ARM MINI

QUICK START MANUAL

CREATION

BY

PHILIPS

1. ARM Board Features

Mother Board Features:

1. This Mother Board Is Compatible For All ARM Processors
2. On Board Power Supply 3.3v,1.8v,5v
3. On Board Transrecivers for LPC2129
4. On Board USB Port For LPC 2148
5. A Serial Port for ISP
6. An RS232 Serial Port
7. On Board JTAG Connecter for Wiggler
8. DC Power Supply Connector(12v Ac or Dc)
9. 4 LED array
0. 3 Intruupt Switches

Daughter Board Features:

1. On Board Connecters to interface with Mother Board
2. On Board Power Supply 3.3v,1.8v,5v
3. On Board Transrecivers for LPC2129
4. On Board USB Port For LPC 2148
5. A Serial Port for ISP
6. An RS232 Serial Port
7. On Board JTAG Connecter for Wiggler
8. DC Power Supply Connector(12v Ac or Dc)
9. 4 LED array
0. 3 Intruupt Switches

1.2 Package Contents:

1. ARM Starter evaluation board
2. Serial portCable
4. ARM Starter Kit CD
6. Burg connectors 20 Nos

(NOTE :JTAG WIGGLER BOARD IS NOT INCLUDED WITH THIS KIT

1.4 System Requirements:

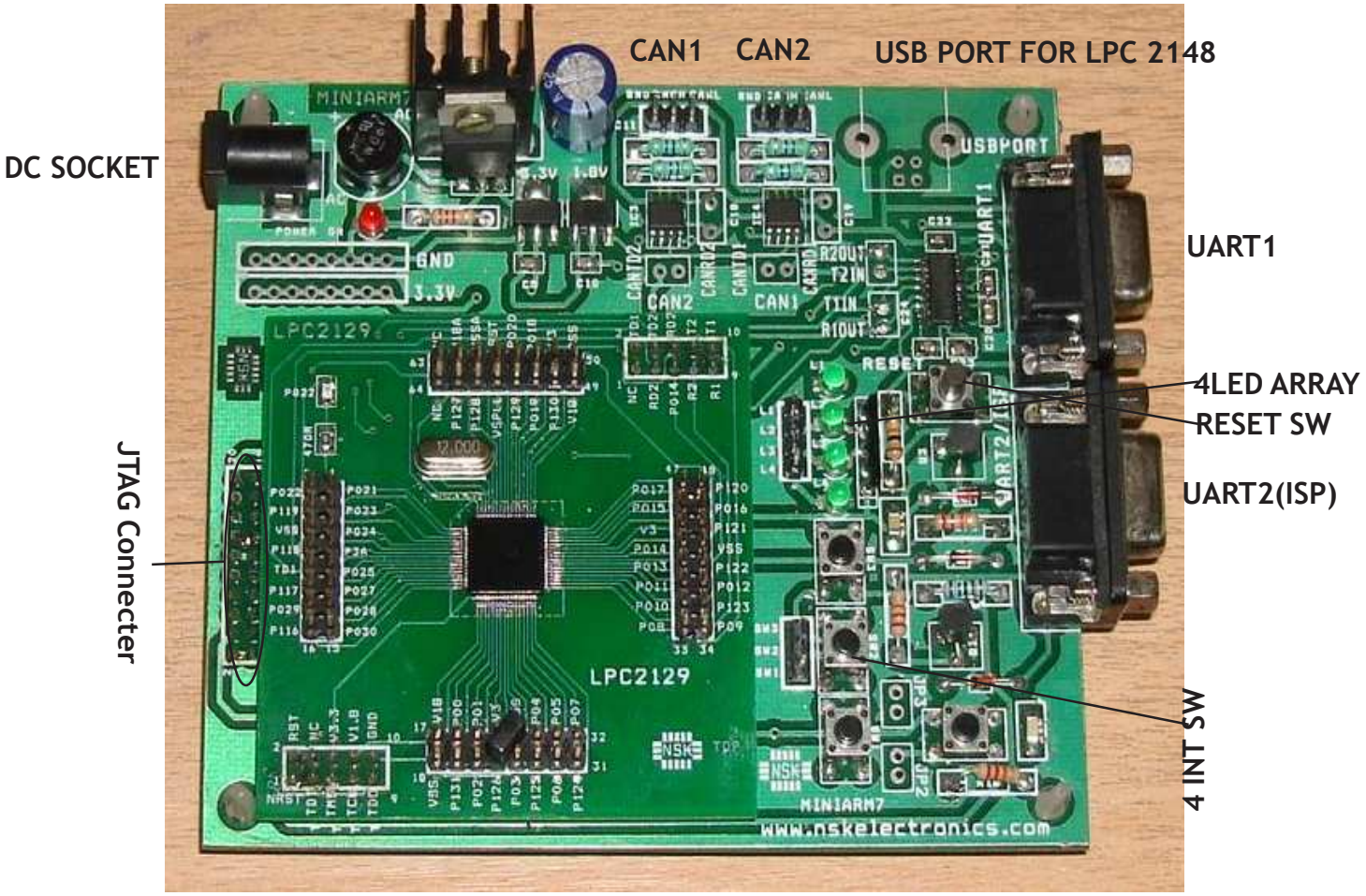
1. Hardware requirements:

1. A PC available with RS232 port for ISP programming
2. Parallel Port for JTAG programming &Debugging
3. DC Adapter

2.Software requirements:

1. Keil uV3 or WINARM for Programming
2. H-JTAG or Phillips Flash Utility for Flash Programming.
3. MS Windows 98/ME or windows WT/2000/2003/Xp

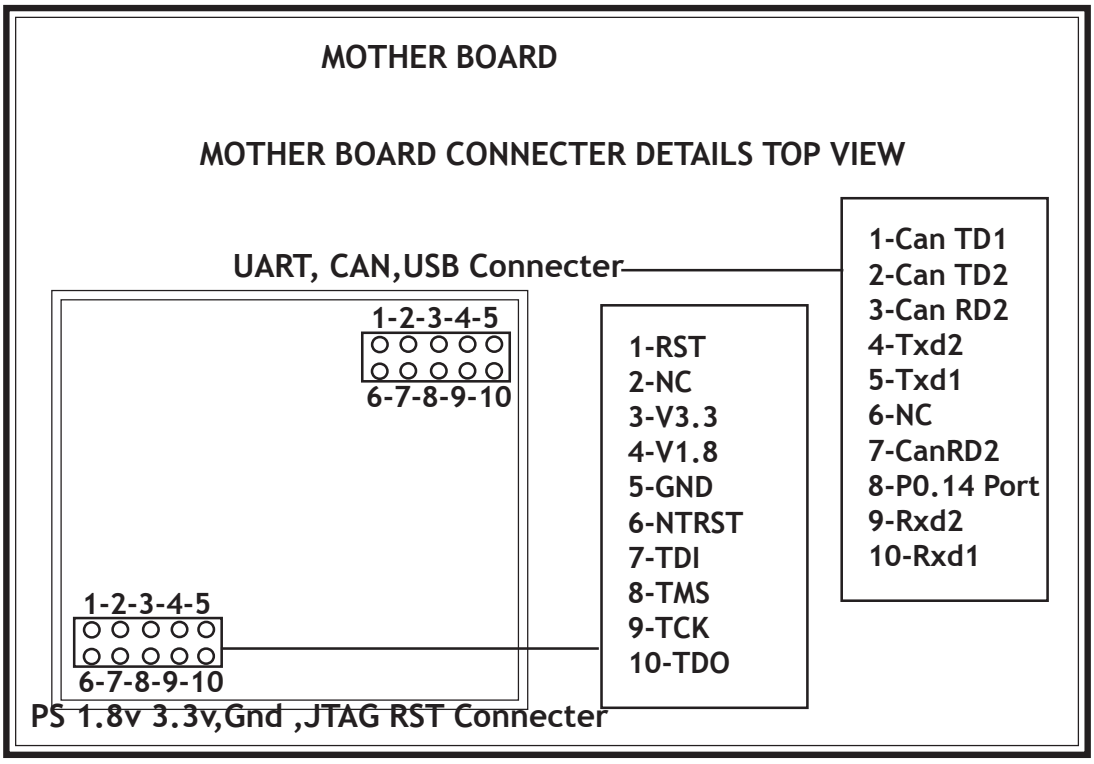
BOARD DESCRIPTION

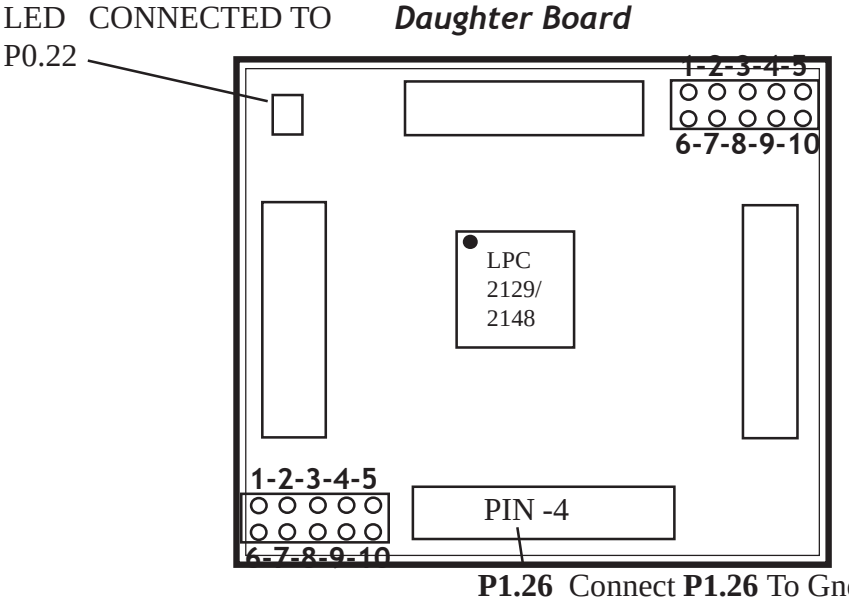


Dual power supply:

1. CPU operating voltage range of 1.65V to 1.95V(1.8 V ±0.15 V).
2. I/O power supply range of 3.0 V to 3.6 V (3.3 V ± 10 %) with 5 V tolerant I/O pads.

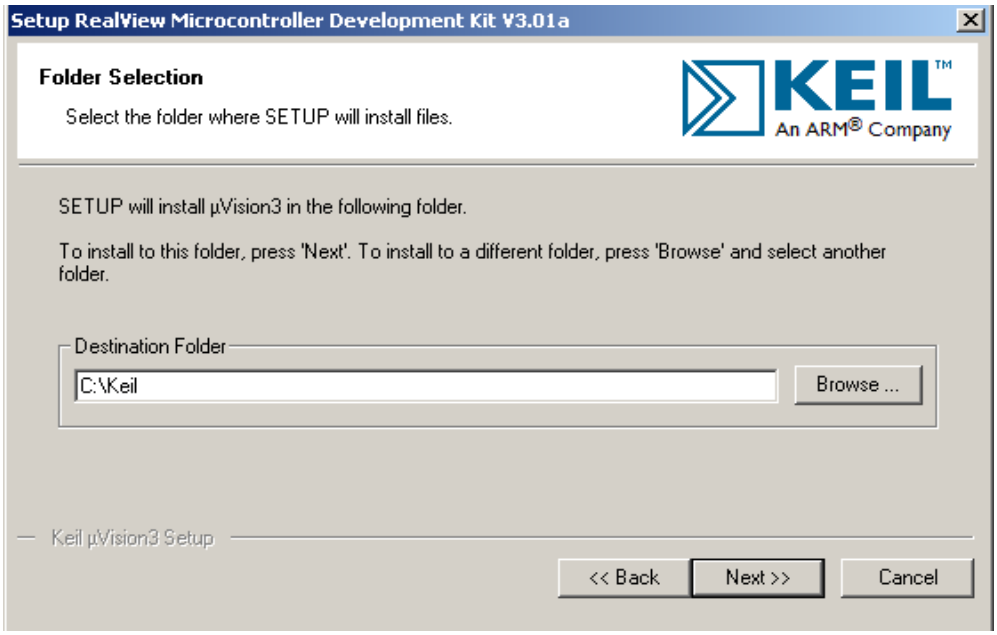
For LPC 2129 Both 1.8v and 3.3 voltages required
For LPC 2148 Only 3.3volts Required



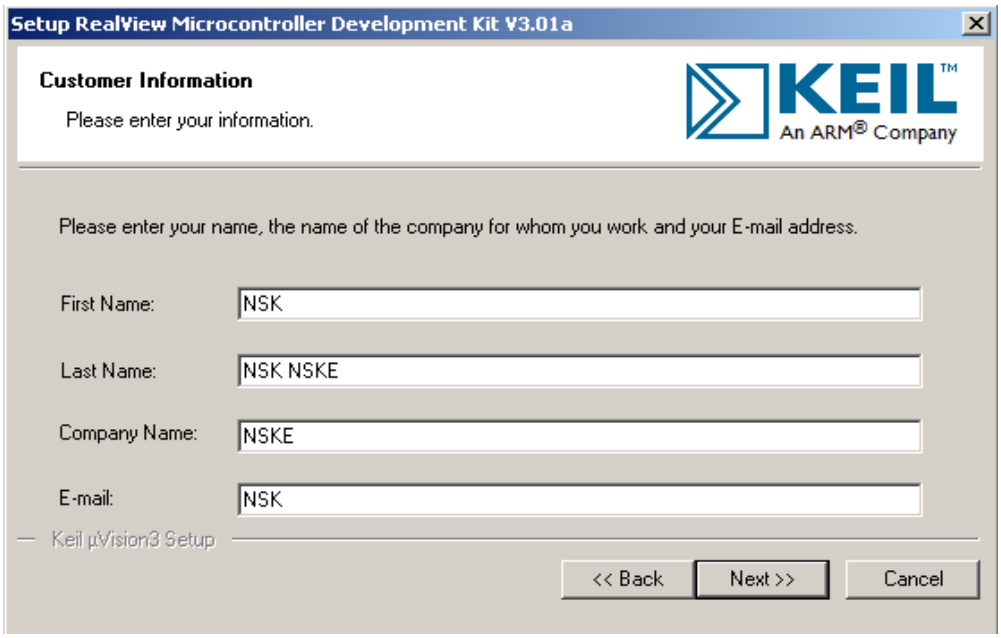


P1.26 Connect **P1.26** To Gnd to Enable **JTAG** For Programming&Debugging

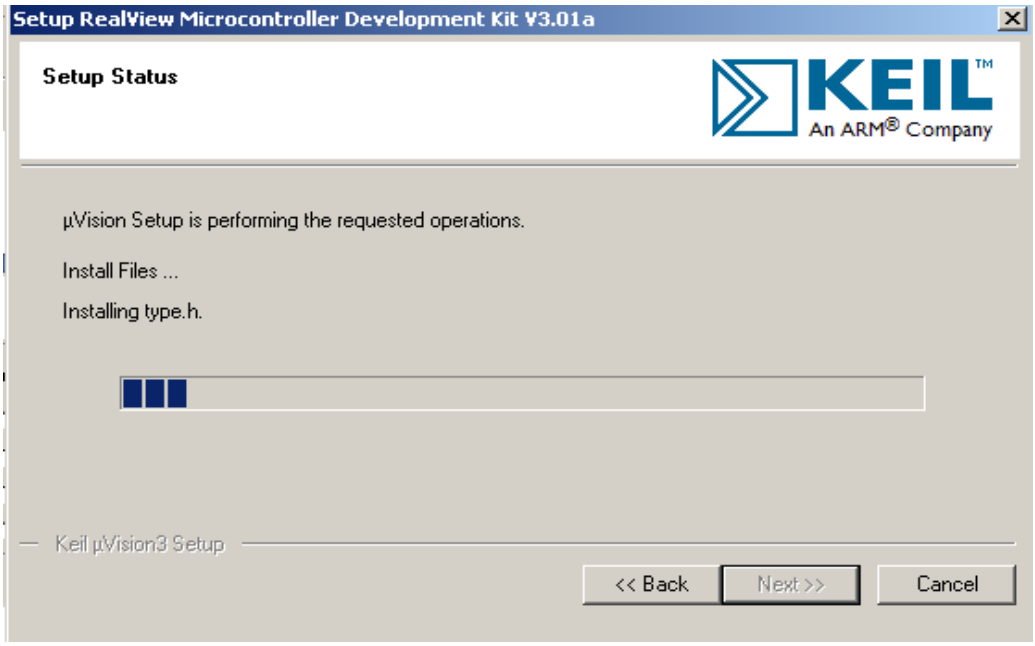
INSTALLING KEIL



Select the Path to install Keil uV3 and press Next

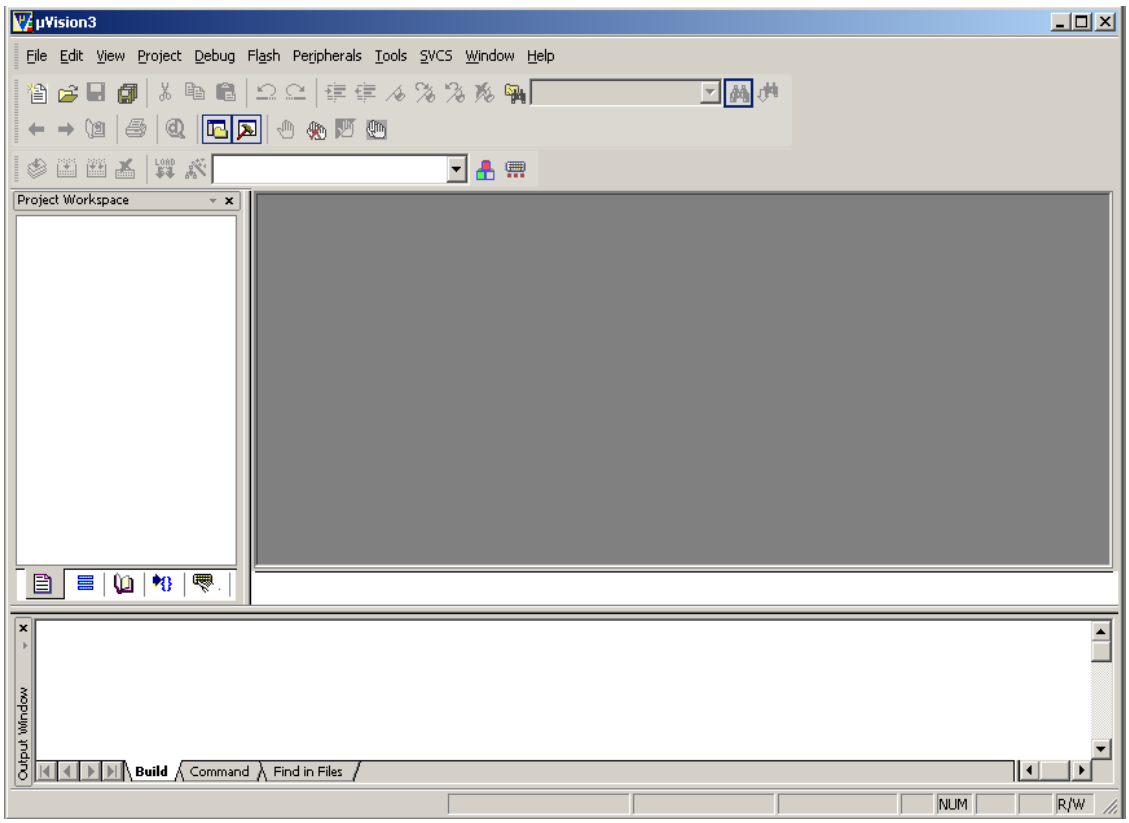


Fill up the Customer information to proceed further installing Keil then Press Next

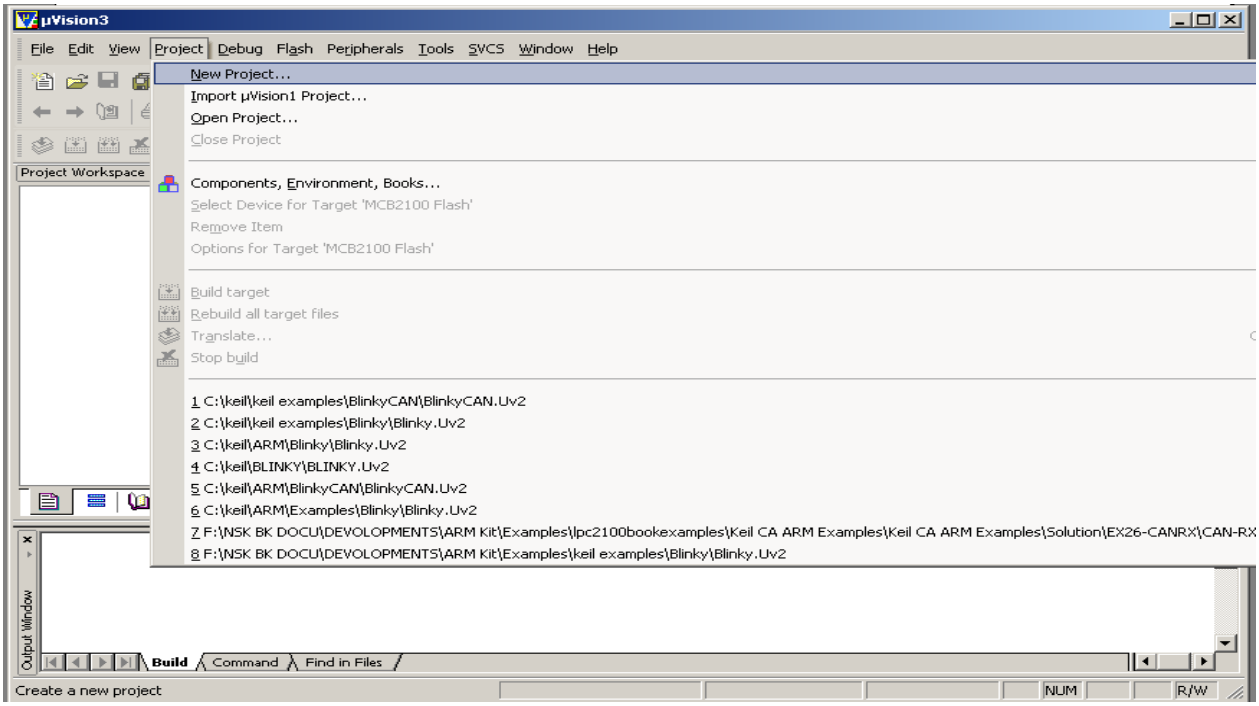


Wait until all the file are copied. Once done press Next
Then in Next screen ,Press Finish to complete the installation.

