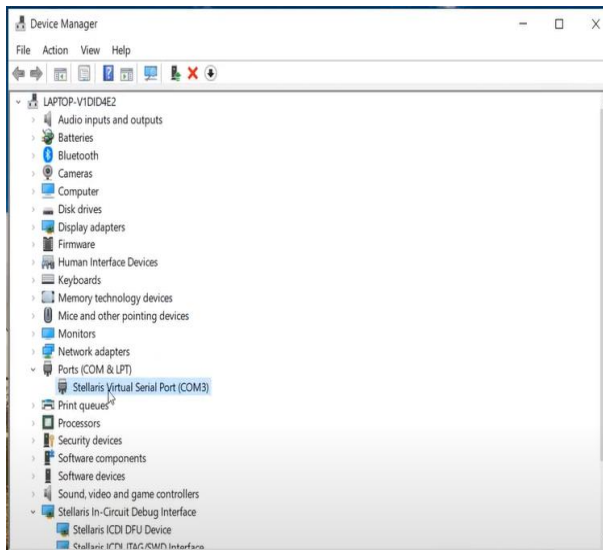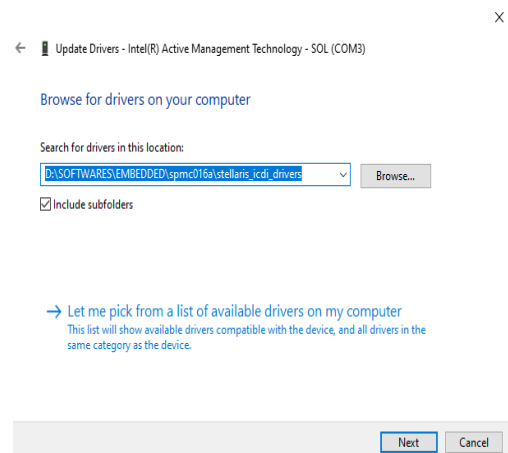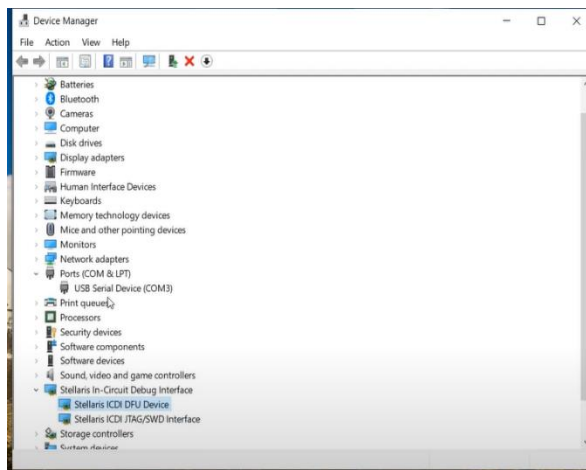
7th Steps: TIVA TM4C123 Interface with Keil Software:

G. The installation process once complete then I have to upload the LED Blinking in my board to check the initial process and very it that Keil and Tiva-TM4C series board is working as you can see the attached working screen shoots.

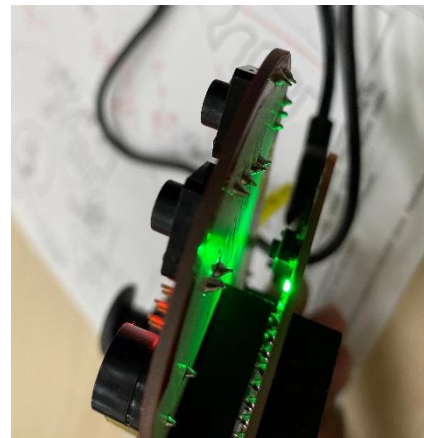1. First I have use this code to test the TM4C123 : This code is for LED Blinking

2. Hardware Results: That Shows the TM4C123 Module is complete working with Micro Vision software.
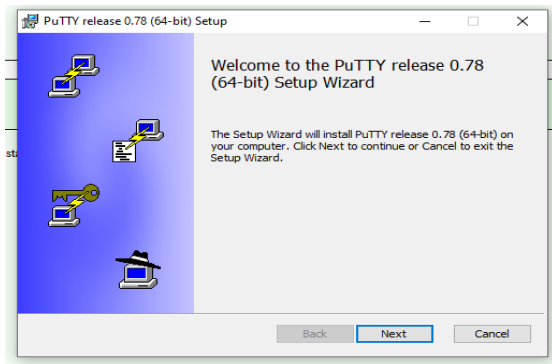