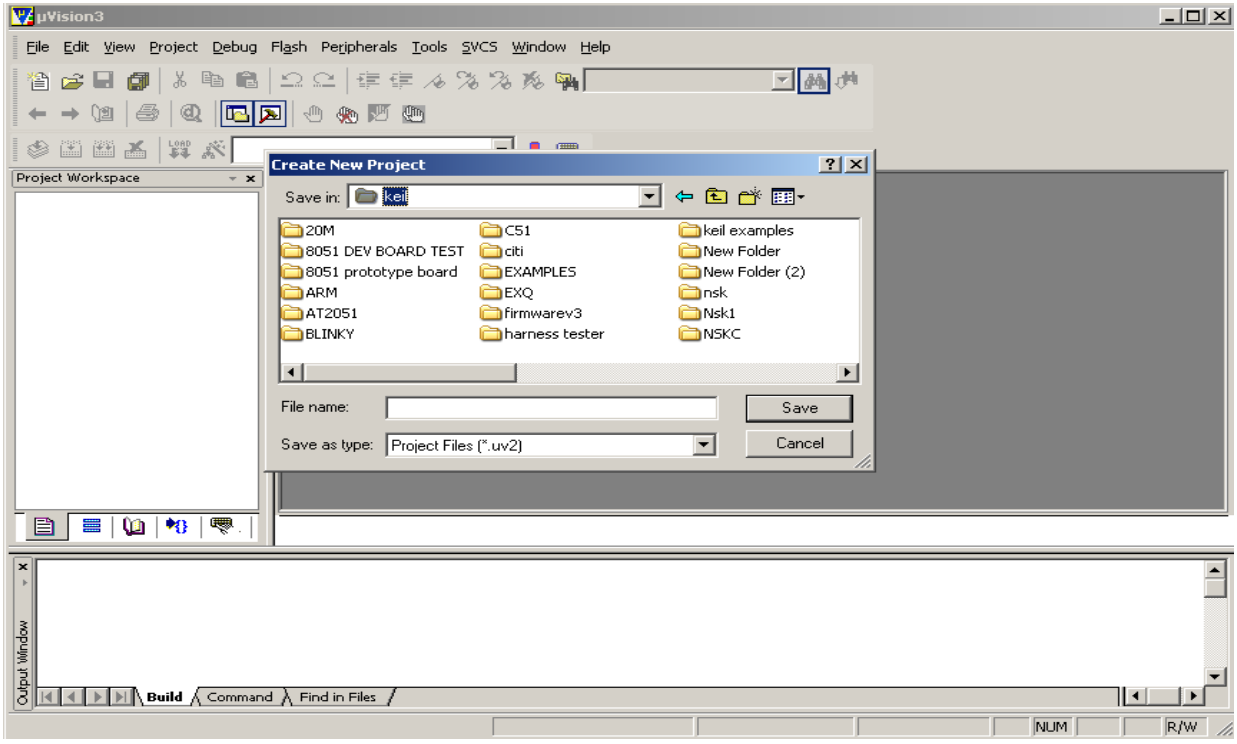
Once Keil is installed, to load Keil uV3 goto to start menu, programs select Keil uVision3



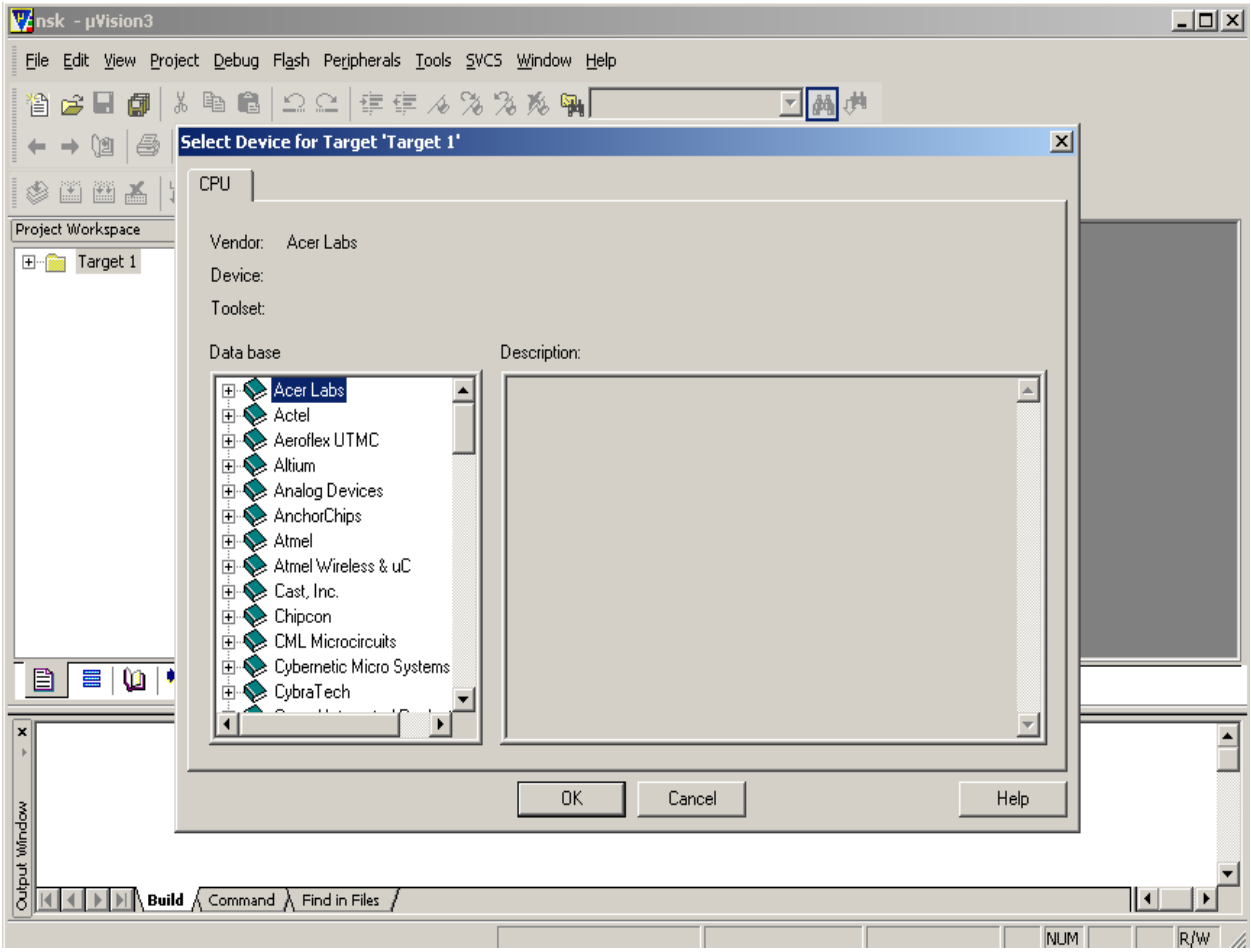
Once Keil is loaded, an empty workspace is displayed. If any project was opened previously, then the previously opened project will be displayed.



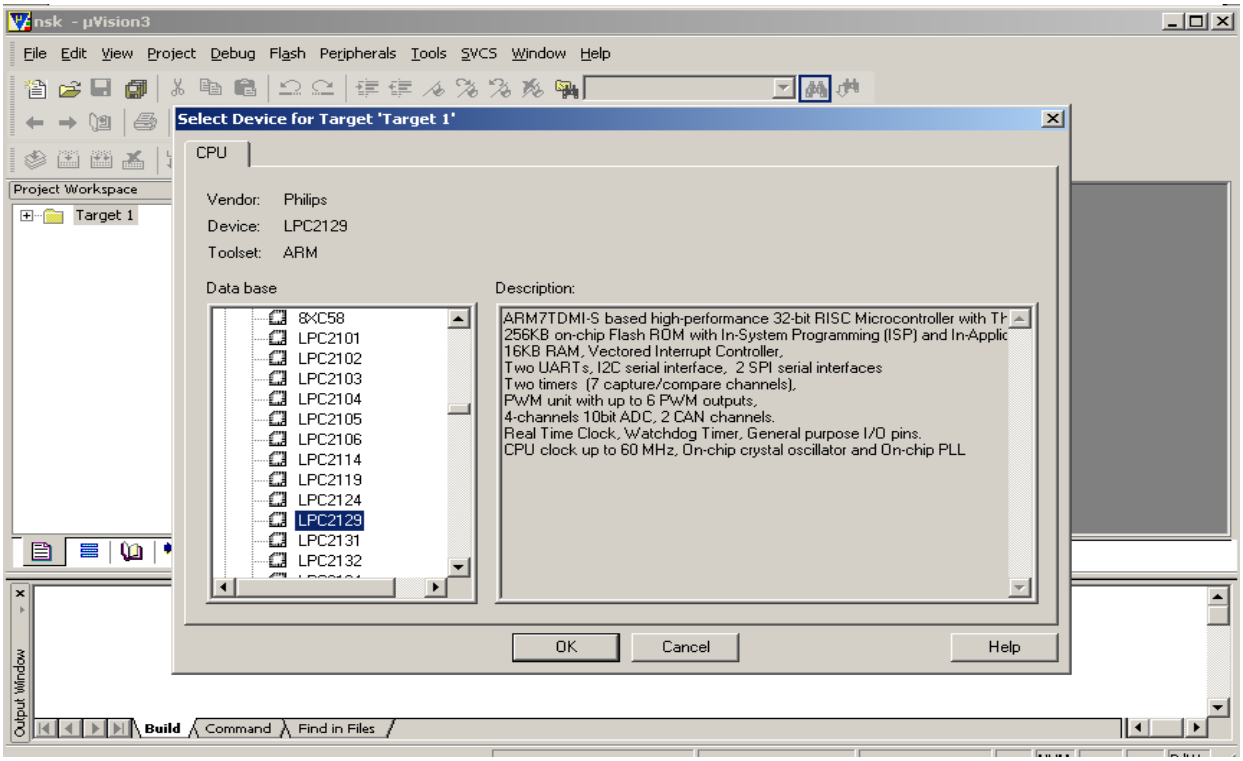
To create a New Project, goto Project – drop down menu and select New Project



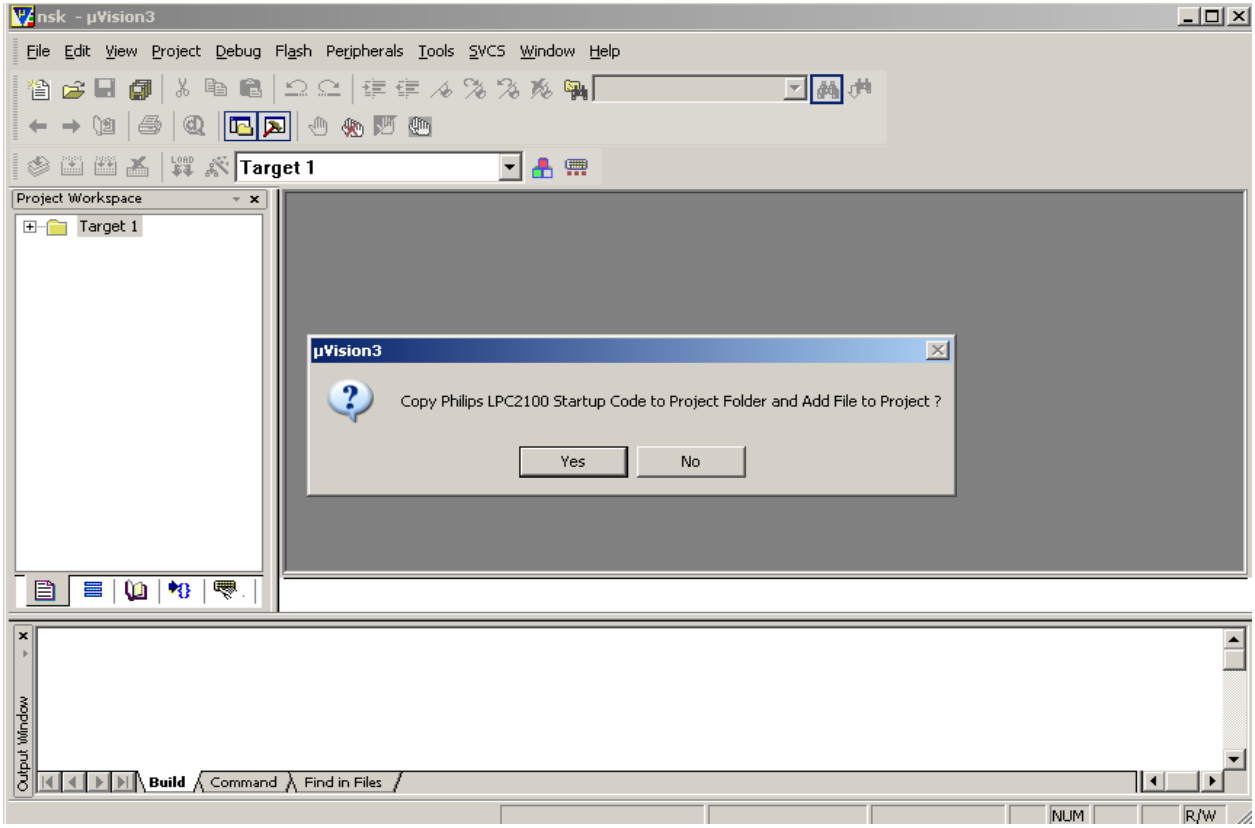
Once you select New Project, it asks you where to save the project. Specify the Path.



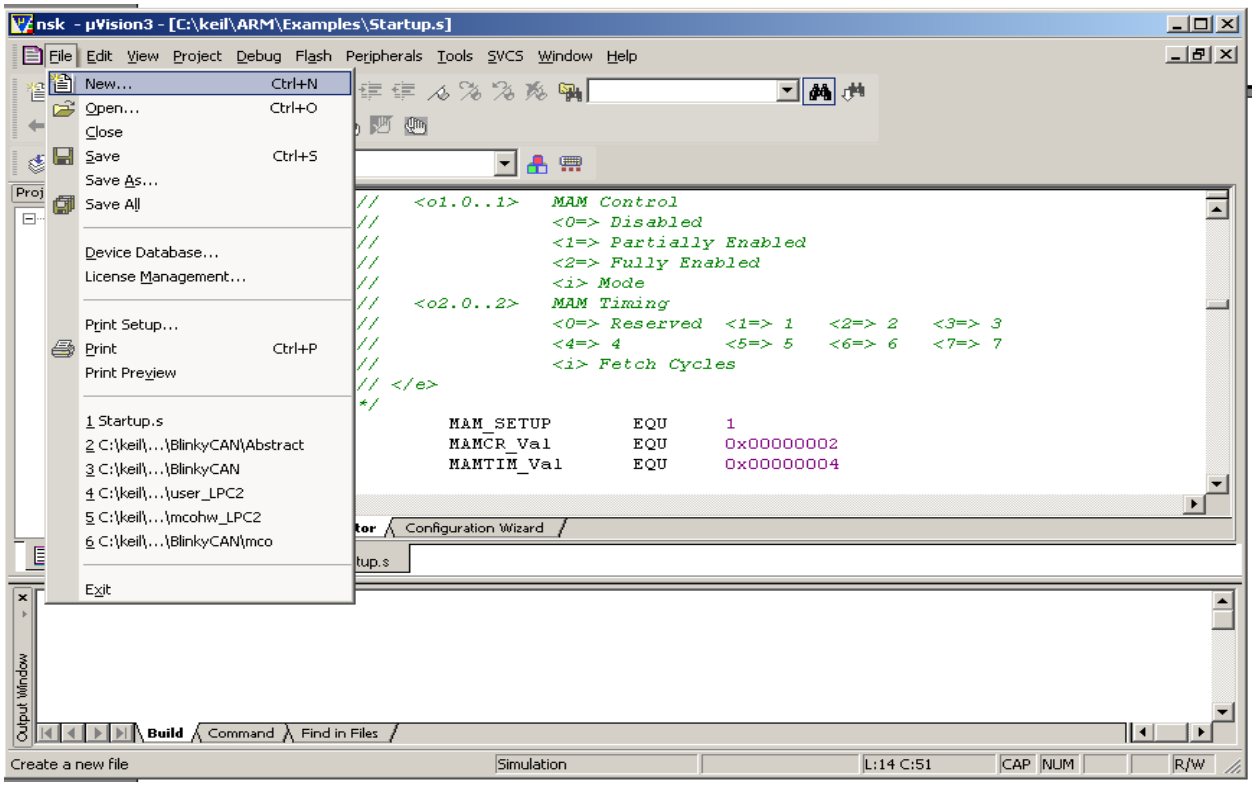
Once you specify the Path, select the Chip to be programmed.



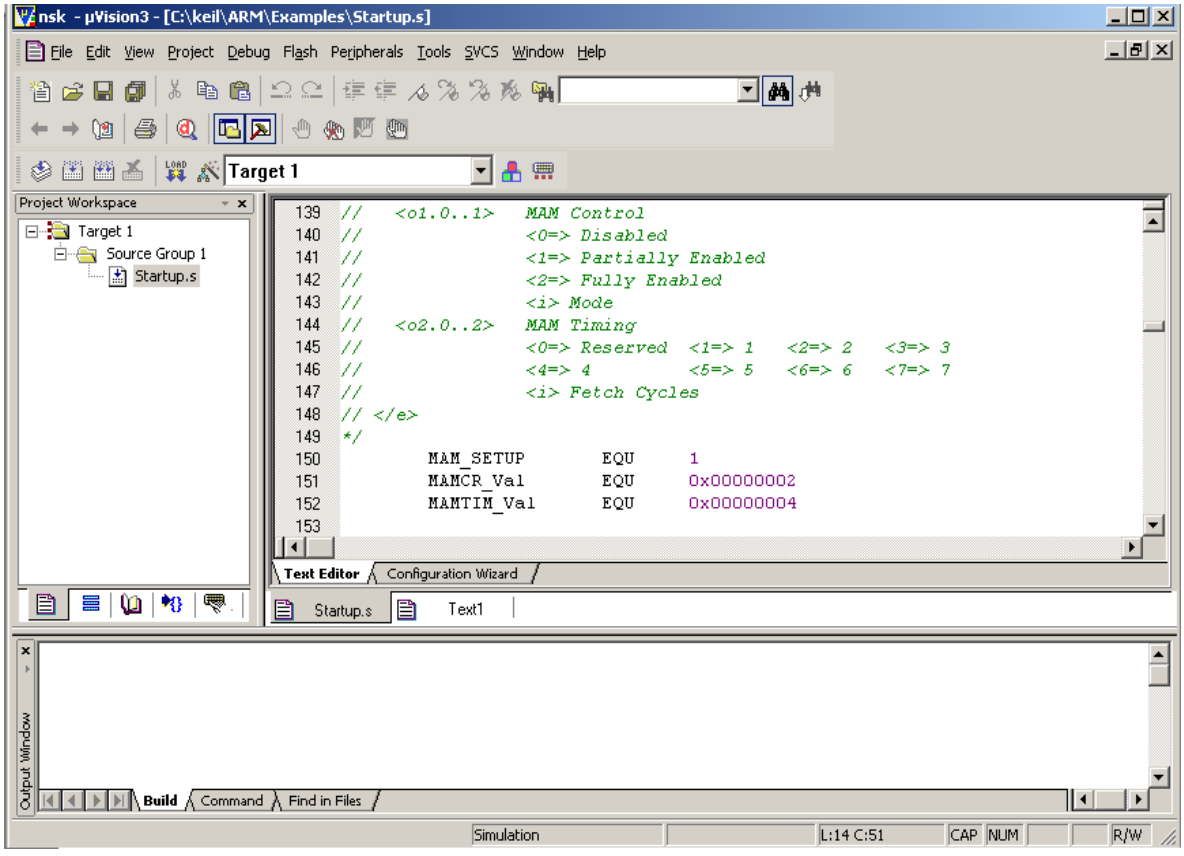
Here in this case choose **LPC2129** from Phillips.



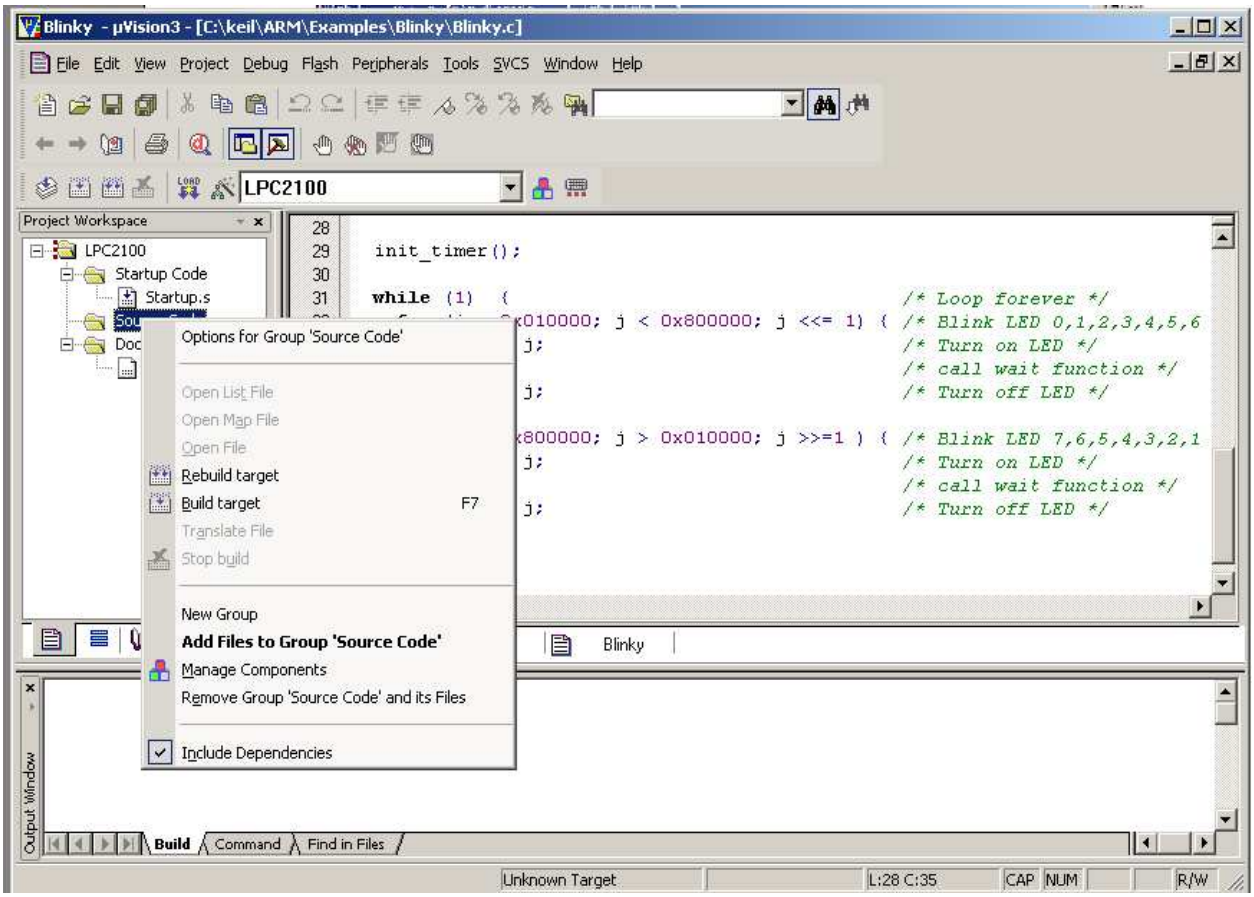
Once you select the chip, a message box will be displayed. It asks whether to load Startup code into the Project.



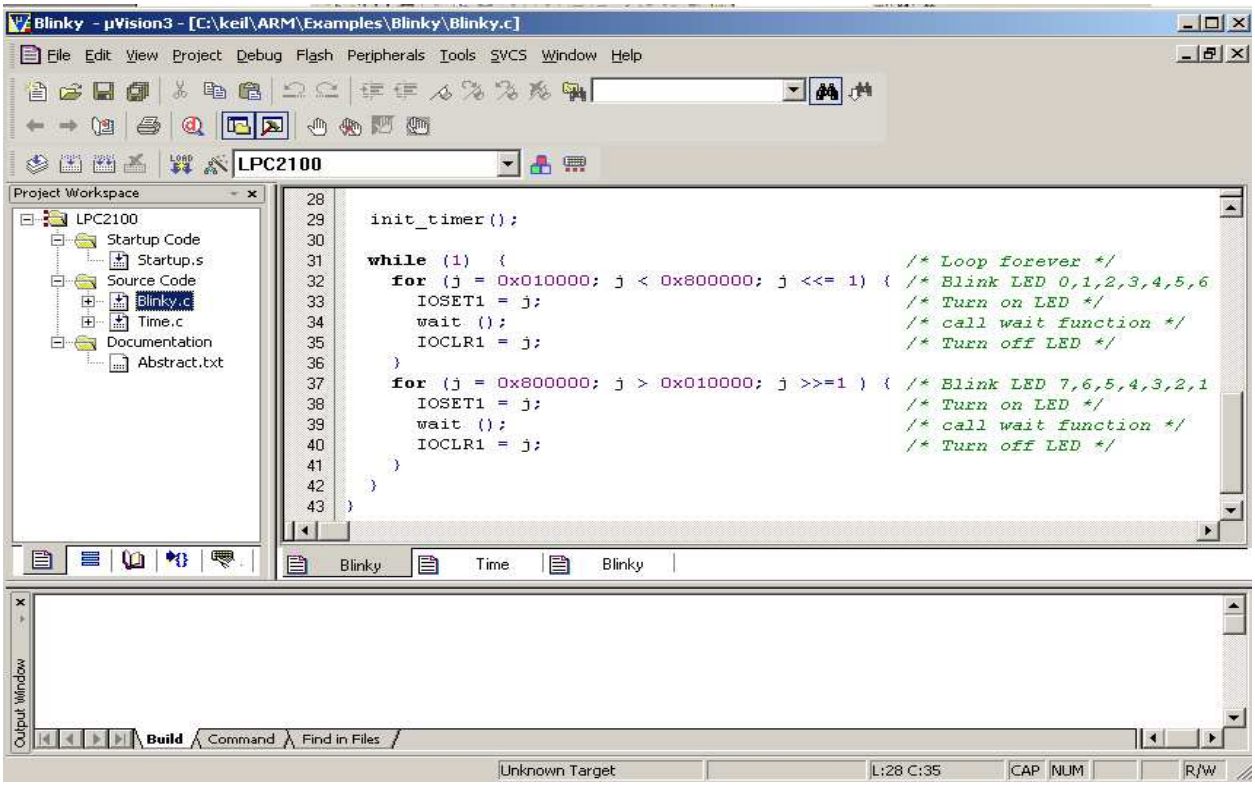
lo write start writing code, select new file from file drop down menu.



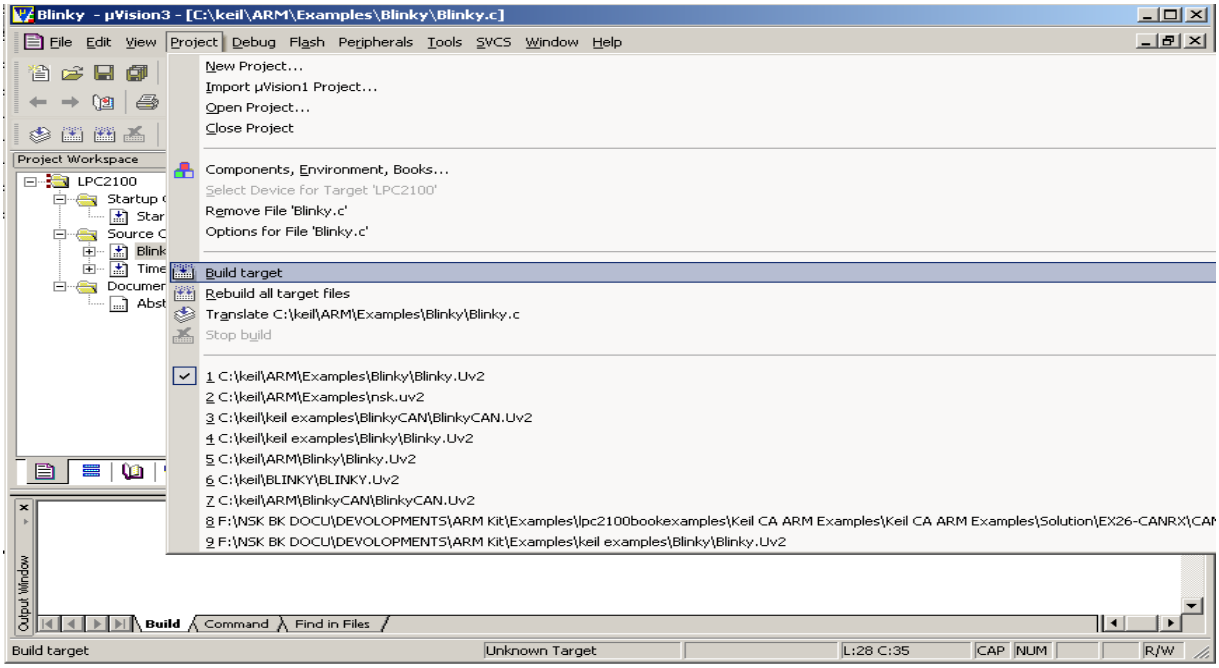
On Right Hand Side is the editor where the code can be written…..



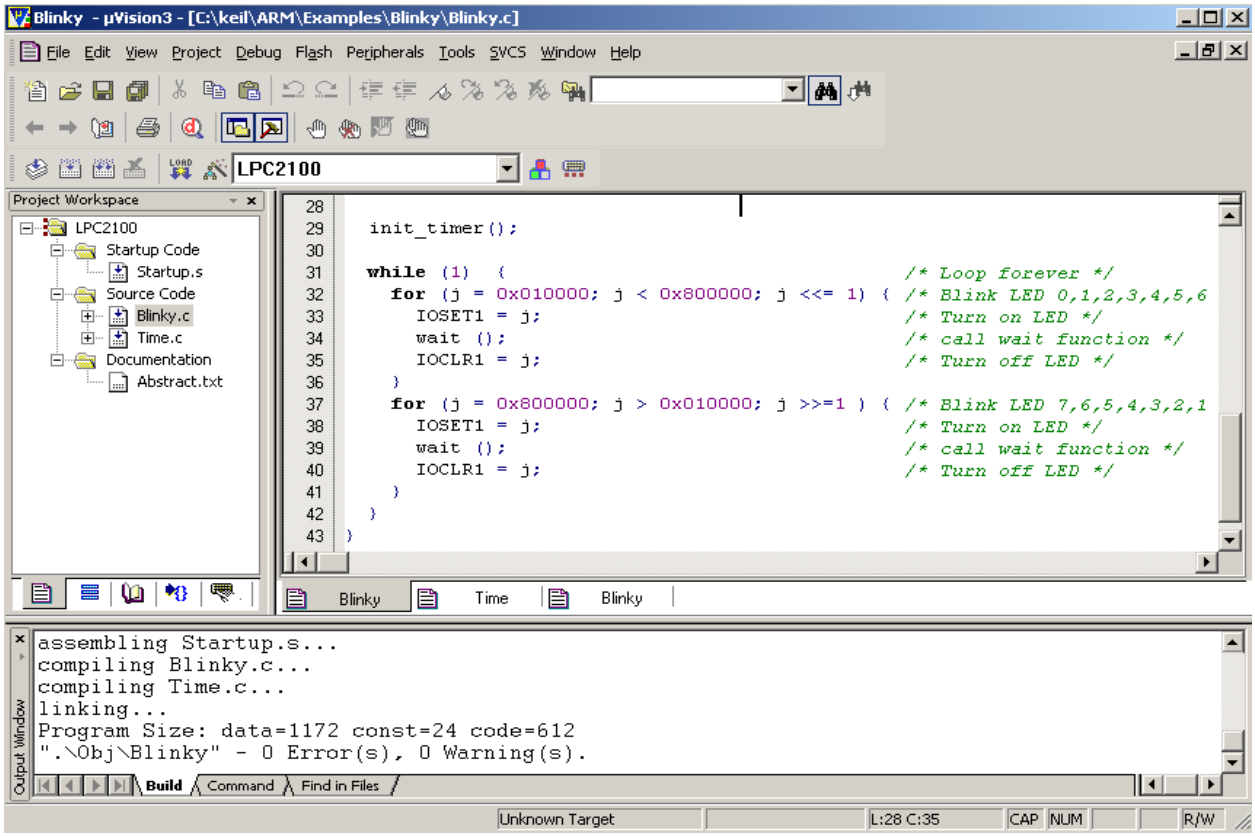
Once the code is written, it has to be added to the Project. To do that right click on the Source group and select **"add files to source group"** option.



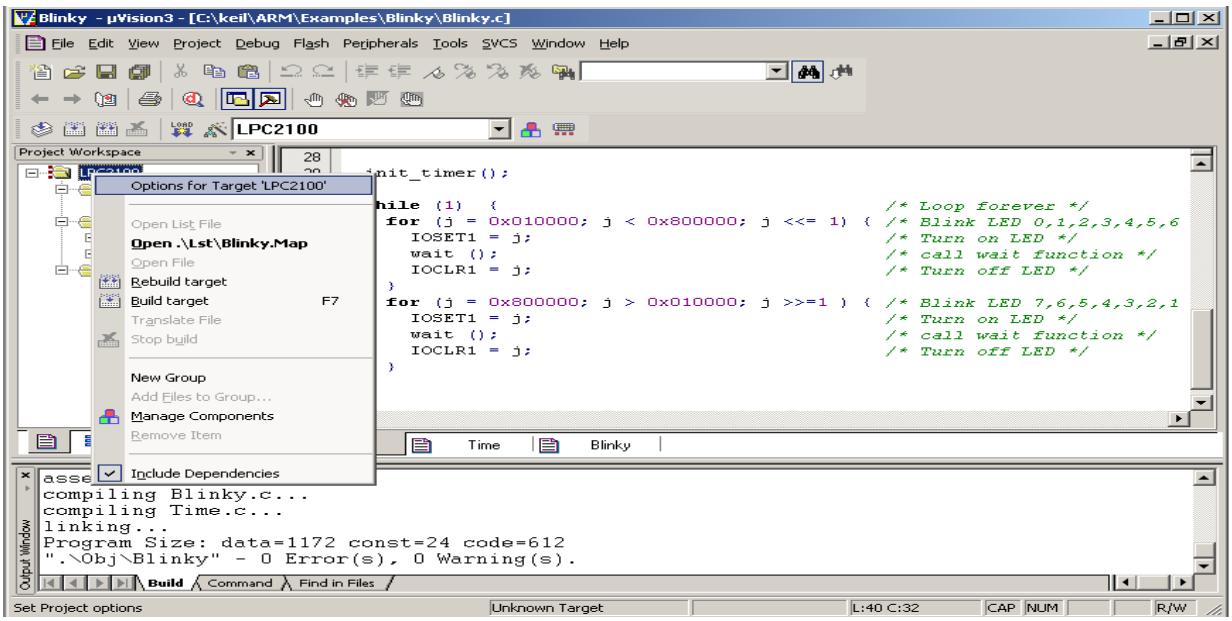
Then select the file to be added. You can see the file added on Left Hand side in the Source group.



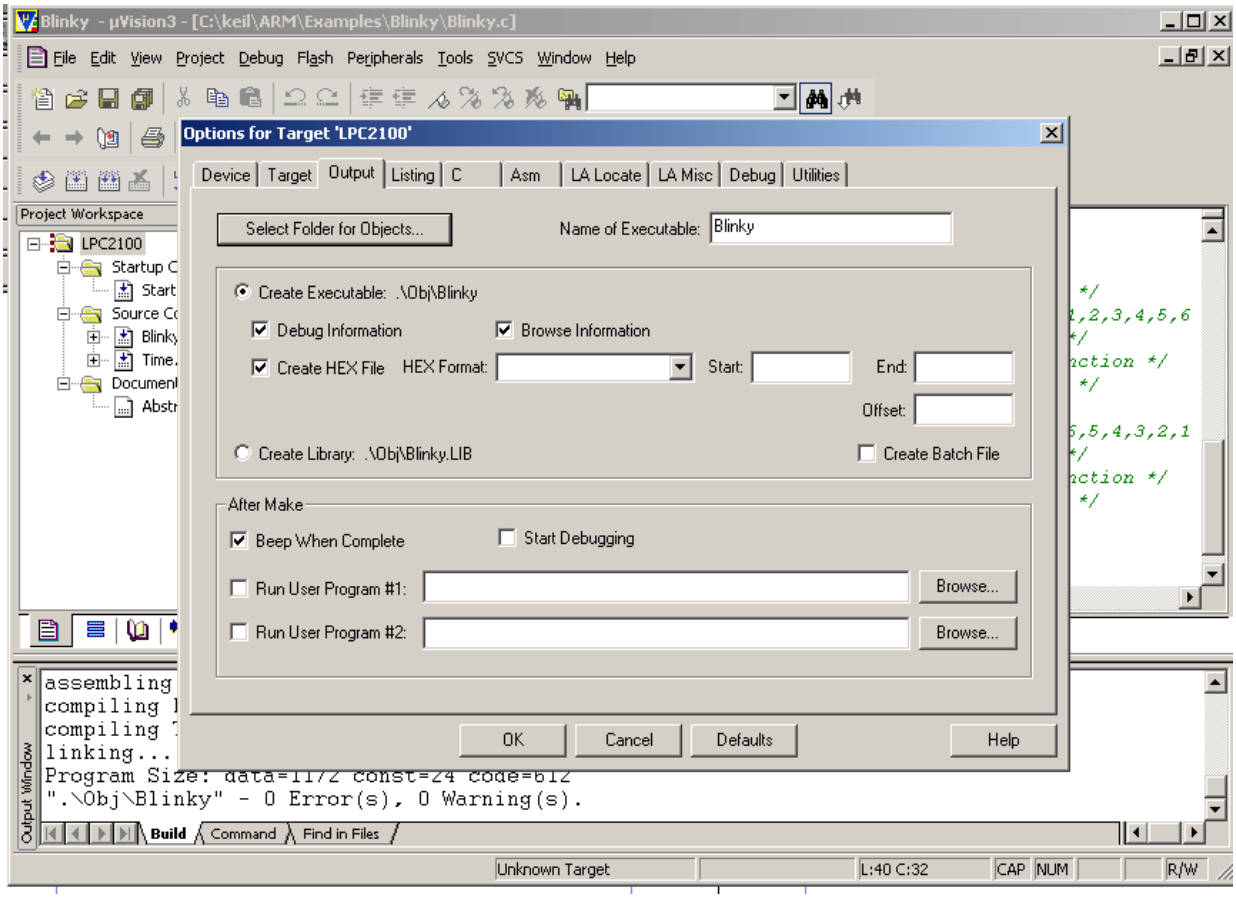
To Build the project, goto Project Drop Down menu and select Build.



Once the project is built, the result can be seen at the bottom. If any errors are present the list of errors will be displayed or if the project has no errors the build is said to be successful.

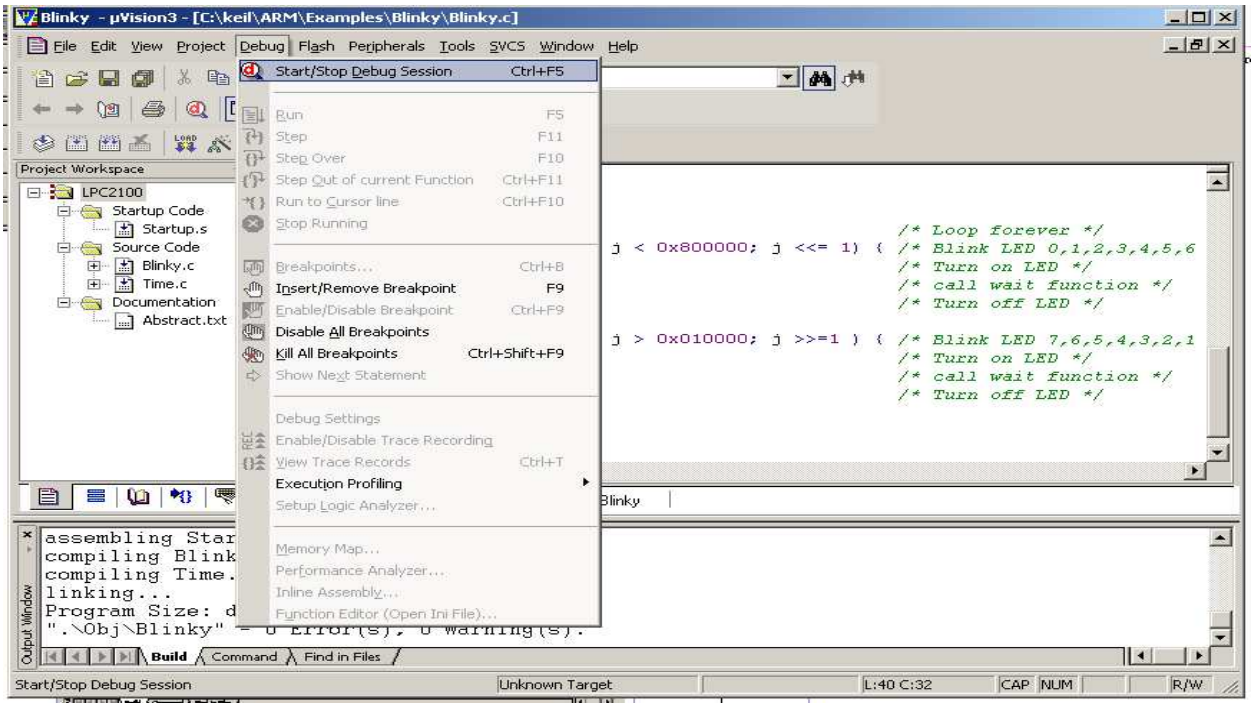


When the project is built, it only compiles and links all the files in project. If the same code is to be loaded onto the chip flash memory, we need the hex file. Hex file is the downloadable file which is used to load onto the flash memory of the chip. In order to generate the Hex file, right click on target folder in Project workspace (the first folder visible) and select "**Options for Target 'LPC 2100'** "

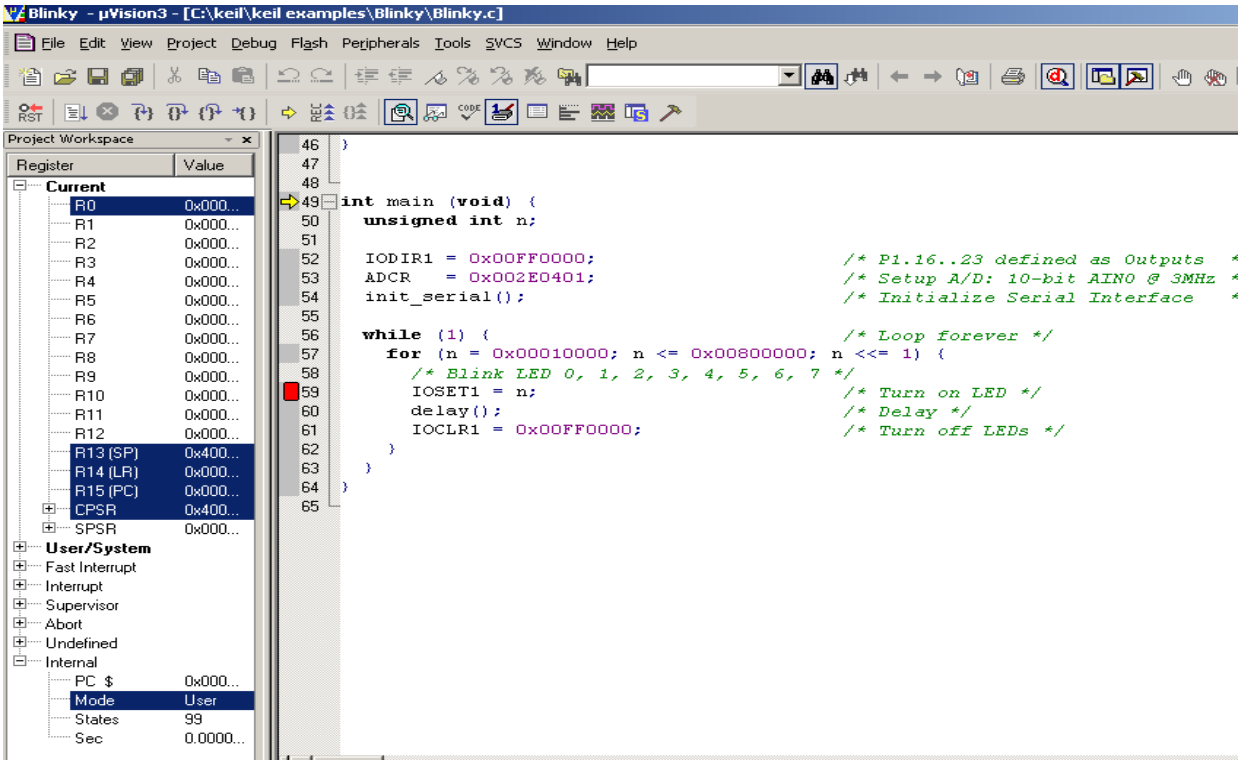


Check the check box – Create Hex file and press OK Once the option is selected to create Hex file, once again build the Project. This time the .Hex file is created. You can see the hex file in the folder where the Project is saved.