This board is working well as I have burn the Blinking code in this module and test it so these attached results shows the hardware performance.
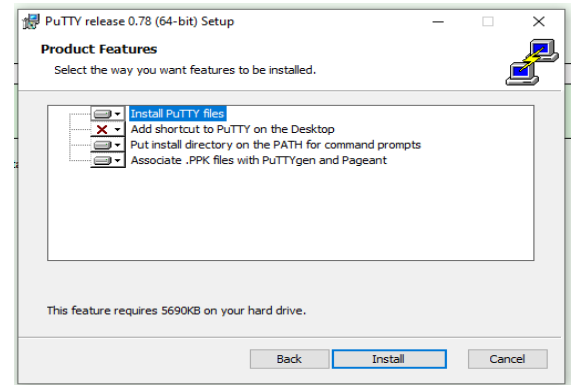
8th Steps Task (Project 0):

This part report is based on the project 0, where we have checked all hardware and software requirements details and its performance last part of this project is to display the "**Hello world and Name**" commands using the serial port and Putty interface. So, I have download putty terminal form this link [Download Putty - a free SSH and telnet client for Windows](#) and furthermore process you can see here.
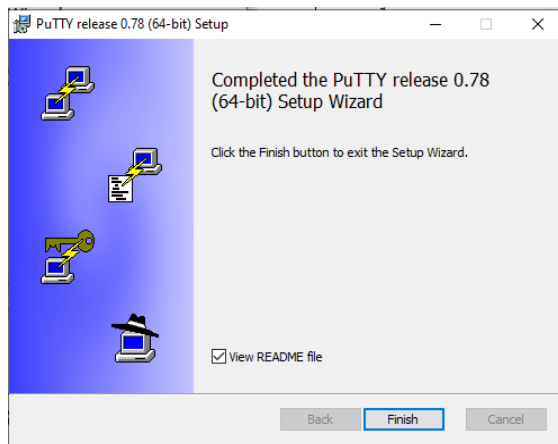
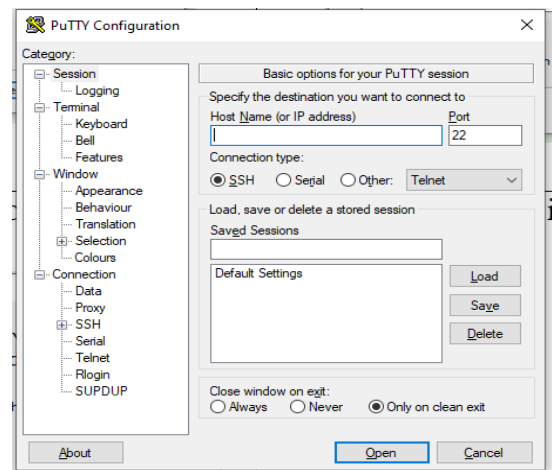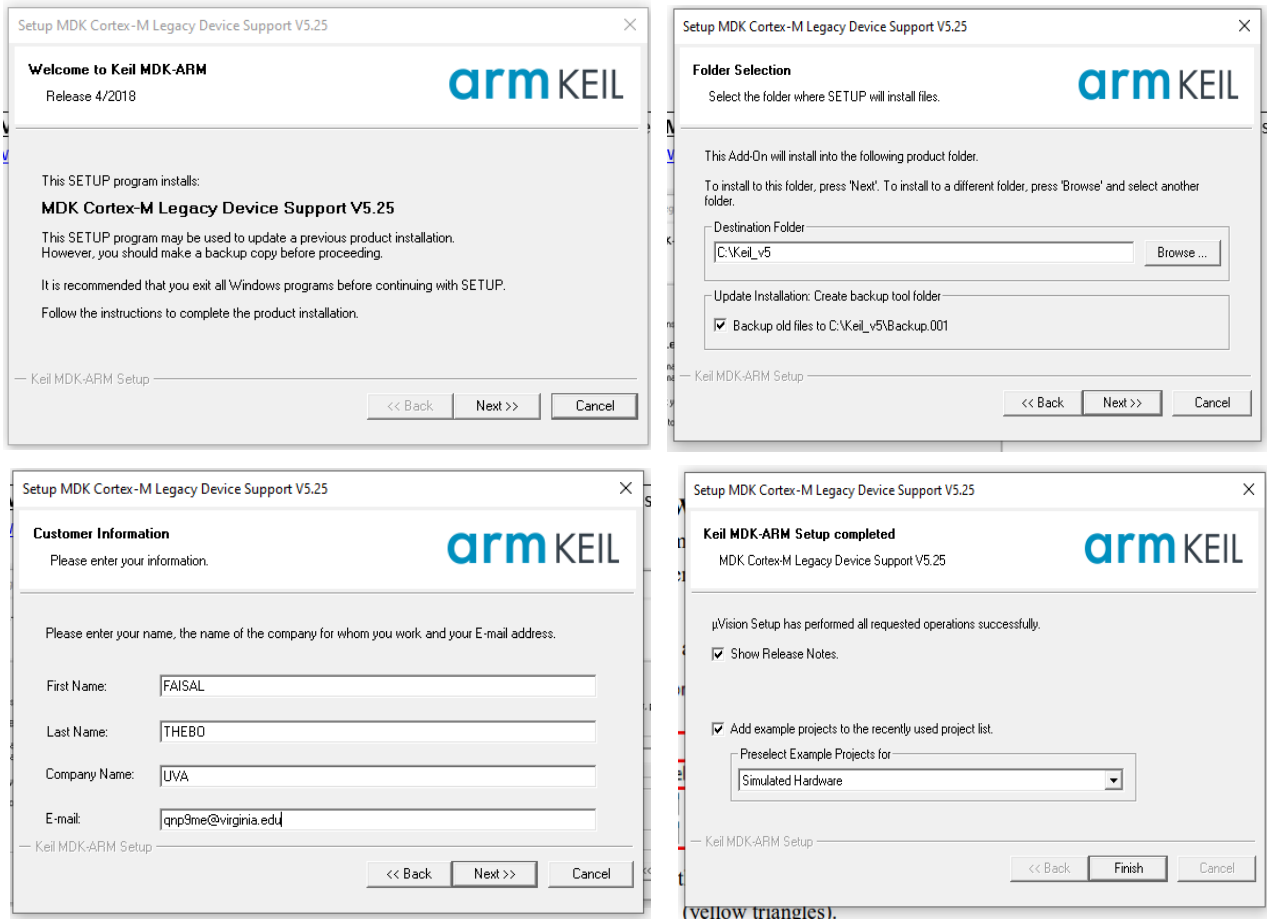| 1. After the Download putty setup it's time to install it in System.	2. These are instruction to install the terminal in PC.
3. Complete the Installation process for putty terminal.	4. Final Putty is Installed

A. **Install MDK Legacy Support for Cortex-M Devices:** I have Download these drivers from here https://www2.keil.com/mdk5/legacy/ and then install it into my system.


B. **Install ARM Compiler Version 5 for Keil IDE**. I have been flow these given link to download and install it into my system https://developer.arm.com/documentation/ka005198/ . And used these given instruction to complete this task.
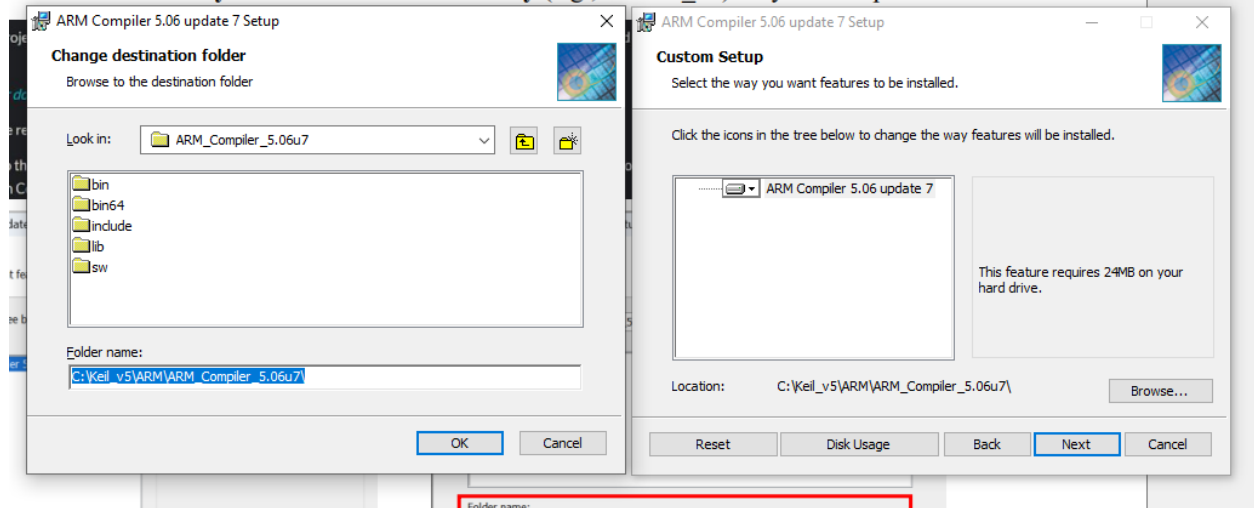
C. Install Texas in MyPC Keil folder. First I have Download and install Texas V2.2 from here: https://homa-alem.github.io/teaching/ece_6501/software/TExaS_Install.exe. And used these instruction to complete the task requirements.
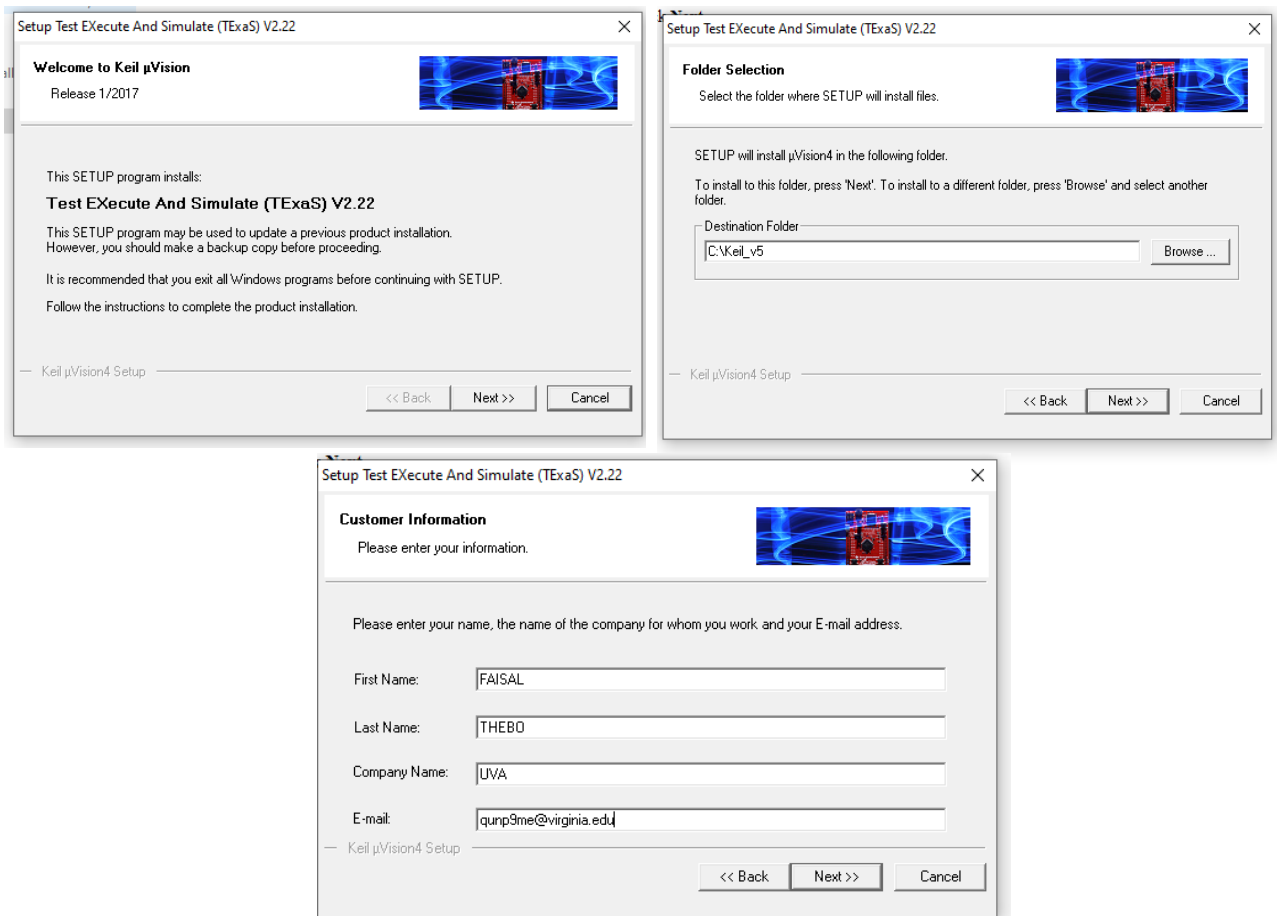