If you want to check for the correctness of the code, then goto Debug Drop Down Menu and select **"Start/Stop Debug Session"**



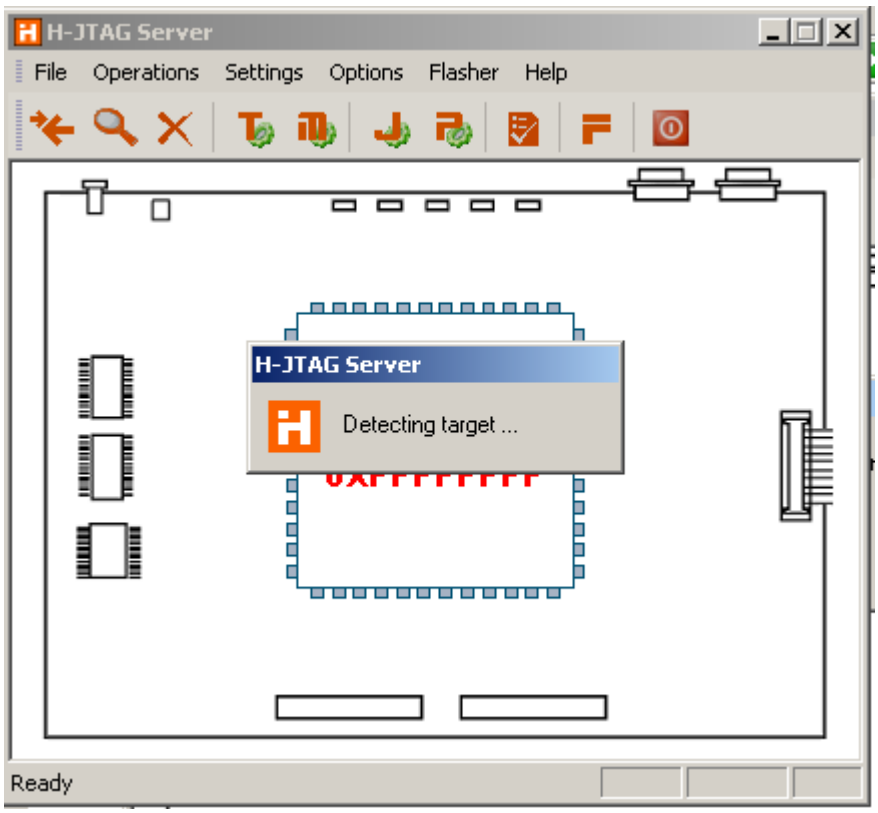
Here you simulate the program in SIMULATOR mode
here you can see Yellow arrow mark that will move step while pressing **F11**



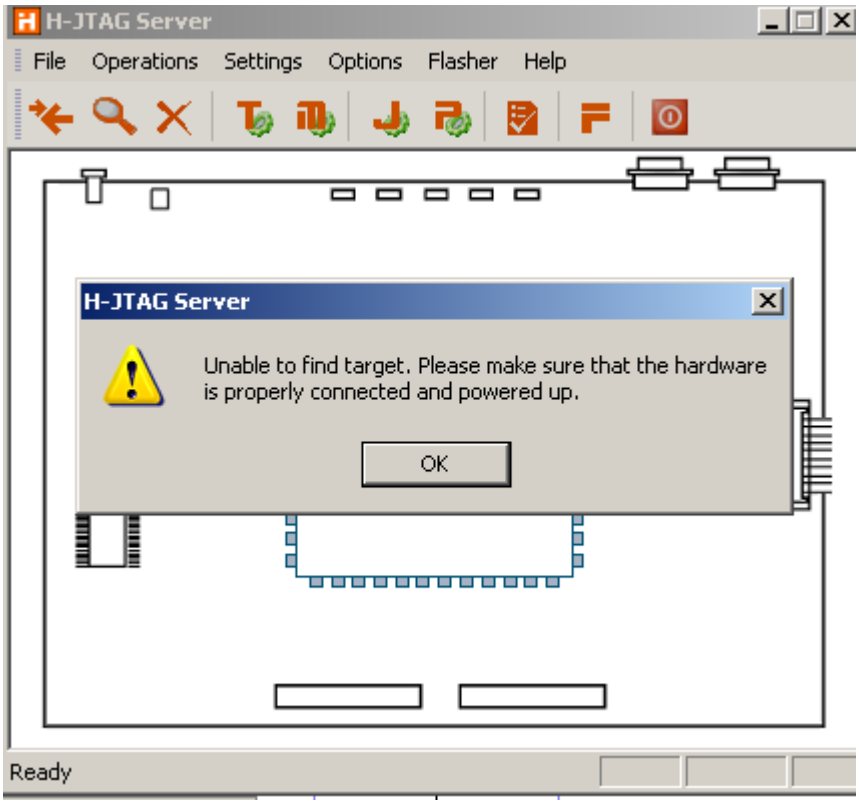
3.7 Installing H-JTAG : used for programming&debugging

Now press Finish to Complete the installation.

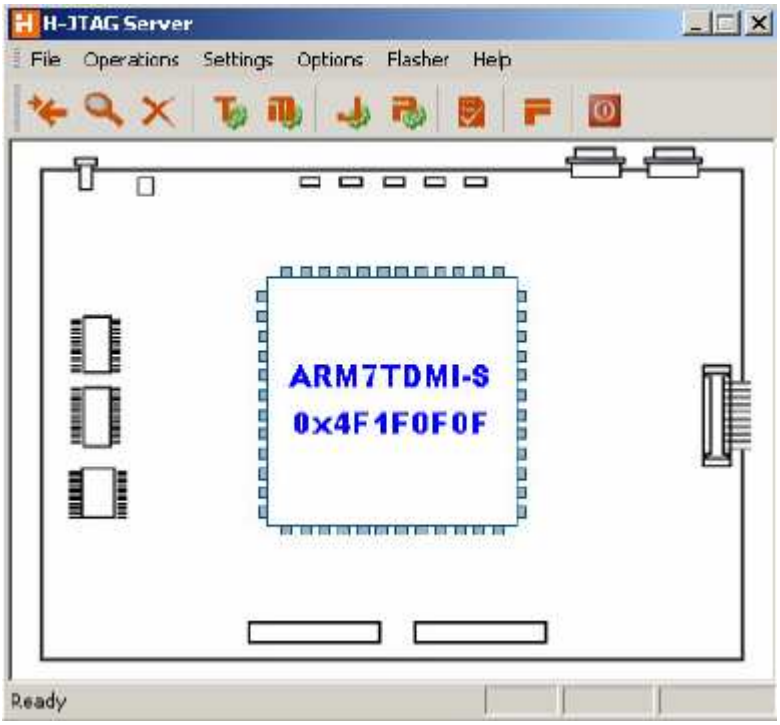
Load H-JTAG as shown above. In order to work with JTAG without error check for the jumper settings to be made to enter JTAG mode.



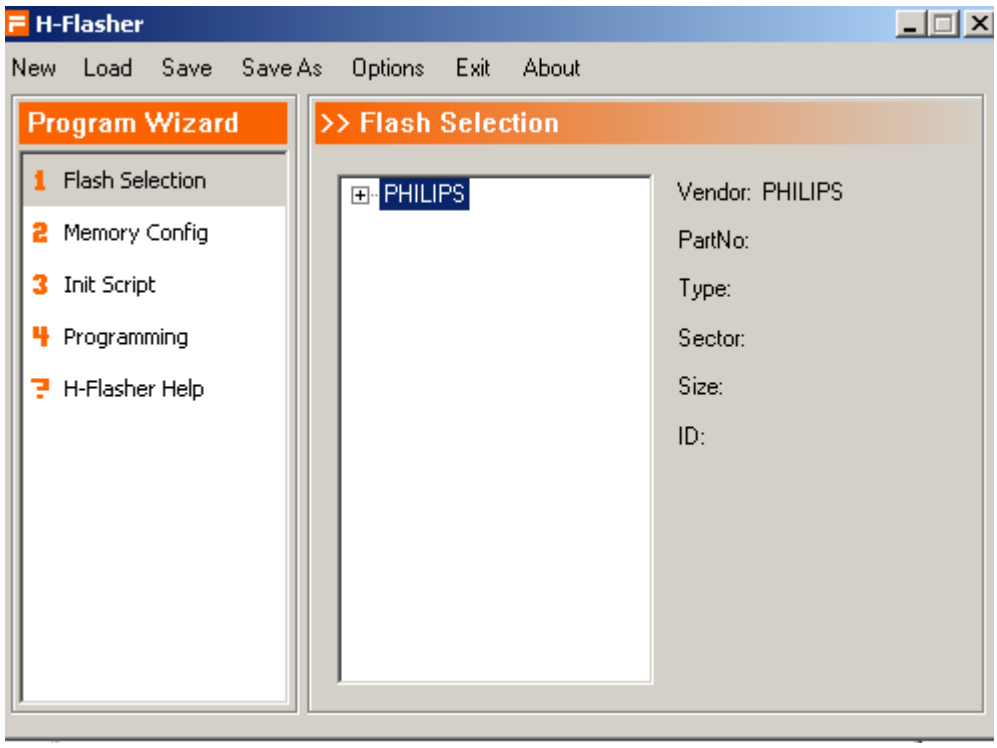
The moment the software is loaded, it tries to detect the chip



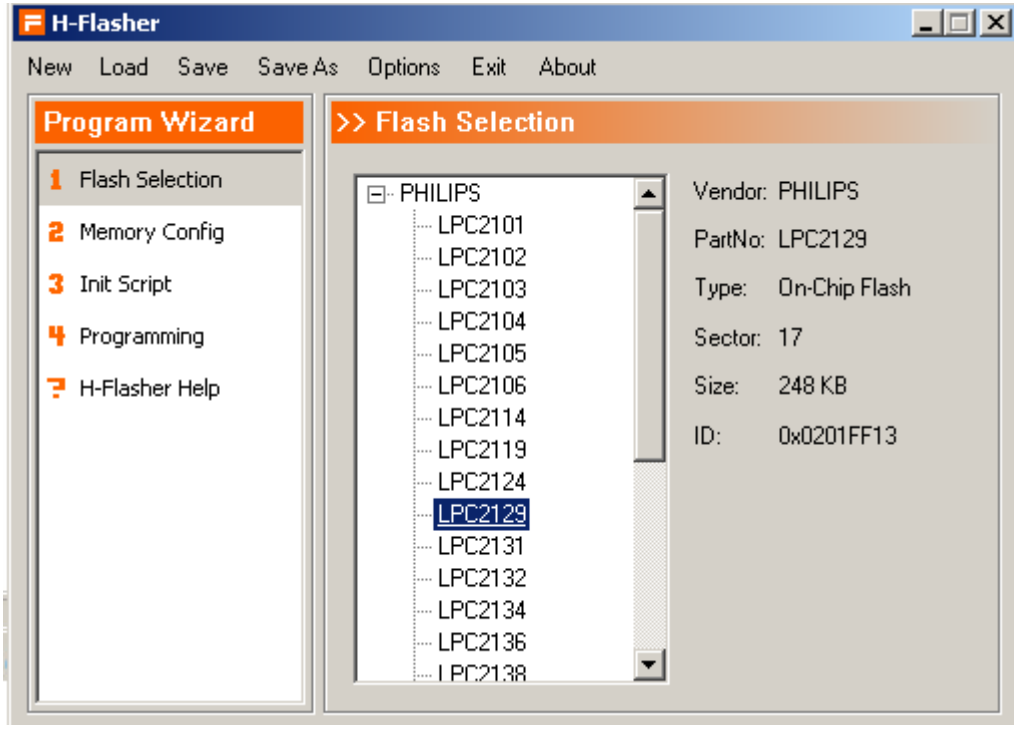
If the chip is not working or the board is not connected to PC, the above error message is displayed.



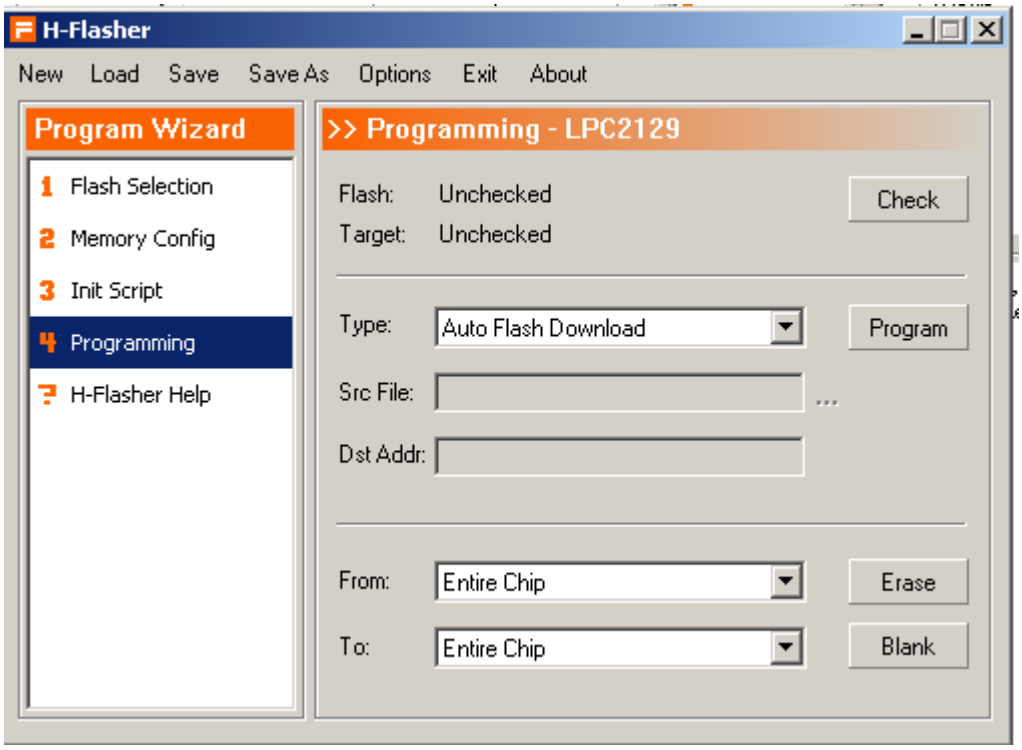
If the chip is detected, then the device ID will be displayed. This ensures that the chip is functional.



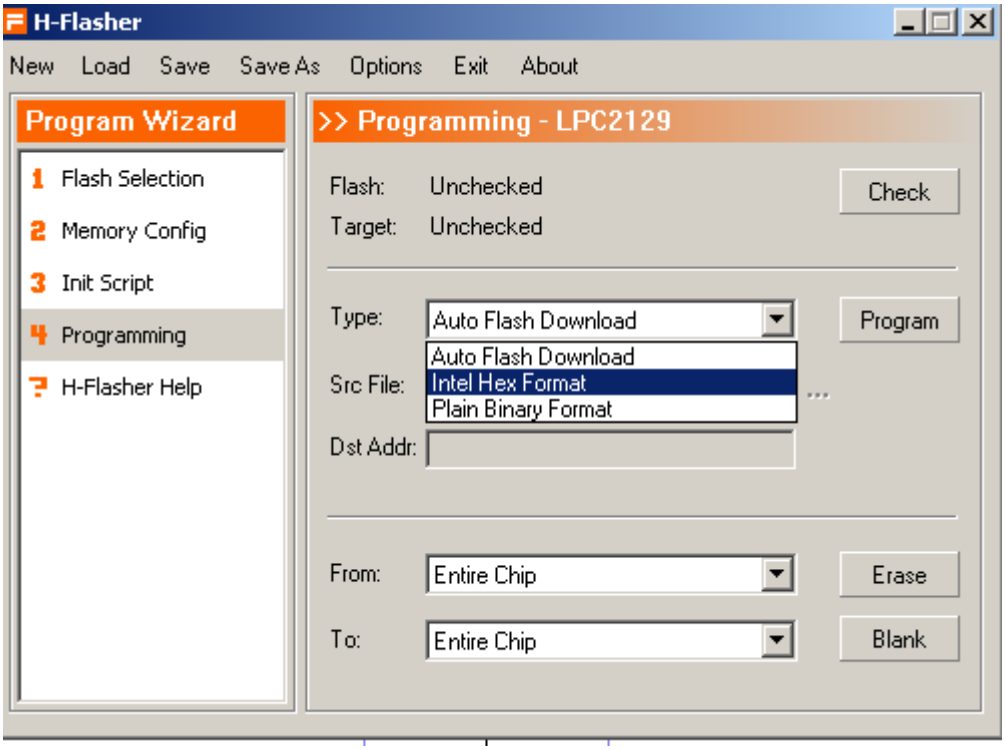
Before we start Programming the flash, we should specify which chip we are programming. In order to do that, select Flash Selection from Program Wizard on Left Hand side. In Flash Selection block the vendor of the chip is displayed. Here in this case it is Phillips.



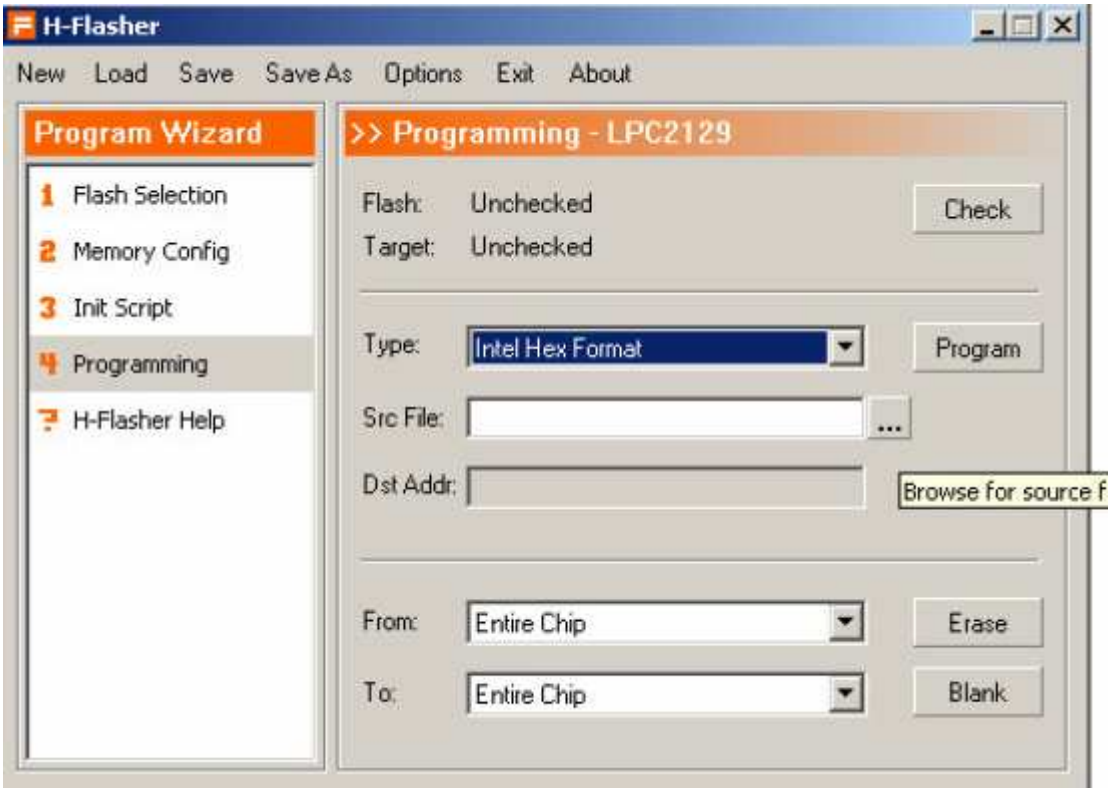
Once you click on Phillips in Flash Selection Block, the list of LPC series chips will be displayed. Since we use **LCP 2129 .**



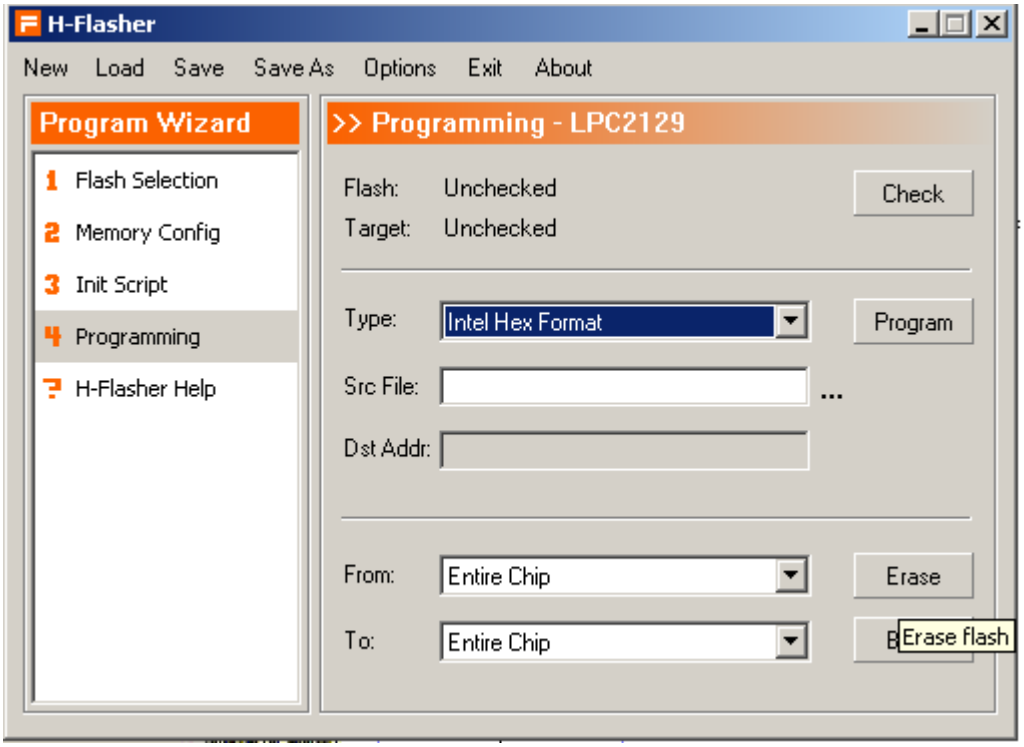
Once the flash is selected, go for programming. To do the programming, select Programming from Program Wizard. Now it enters into the Programming Mode of **LPC -2129.**



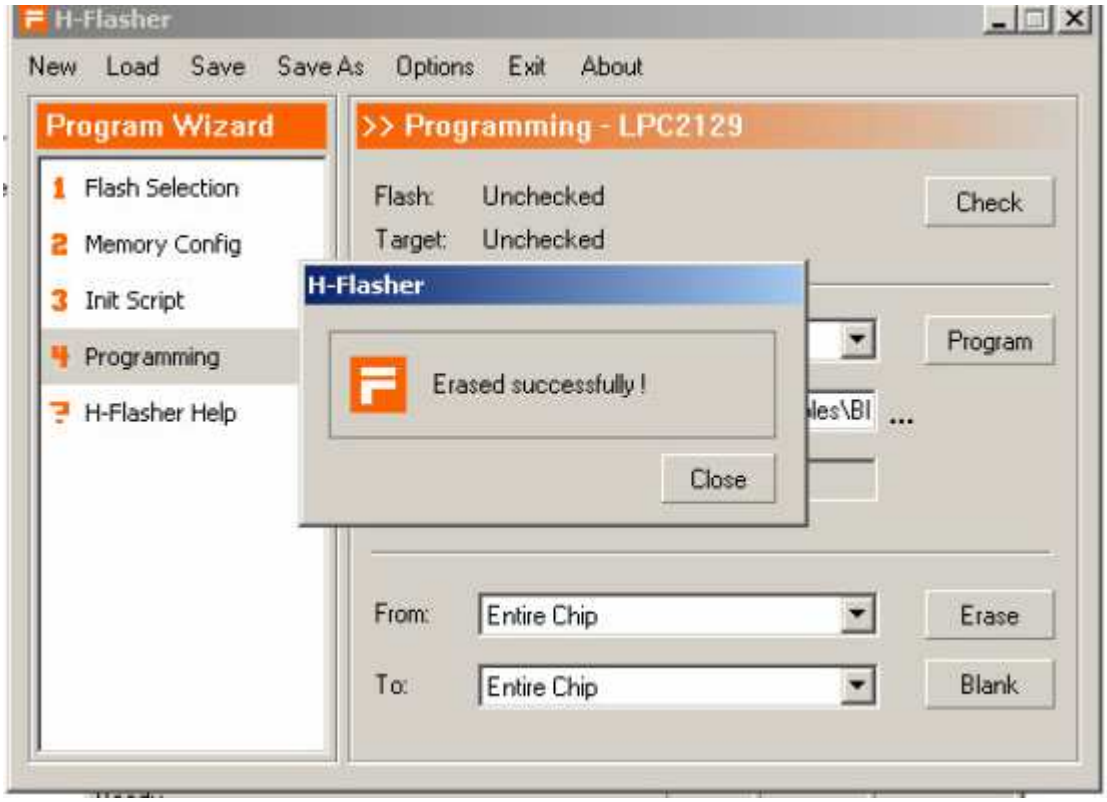
In the Programming LPC 2129 Block, we should select the file format to download onto Flash. Here in this case select Intel Hex Format



Once file format is selected, select the hex file from src file to be downloaded onto flash.