Note:

I have been installed required driver in **5ᵗʰ** and **6ᵗʰ Steps** to add the port detection drivers **Stellaris ICDI** Driver and **MDK Stellaris ICDI Add-On**. Furthermore you see in mentioned parts. And they are working well and even I have install **Putty** in Eight Steps as well as.
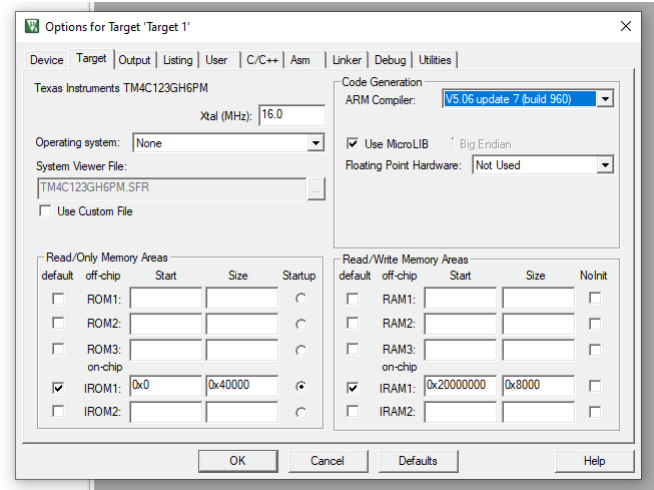
9<u>th</u> Steps: To create the New project in Keil to perform the required task, first I have to create project –Name –Po and then used the given instruction:

1. Create New project
2. Choose the **Legacy-Device Option** ➔Texas Instruments & TM4123GH6PM.
3. Click on the Source Group to add "Add Exiting Files".
4. Select All File from "Git-Hub File –Mini Project 0" and then add on it.
5. Goes to Project ➔ manage ➔ Project Items. Please use this link for furthermore process: [µVision User's Guide (arm.com)](https://arm.com).
6. In six step Please see the attached Screenshots.
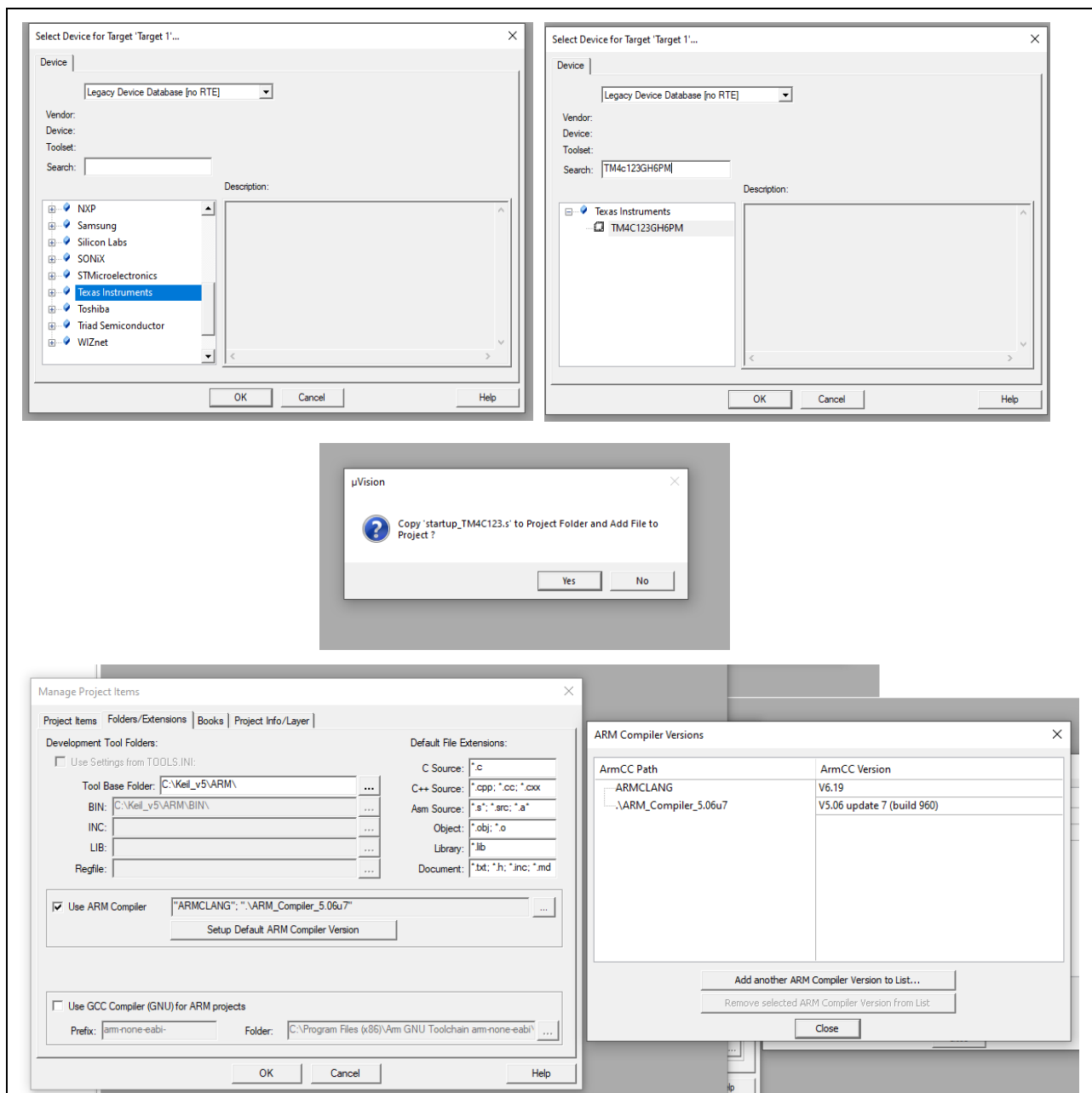
10th Step: To configure Keil in simulation mode for run the code to verify Mini-prject-0, please see the given screenshots and steps for this process to validation and testing.