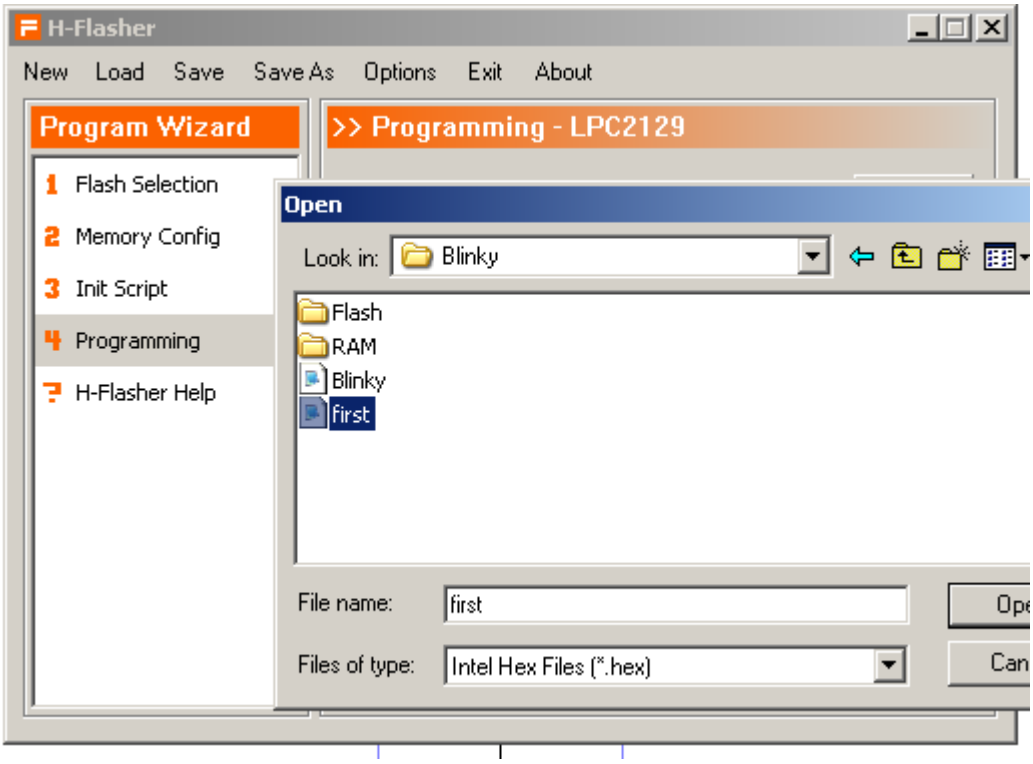


To Erase the Flash memory, click on the button Erase. This will erase complete flash.

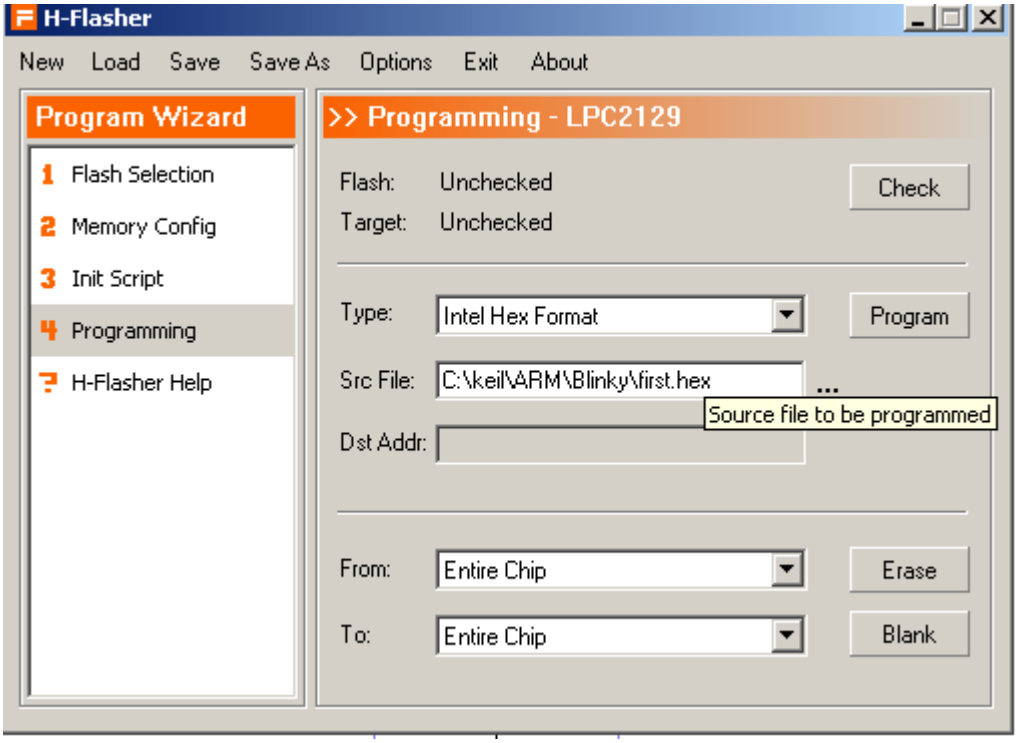


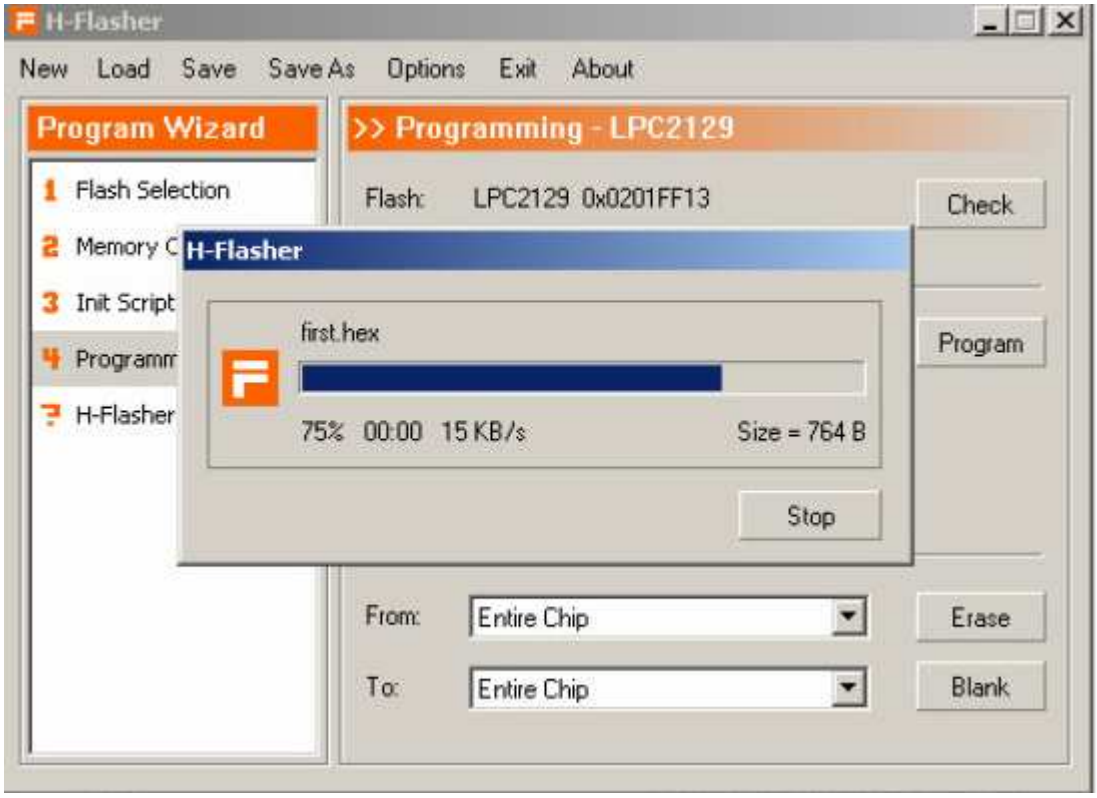
Once the flash is erased, the message box will be displayed.

Select the hex file to be downloaded

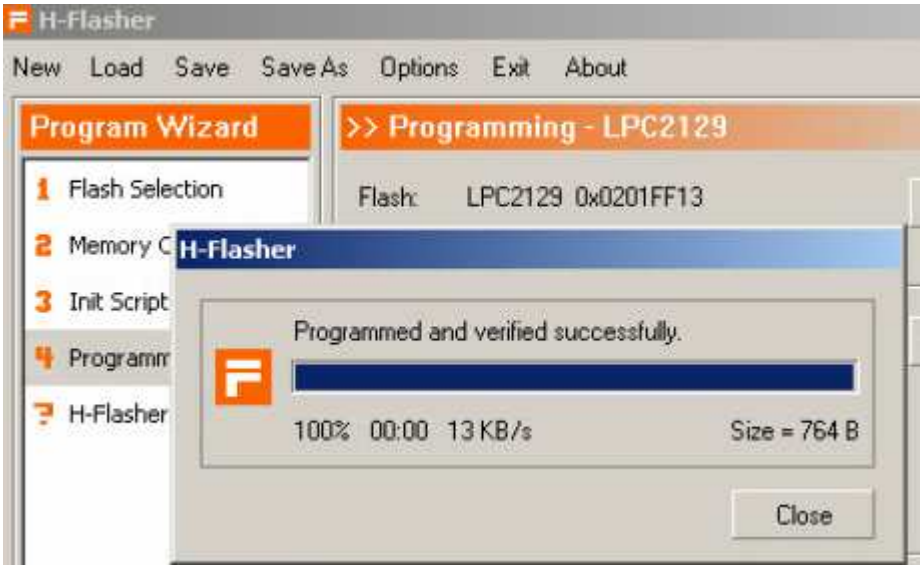


Once the hex file is selected, the path will be shown in Src File text box.



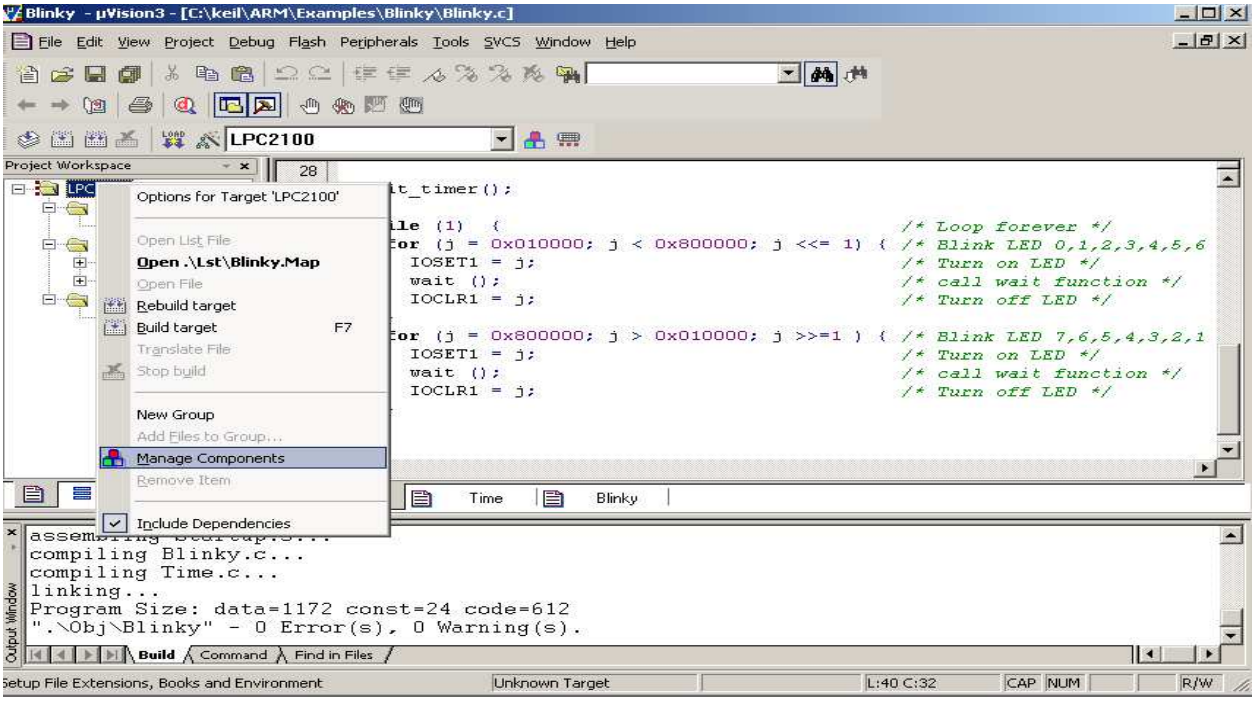


Once the hex file is selected, click on Program Button. The Programming process will start.

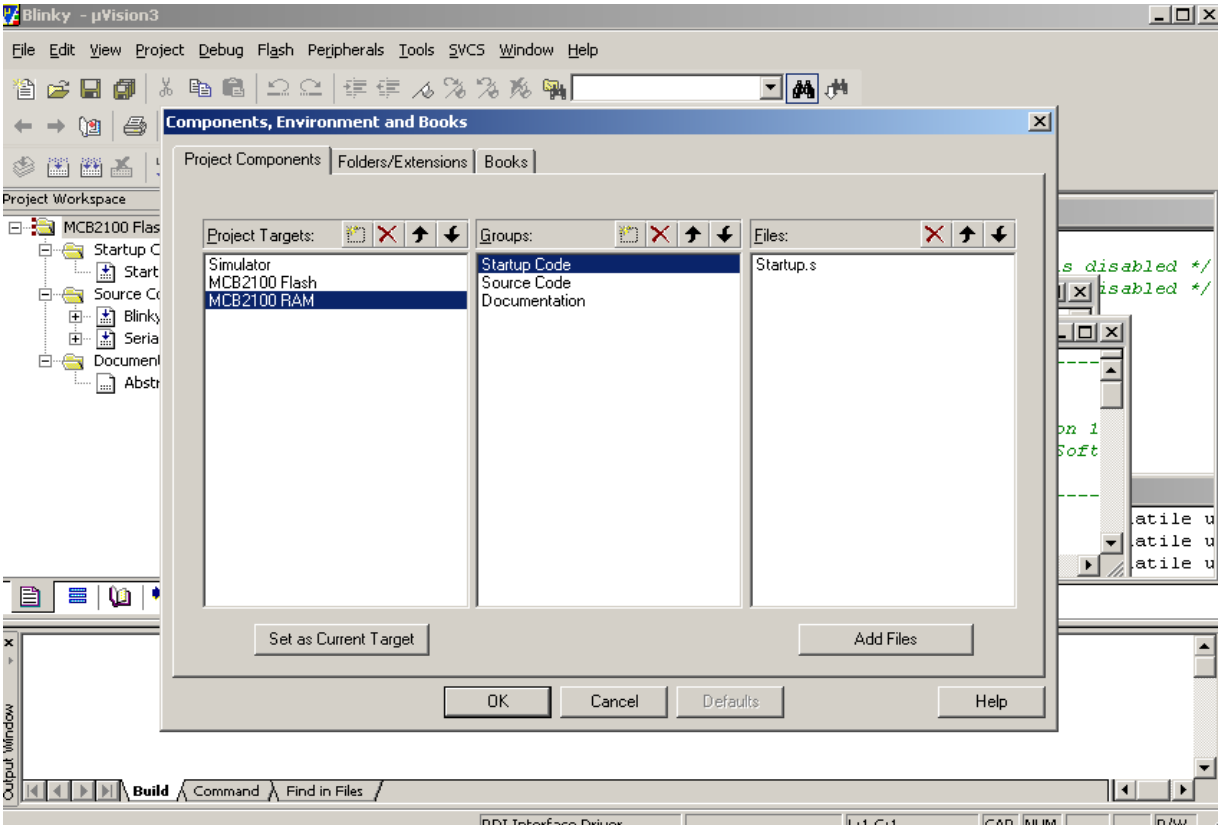


Once the chip is programmed the message is displayed

3.9 Program Debugging using Keil:

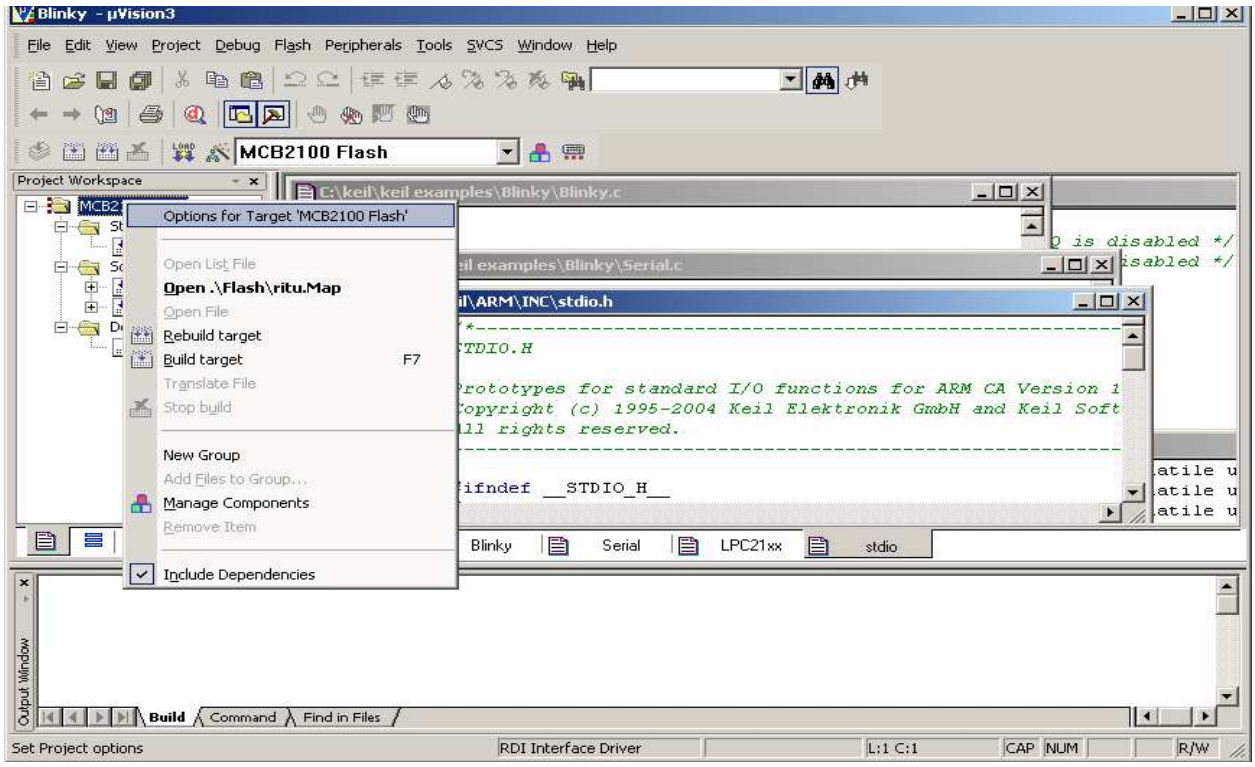


To do the debugging, first open the Keil uVision3 IDE, Load the project. Once the project is loaded, right click on target folder in Project workspace and select Manage Components.