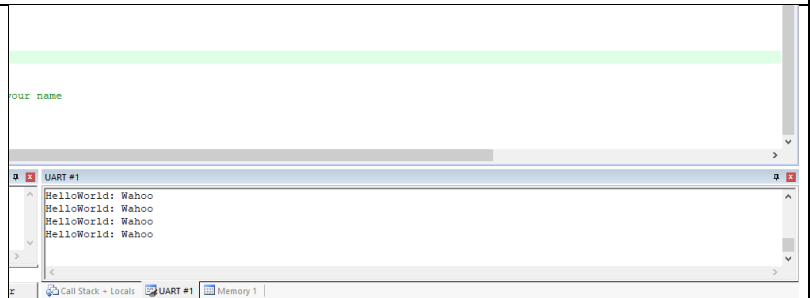|	
1. Make sure these configuration : a. Check "Use MicroLIB" b. Select "Not Used" for "Floating Point Hardware". c. Select the ARM complier V5.06 update 7.	
2. In the Debug Tab, select "Use Simulator" in the left panel and add "**-dLaunchPadDLL**" to the "Parameter" box:	
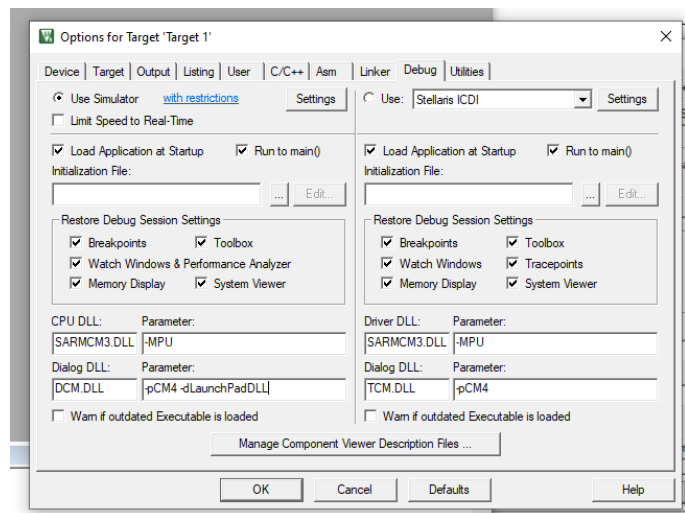
NOTE: When I add all setups and find that my system Keil **"debug"** not working and its shows Error: "Error: Could not load file 'D:\PHD COURSE\EMBEDDED_SYSTEM\PROJECTS\Objects\Project-PO.axf'. Debugger aborted!"