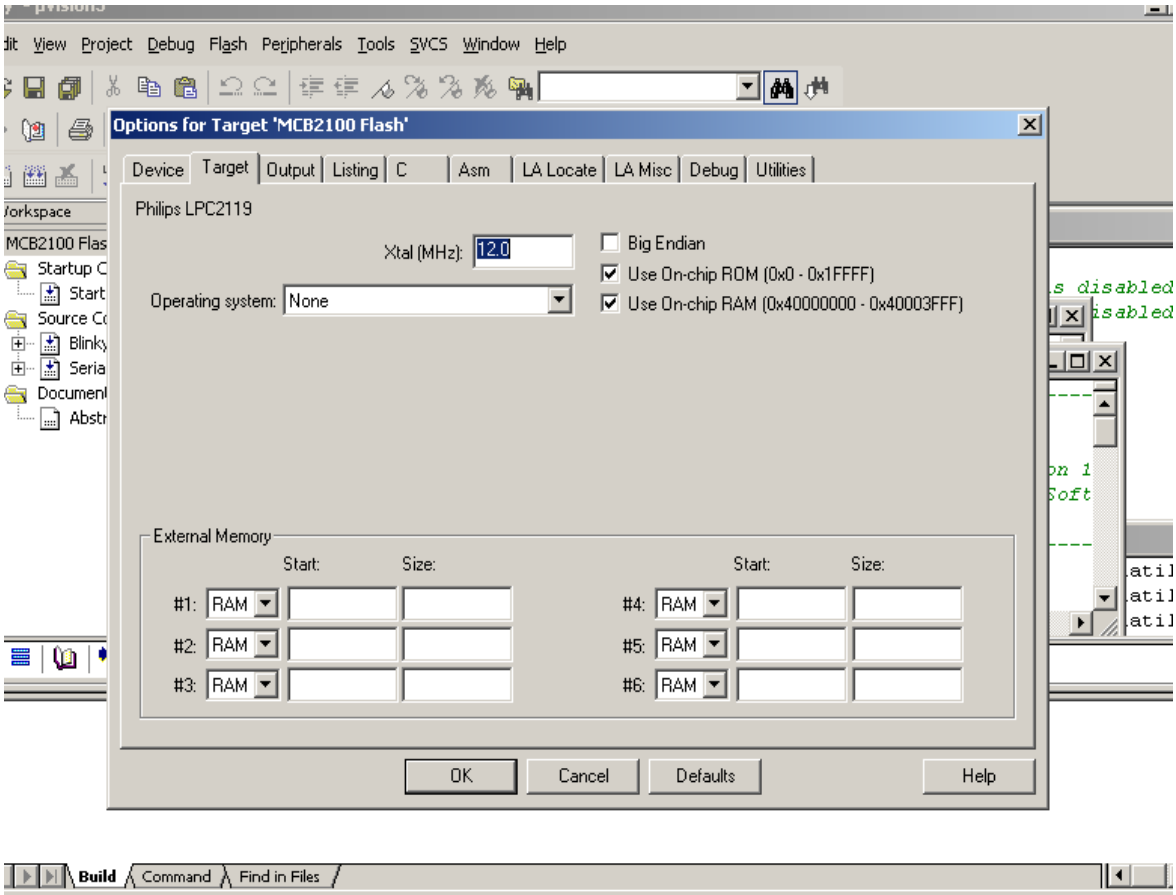
Once the Manage Components is selected, you can select the target type. That is to configure where the program is to be loaded or select Simulator. Once you select the target click on “Set as Current Target”

Select in this case RAM area to load the program for debugging. Select and click OK

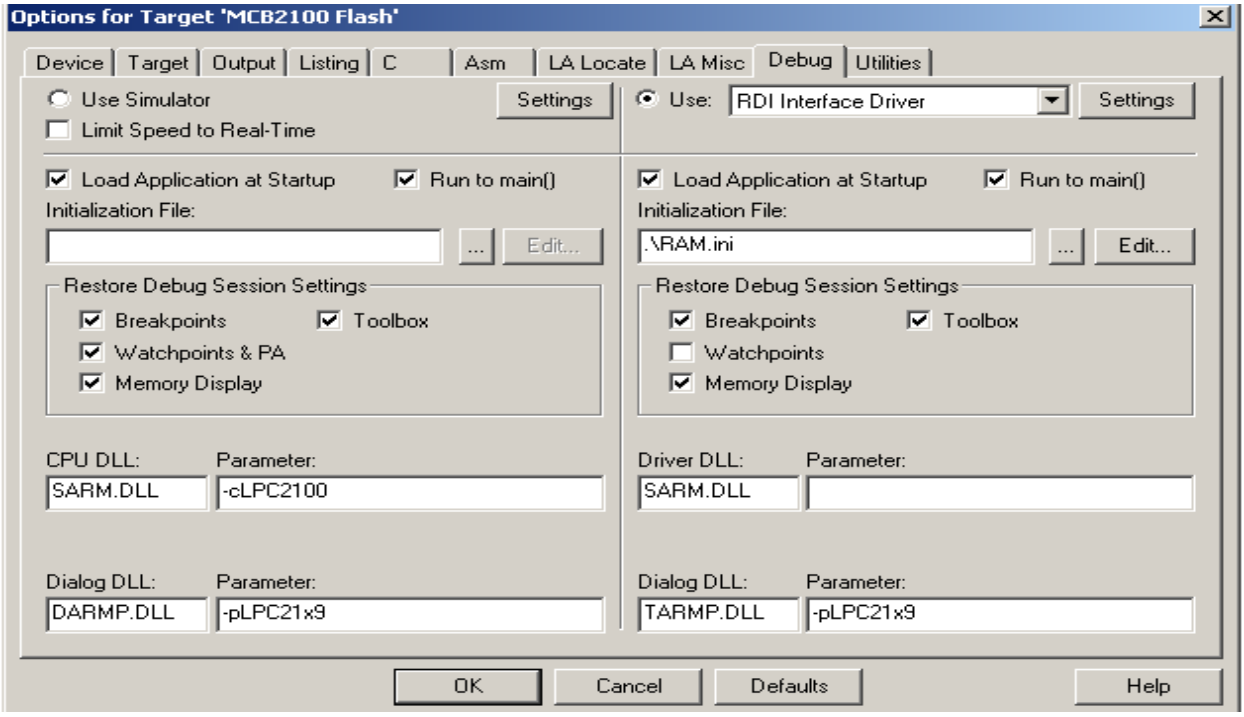


Now right click on the target folder in Project Workspace and select Options for Target.

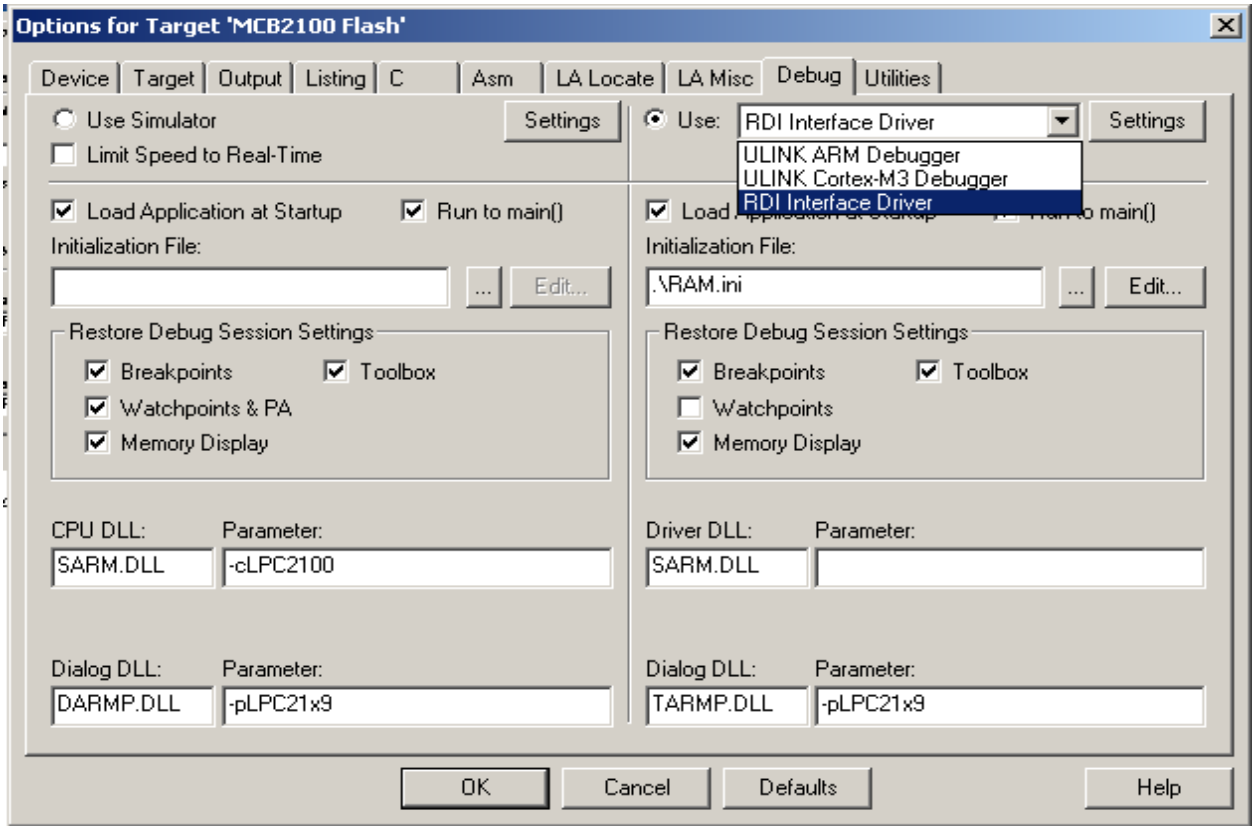
This is the window which will be displayed. Now select Debug Tab.



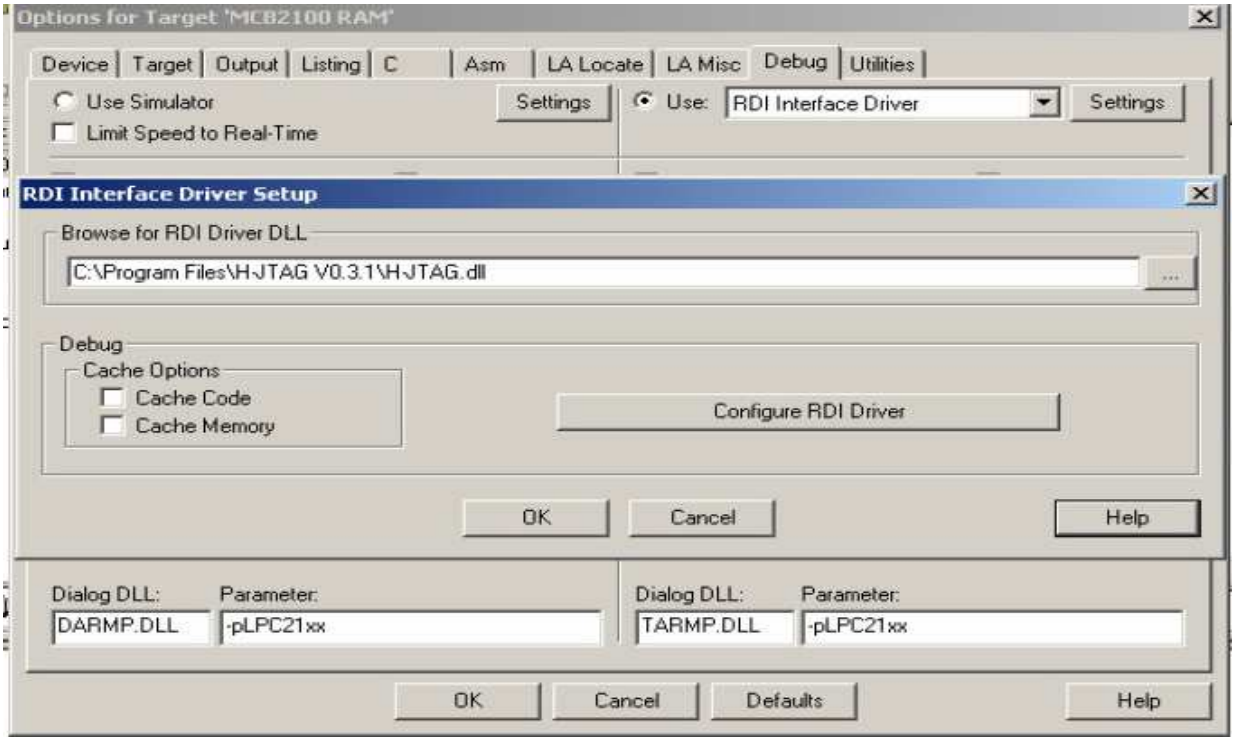
This will be the window which will be displayed when selected Debug Tab.



Now select RDI Interface Driver from the dropdown menu – use on Right Hand Side of the window



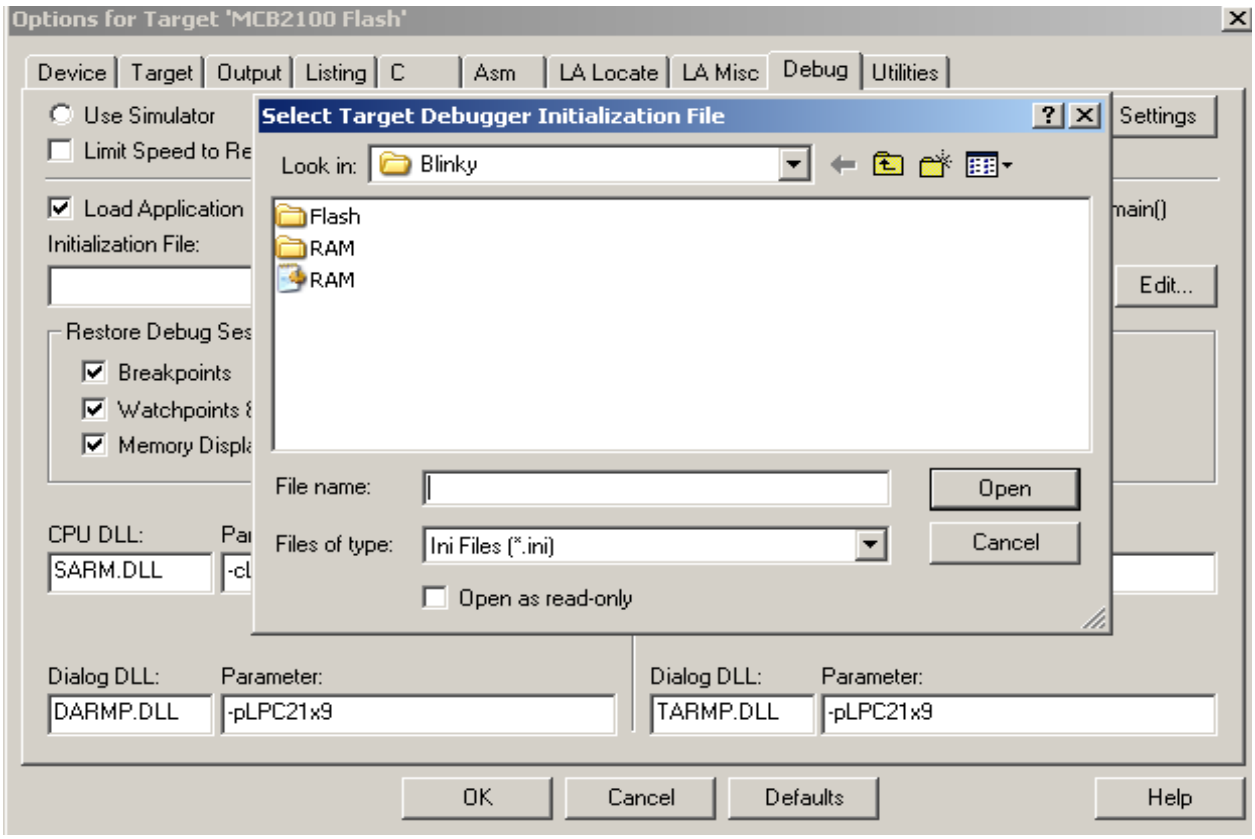
Select the check box to select "Run to Main" and check box "Load Application at Startup". Then click the Settings button



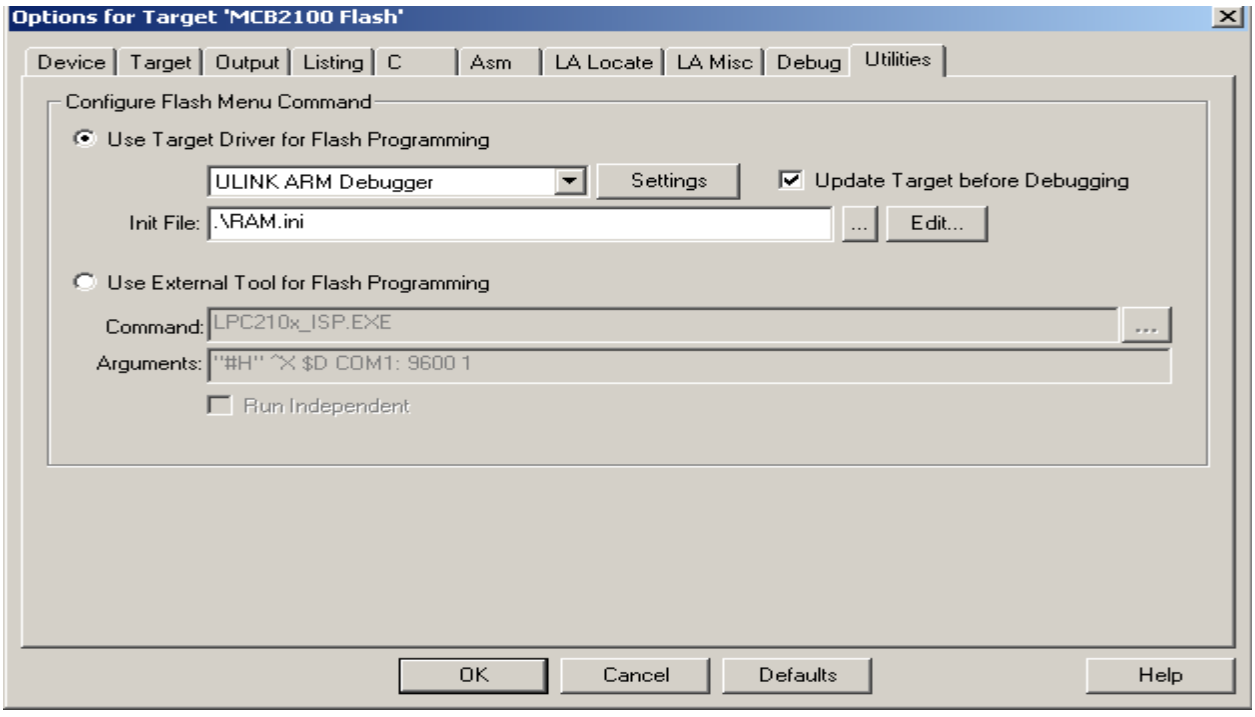
In the settings window select H-JTAG.dll file to link it to HJTAG.
NOTE: while performing the configuration make sure HJTAG and the target should be detected by HJTAG software.

To ensure the configuration file (HJTAG.dll), click on the “configure RDI Driver” button. The above message box will be displayed.

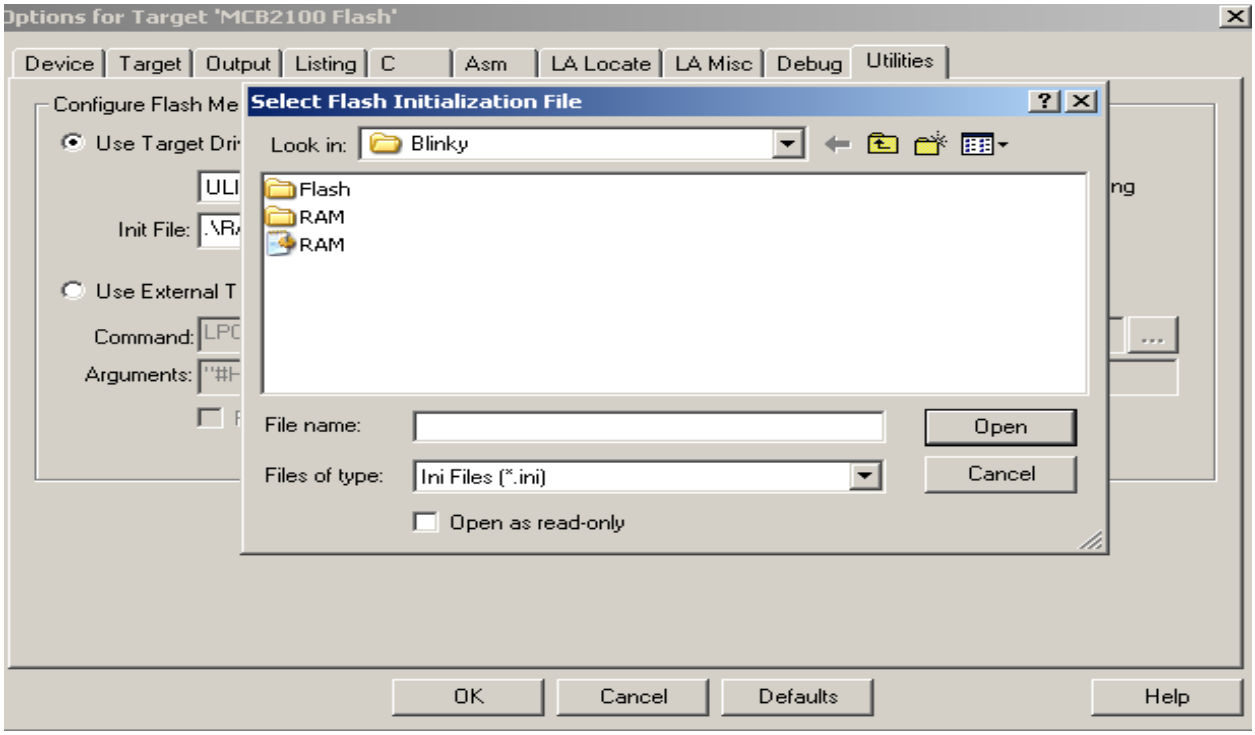
Now select RAM.ini file for initialization file.



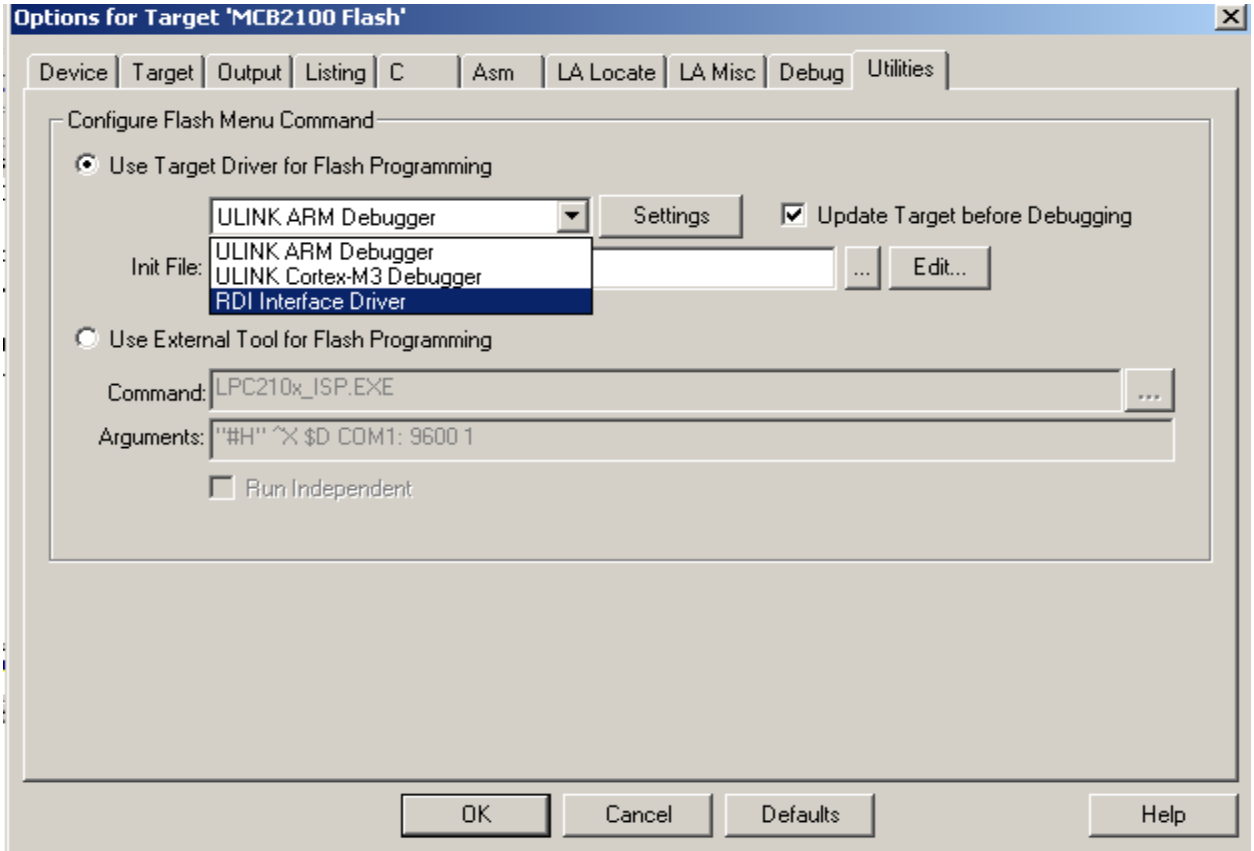
Now select Utilities Tab and you can see the above window.



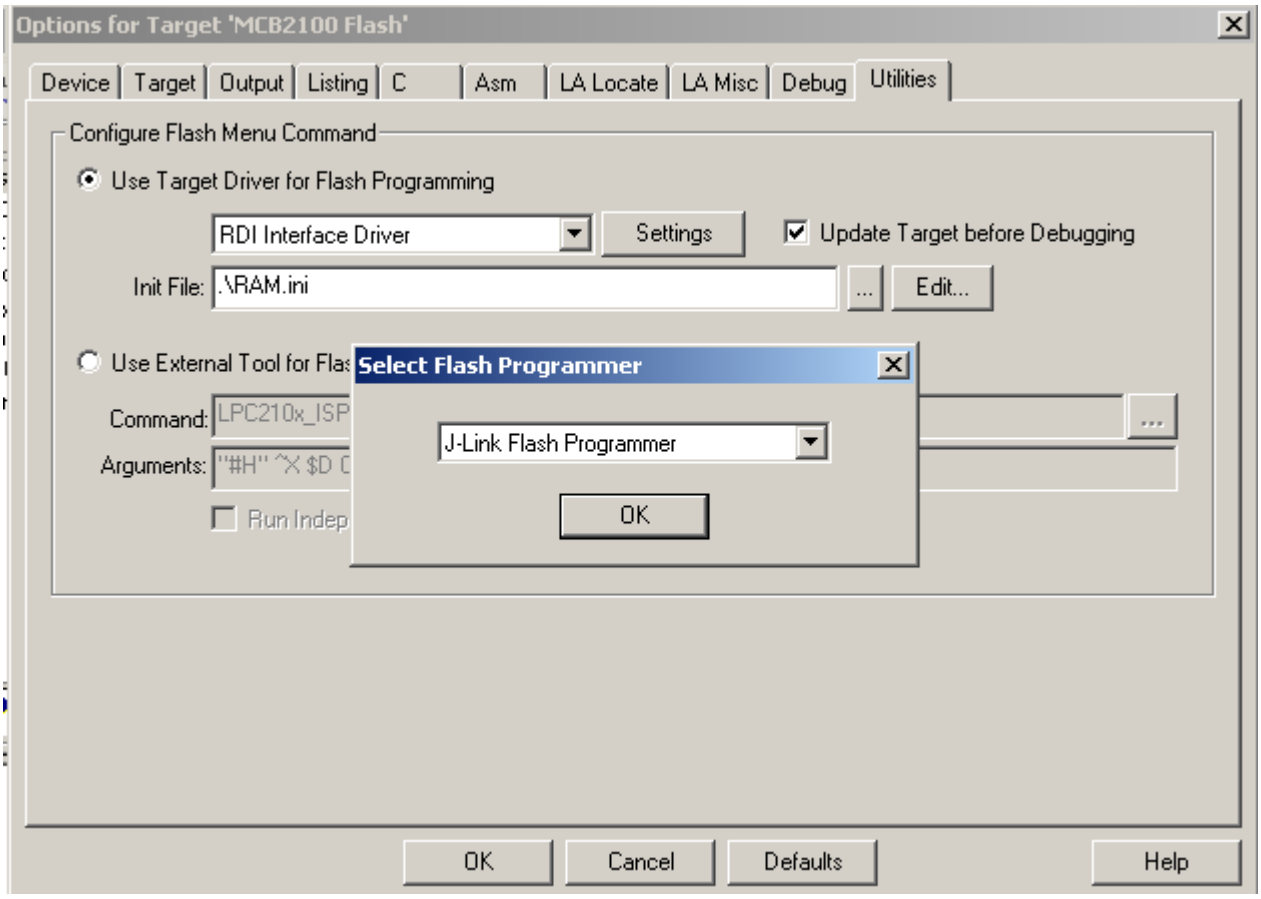
Again select the RAM.ini file in init File select box



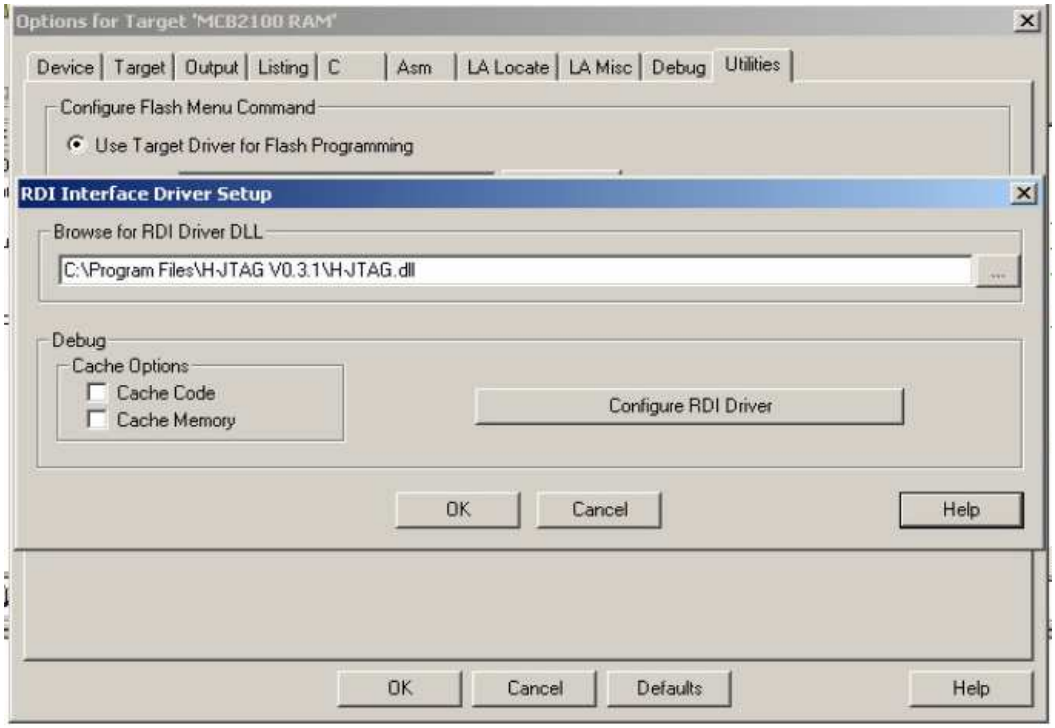
Select RDI Interface Driver from dropdown menu to select Target driver for flash programming.



Check “update Target Interface Debugging” check box. Now click Settings Button. A box will be displayed to select the flash programmer. Here select “J-Link Flash Programmer” and click “OK”

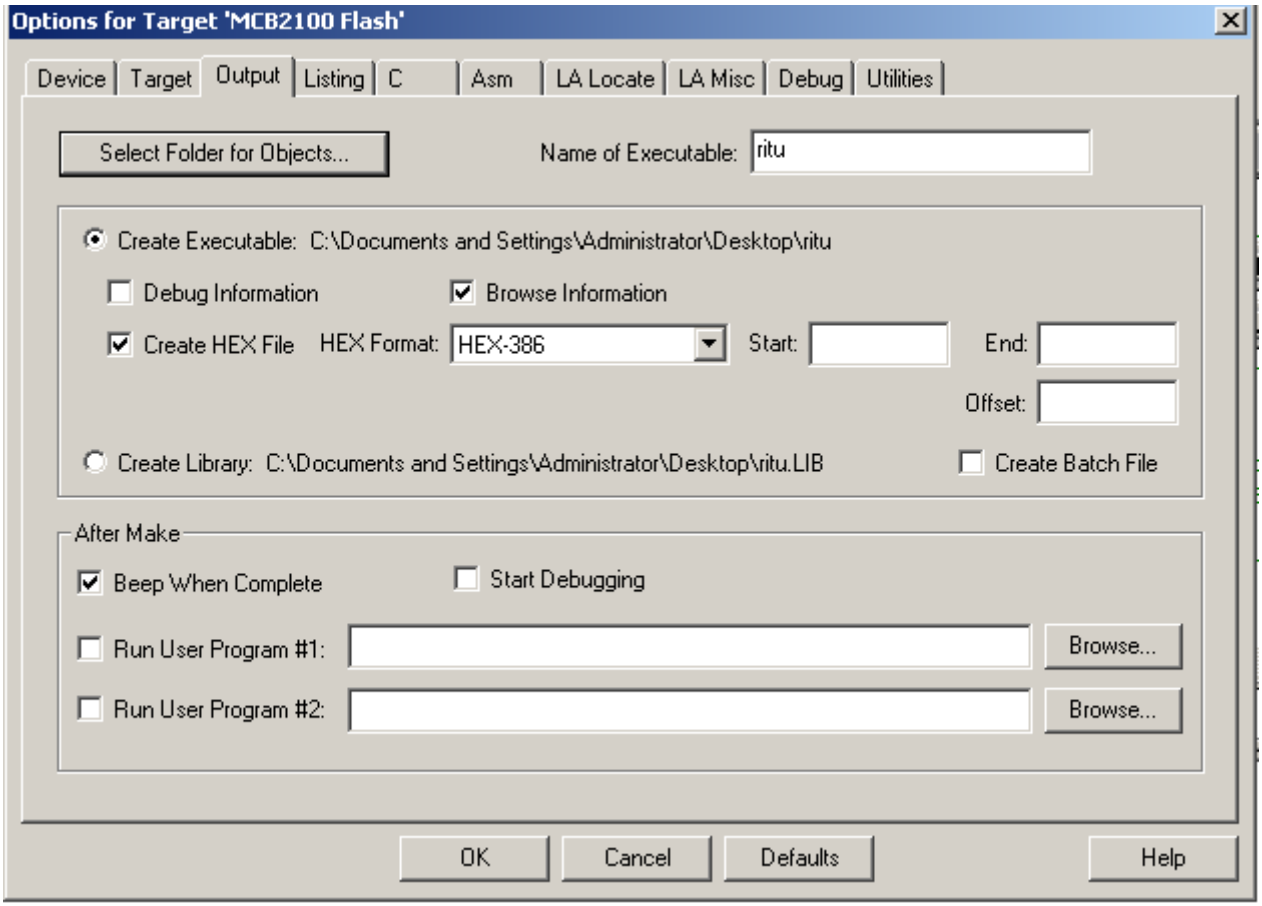


As you select the J-Link Flash Programmer, select HJTAG.dll file to configure the HJTAG.

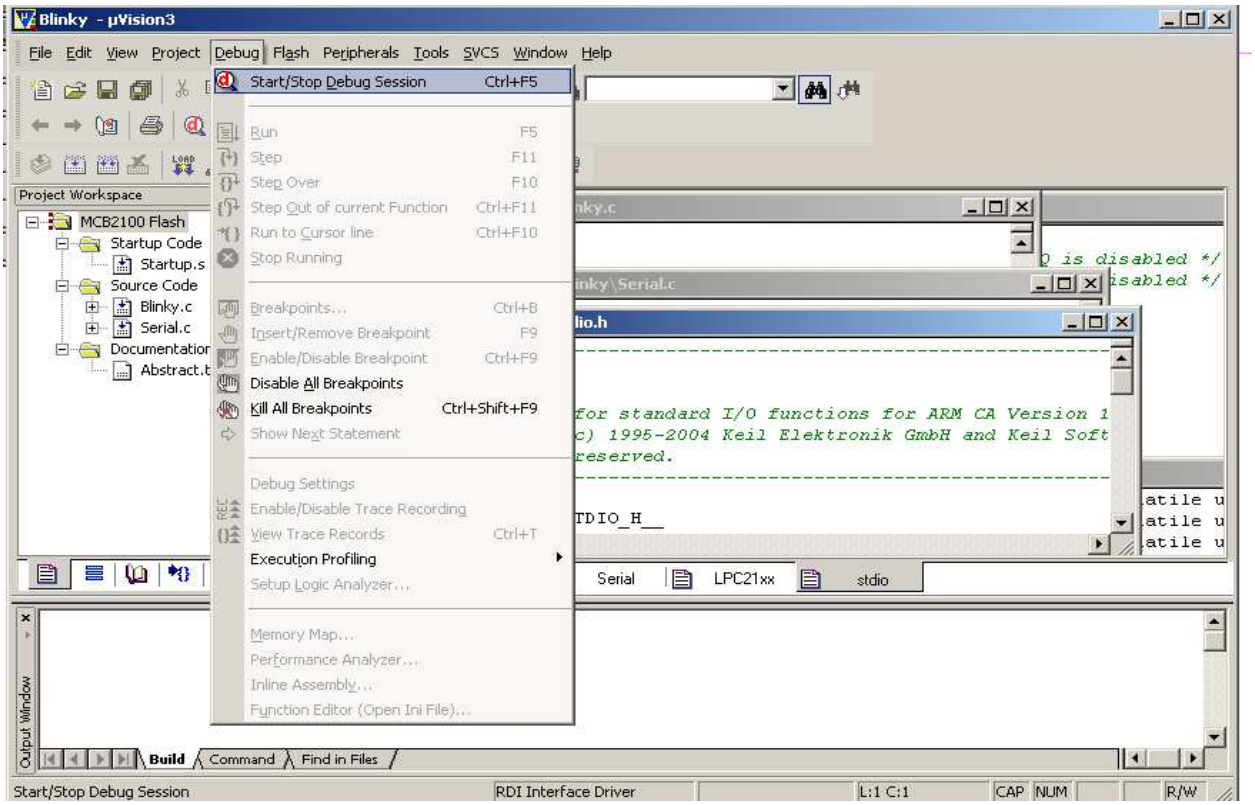


You can cross check the configuration with HJTAG by clicking on “Configure RDI Driver” button. Once clicked, the above message box will be displayed.

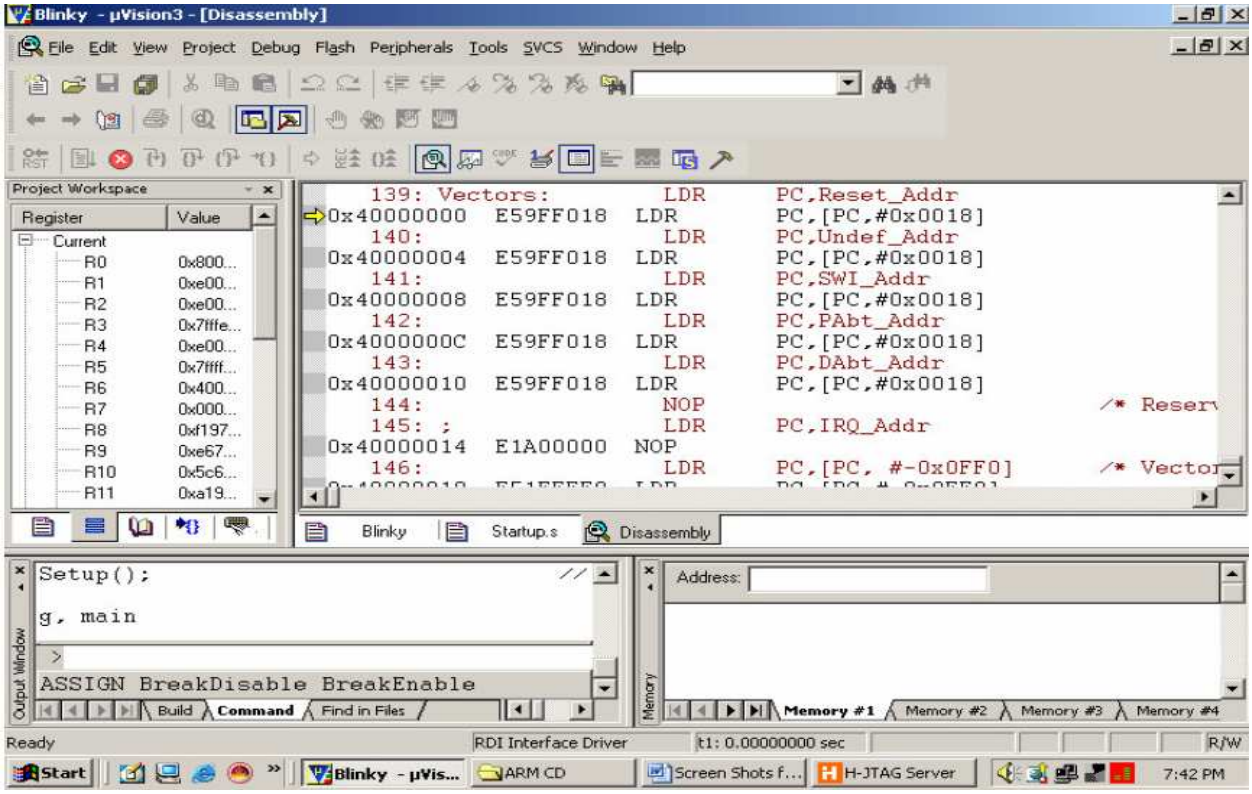
In order to load the program into the flash, .hex file is to be created. To create .hex file select the Output Tab and select the “Create HEX File” check box.
Once selected rebuild the project, it will create the .hex file to be downloaded.



After all above configuration, the project is ready to go into debug mode. To enter into Debug mode, goto Debug dropdown menu and select “Start/Stop Debug Session”.



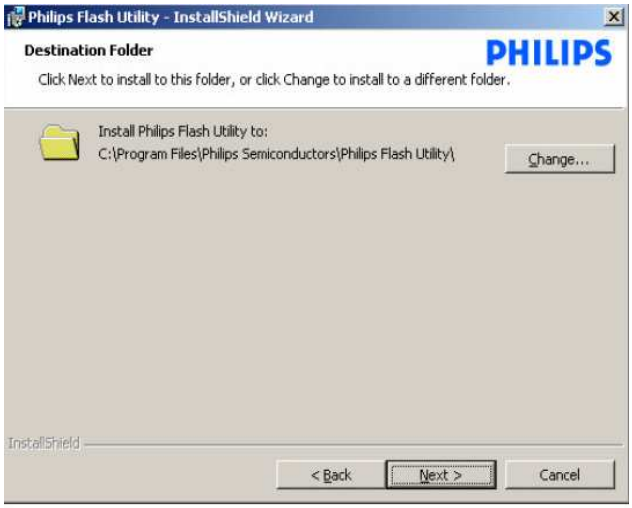
Once selected, Debug mode is entered. Here the debugging can be done by inserting breakpoints, single step execution or running the program conteniously.



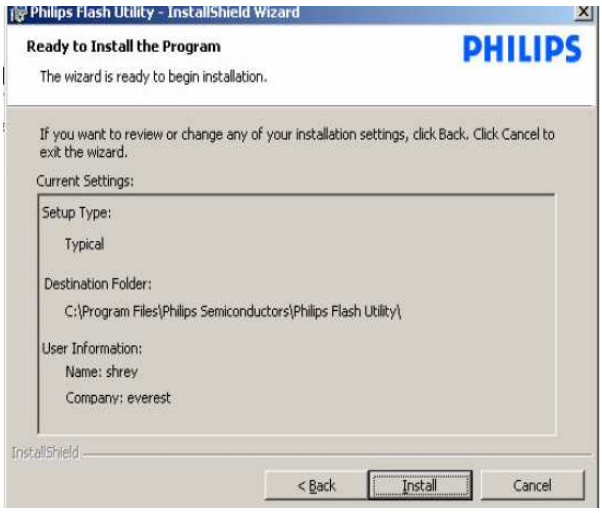
3.10 Installing Phillips Flash Utility:

Double click on the Flash utility setup.