Note: Then I Fellow these instruction to fix it : first ➔ KEIL ➔Project ➔ Options for target 'your project name' ➔ Output ➔ Name of Executable tab an then ➔ add this extension **" .axf "** after the project file name.
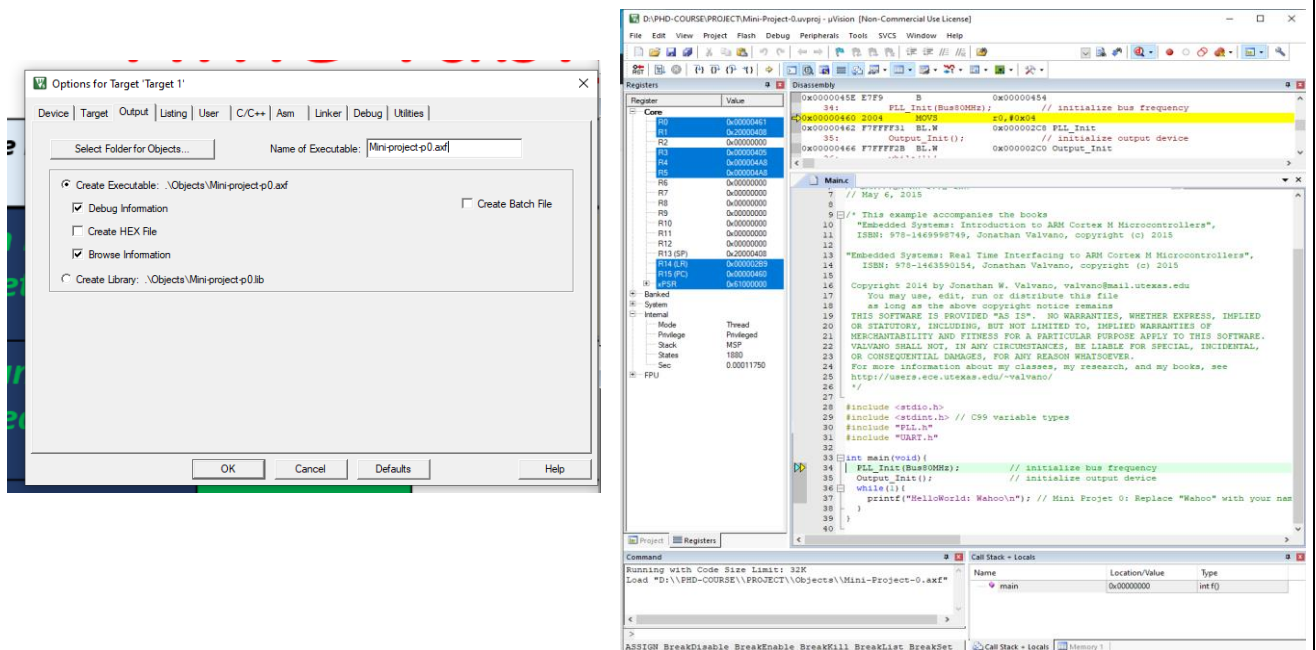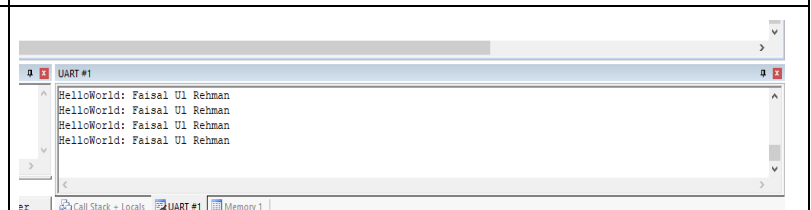

Now Debug Is working :

|	
3. I build the Project and set these item to perform this activity. And see the results on given UART port you can see in figure.	
4. In this step I have change my Name Faisal Ul Rehman : and see the results	

Last Step: To run on the Board, I goes the same process in step no 10ᵗʰ Steps Just change the device options here are the process detail.