Click on Next

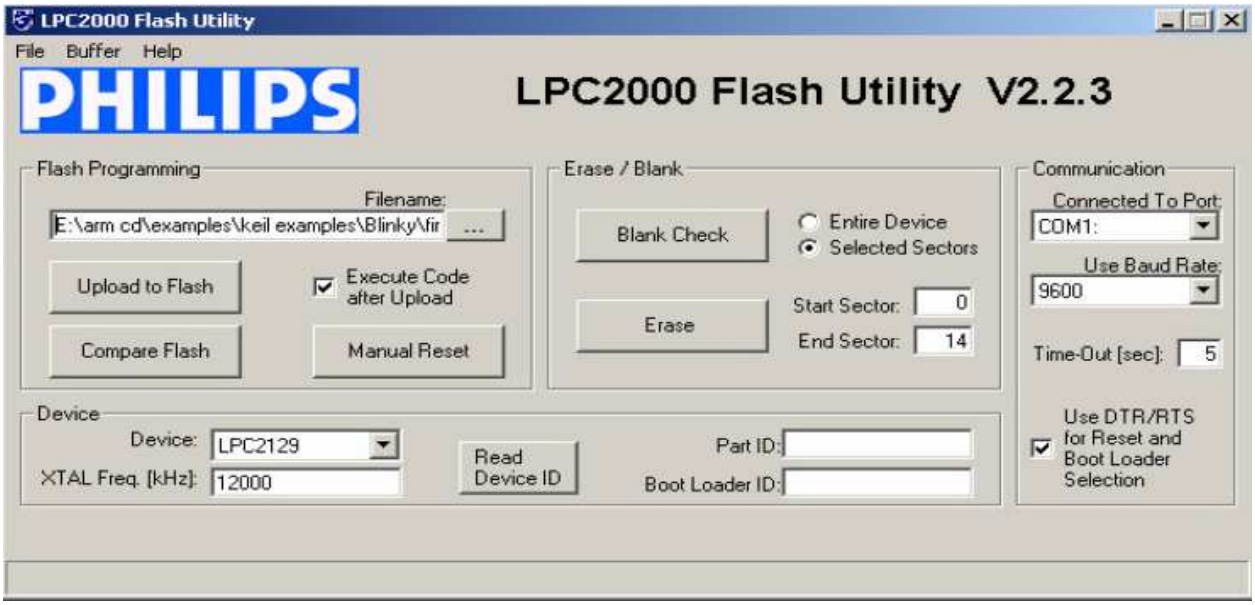


It will ask for the path where to install Phillips flash utility. Select the path and click on Next

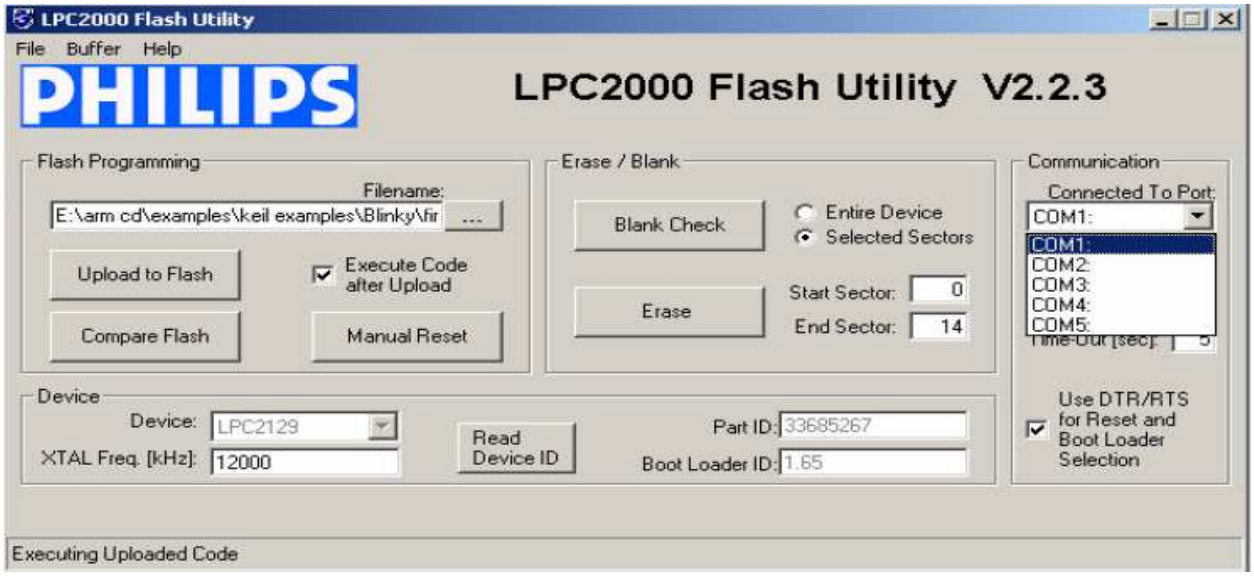


Click on Install Button

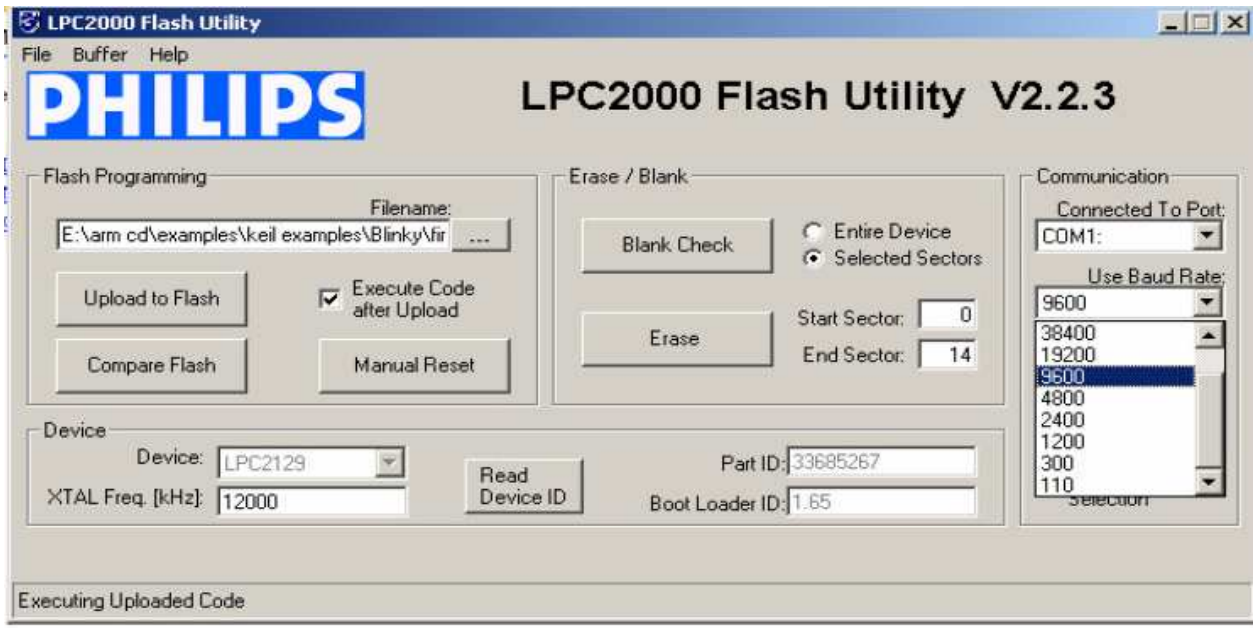
click finish and Goto start menu and select the Phillips Flash Utility



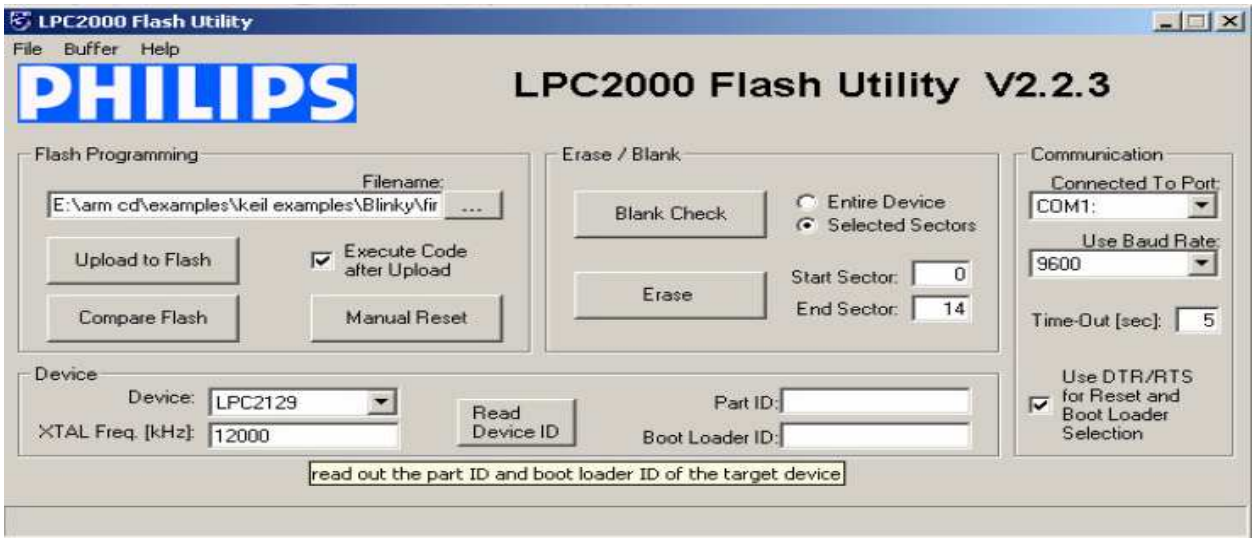
This will be the utility loaded for flash programming



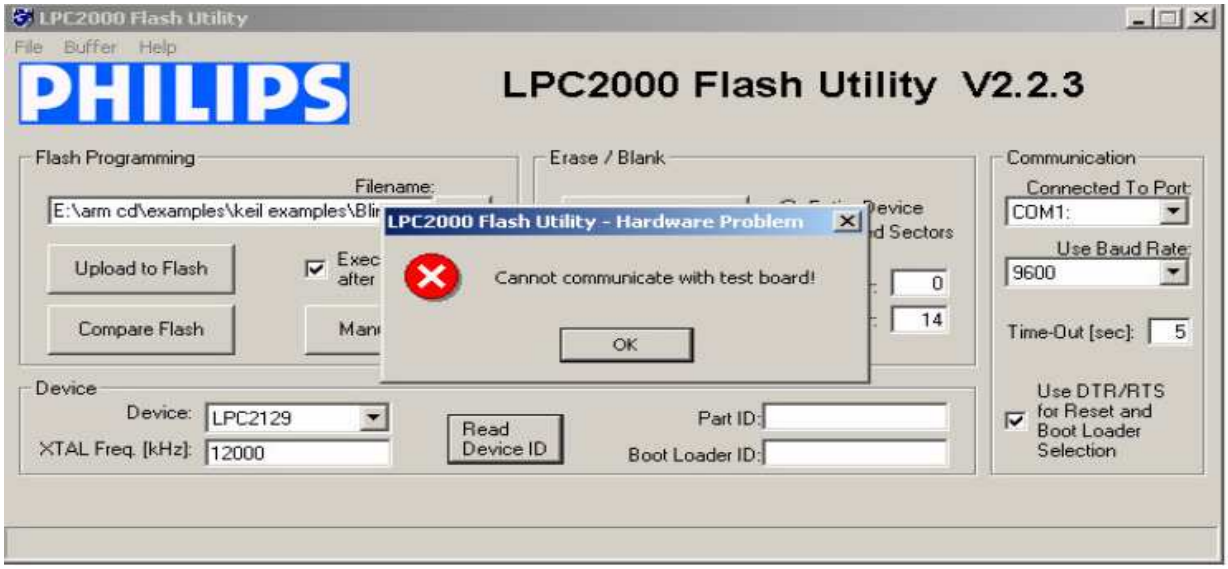
Select COM PORT from where you download the hex file into flash



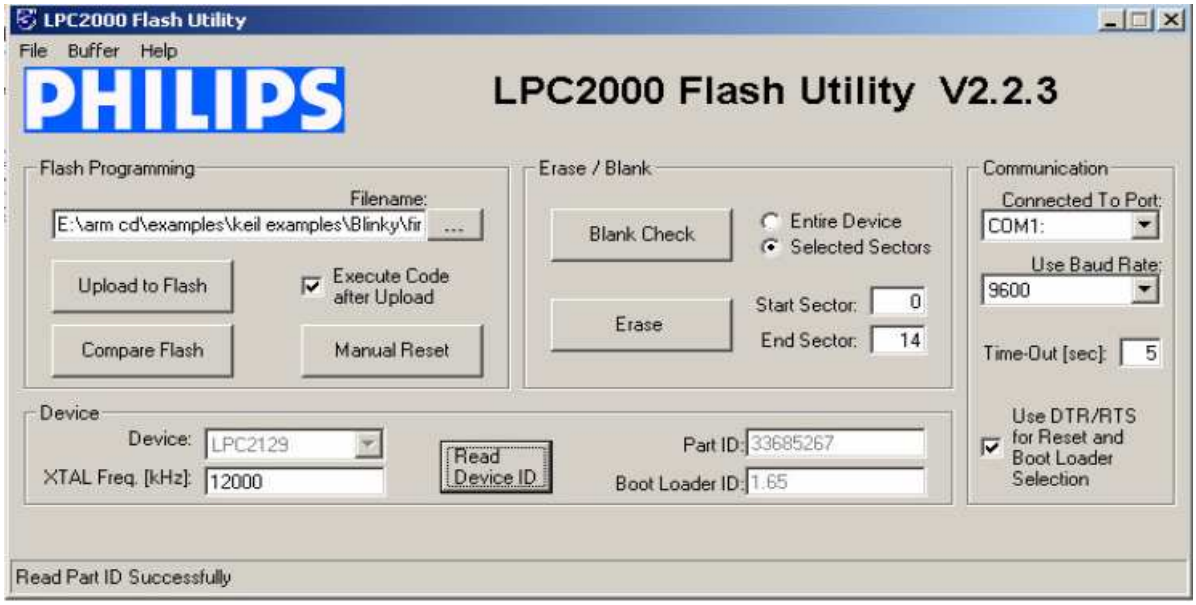
Select the Baud-rate. Here in this case select 9600



Now click on Read the Device ID Button to detect the target.

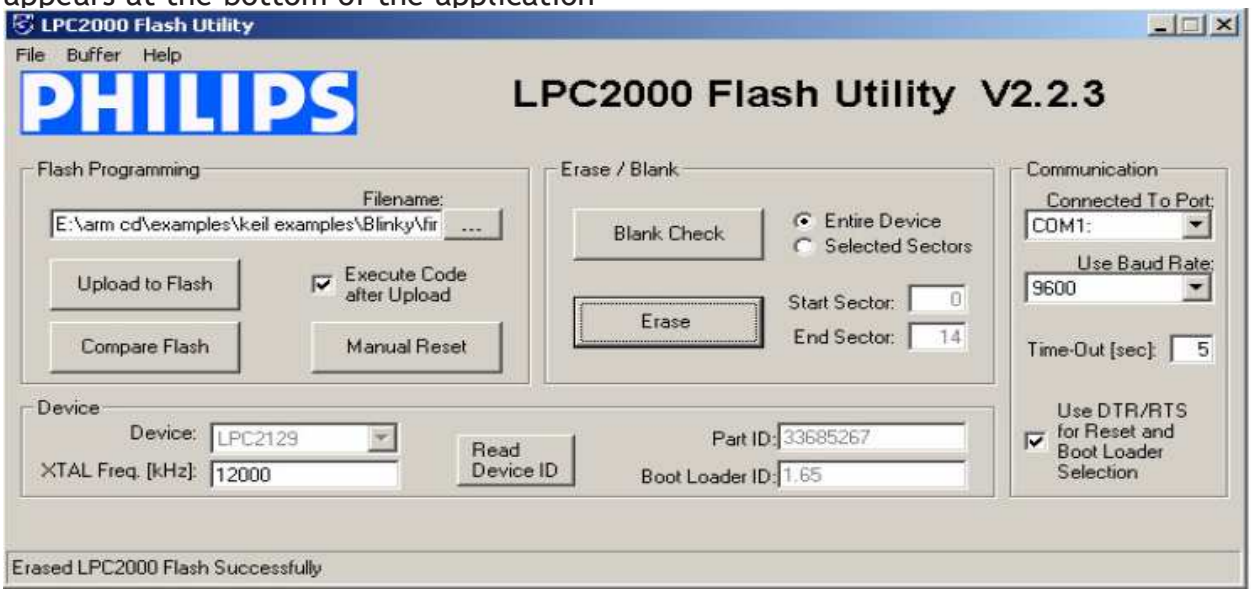


lf the targets is not connected or not in working condition this error message box appears.



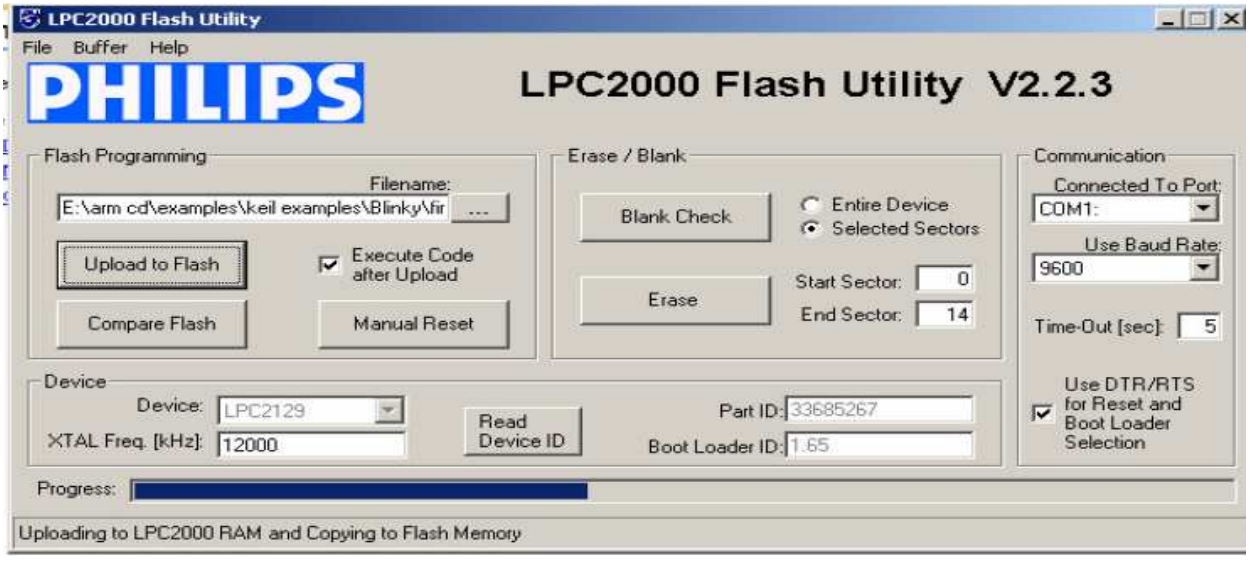
If detected, the Part ID and Boot loader ID will be displayed in their relative Text boxes And also a message will be displayed at the bottom “Read Part ID Successfully”

To Erase the Flash, click on Erase Button. Once the flash is erased, the message appears at the bottom of the application

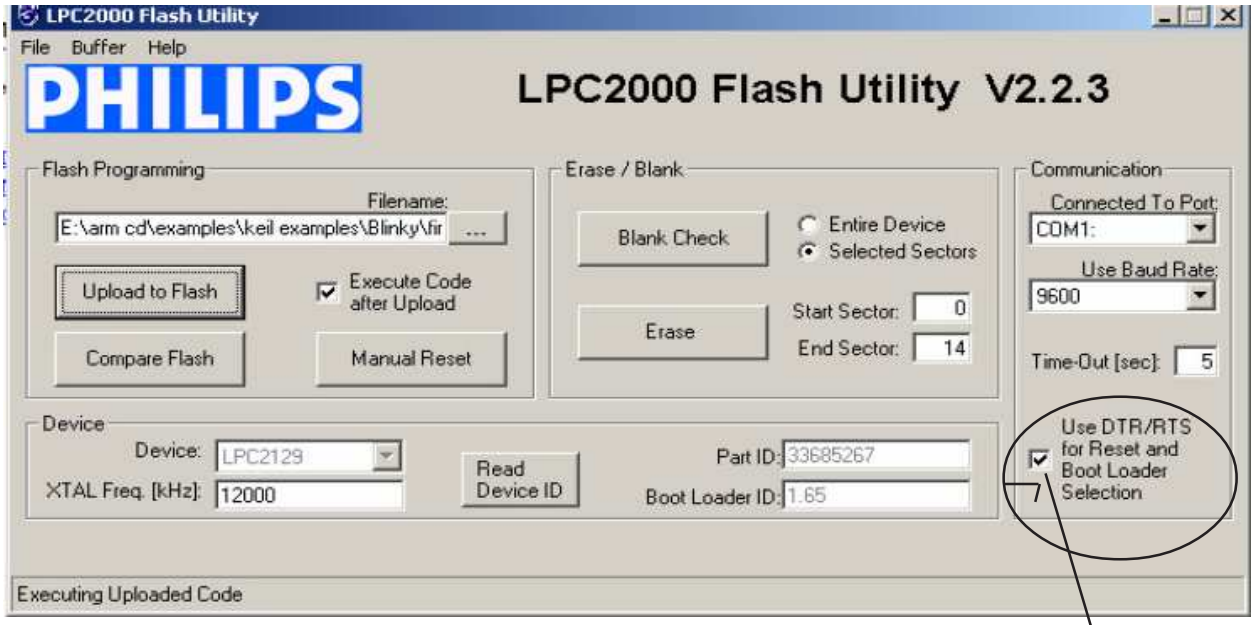


To program the flash select the file to be loaded into flash

Once the hex file is loaded, click on Upload to Flash button. Once clicked the programming starts. The programming progress is indicated by the progress bar.



If the check box “Execute Code after upload” is checked, then the program starts to run immediately after downloading the code. The process information will be displayed at the bottom of the application.



NOTE : for Philips Flash utility

The Philips LPC2000 Flash utility utilizes two, otherwise unused, signals (RTS and DTR) of the PC serial port to control the microcontroller reset and P0.14 pins. The port pin P0.14, if LOW during reset, puts the microcontroller into In System Programming (ISP) mode; this pin has the alternate functions of external interrupt one and general purpose I/O (GPIO). Some details on the associated circuitry will help in understanding how this works.

FOR FULL DETAILED DIAGRAM&DESCRIPTION REFER PHILIPS FLASH UTILITY MANUAL

Contact information

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