1. Goes to option for Target then goes to "Debug" and select the USE option.
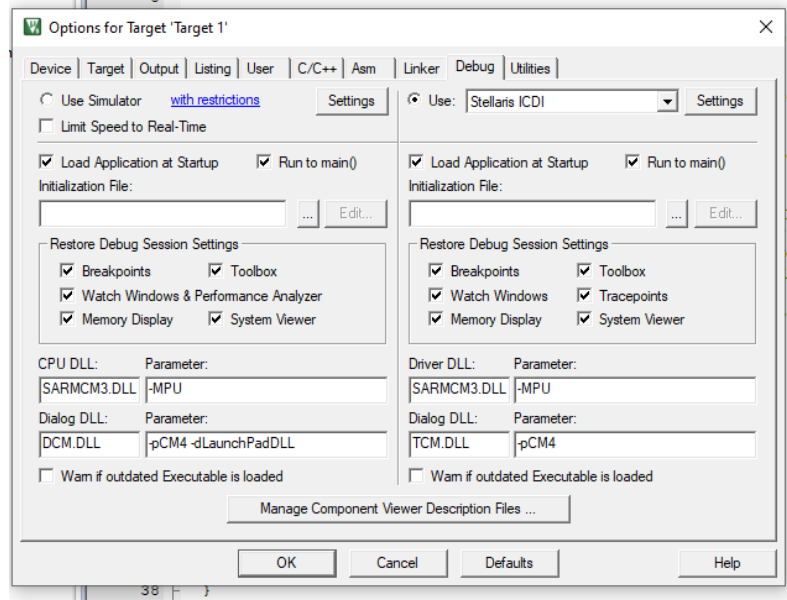
2. Open the putty as I have installed in 8ᵗʰ Steps just here open into window and put the settings for operation status.
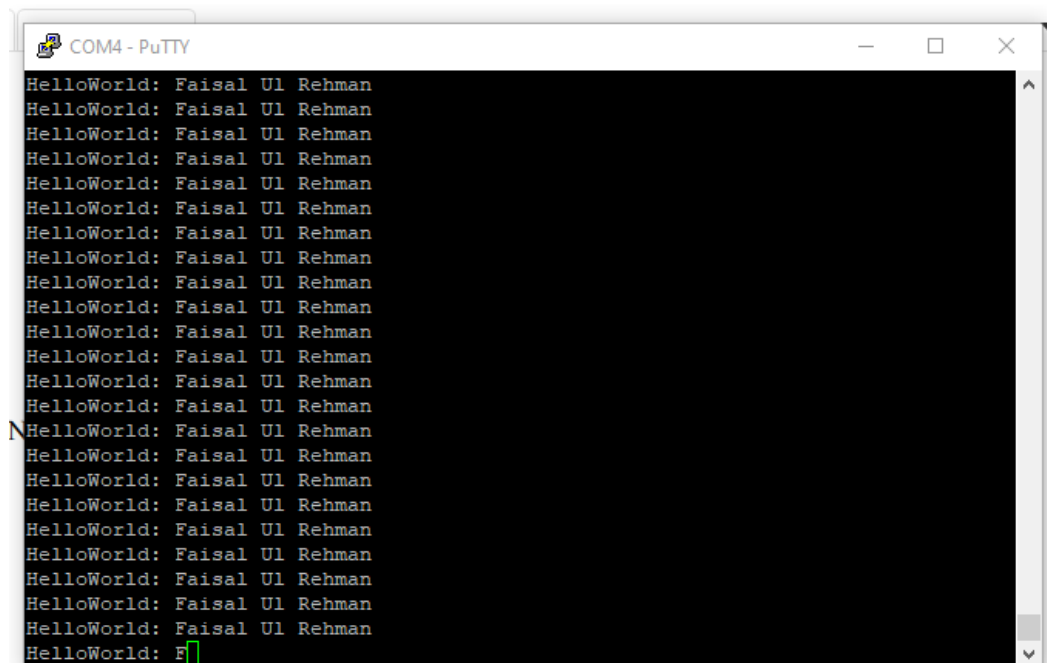
In final this is the whole picture about the Project: results on putty and UART: