USER'S MANUAL

FOR

DC Motor
&
Stepper Motor

Manufactured By

LOGSUN SYSTEMS

B-2, RAUNAK, 134/4+3B, NEAR MAYUR COLONY,

KOTHRUD, PUNE-411038

Ph.-020 24356456/25410129/32937840

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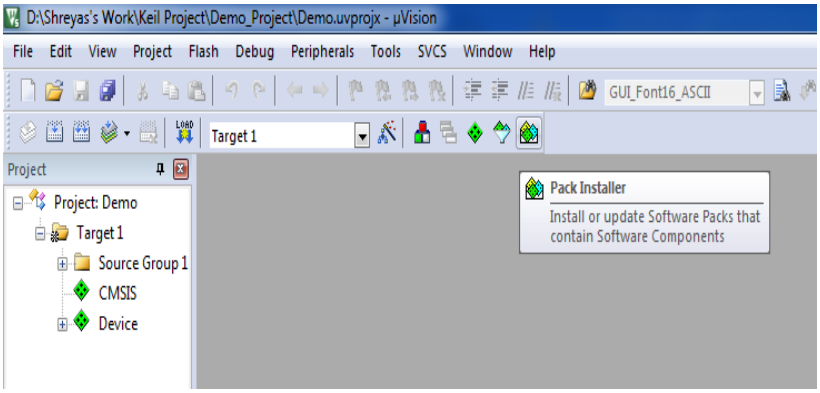
Hardware Connections:

1. Connect the connector **SV4** on LPC1768 board to the connector **J17** on Motor Interfacing Card, using 10 pin FRC(Flat Ribbon Cable).
2. Connect the connector **SV5** on LPC1768 board to the connector **J1** on Motor Interfacing Card, using 10 pin FRC(Flat Ribbon Cable).
3. On Motor Interfacing Card, short the **1st** and **2nd** Pin of **JP6** and **JP7** jumper to select DC motor mode.
4. Connect the 2 pin DC motor wire to DC motor connector on Motor Interfacing Board.
5. Connect the USB cable between Computer and LCP1768 board.
6. Connect the 12V DC adapter pin to DC jack on LPC1768 board.

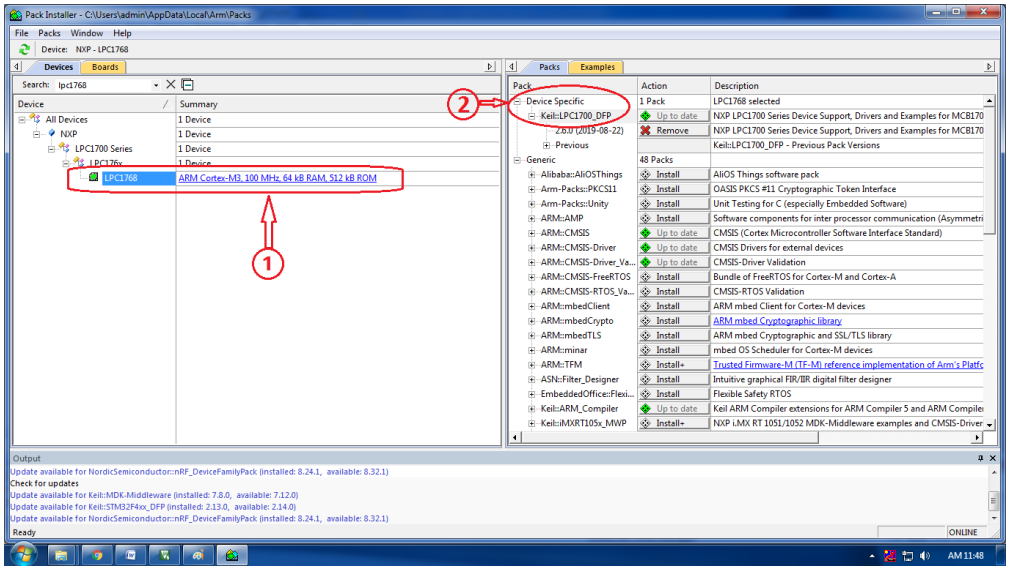
Programming and Generating Hex file.

Requirement: u-Vision Keil version 5 or higher.

1. Create a Folder where you want to store your project.
2. Open the **u-vision Keil** software.
3. Click on Pack Installer Icon as shown bellow.

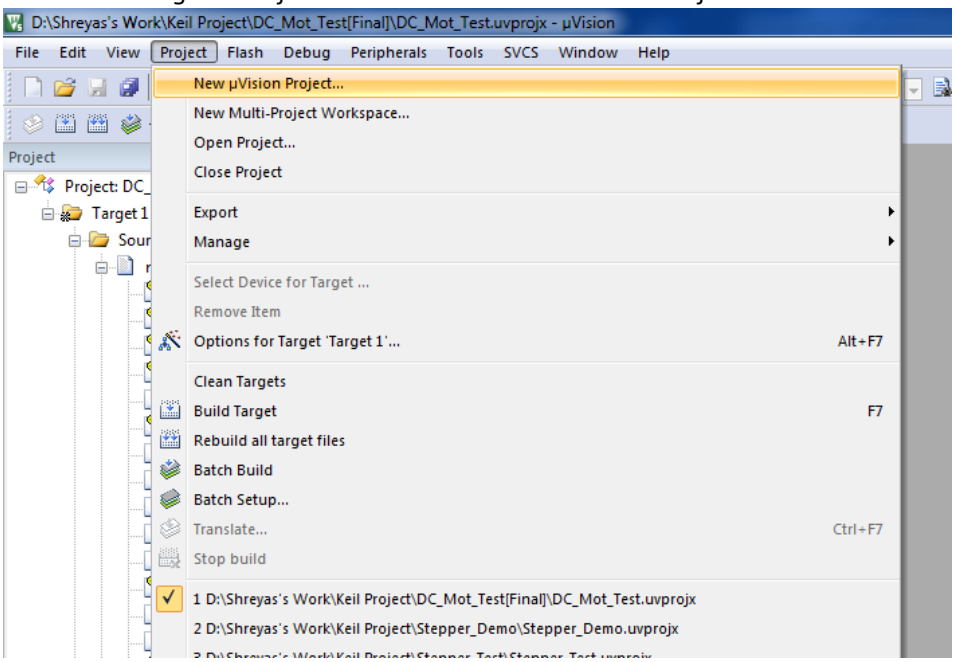


4. Search for “**LPC1768**” and Select the Microcontroller first and then Install the packages related to microcontroller, as shown in image bellow.

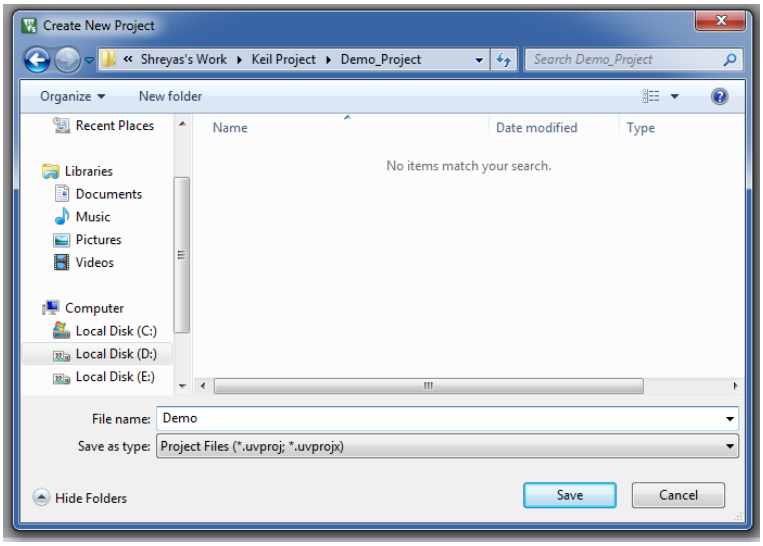


5. After installing the packages close the window. Step-3 and Step-4 are only required once. Once you complete these steps for one computer then no need to do these steps. You can directly jump to Step-6.

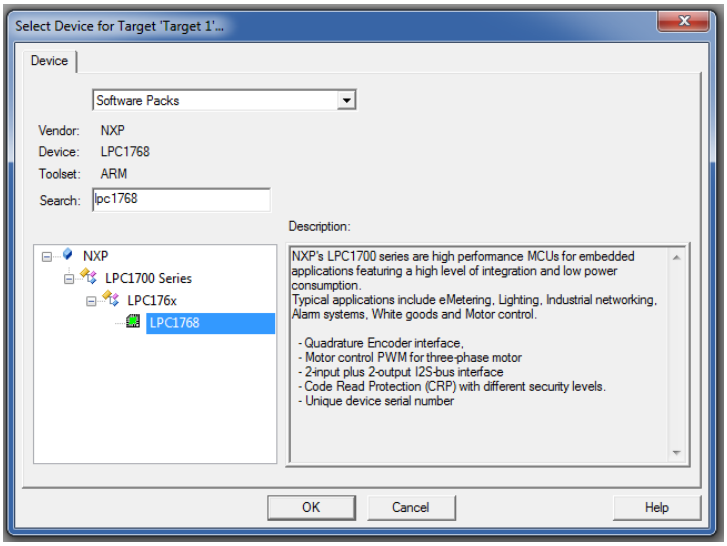
6. From Menu-bar go to ‘Project’ menu and select ‘New uVision Project’.



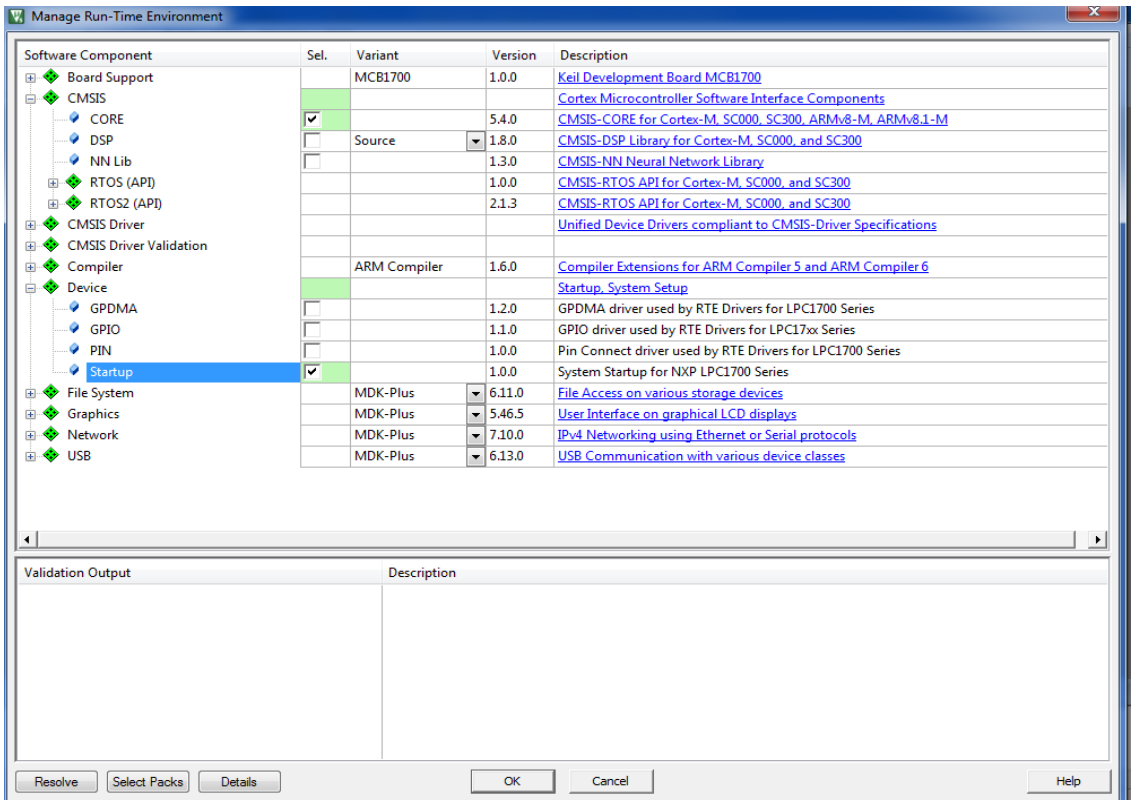
7. Give a name to your project and save it in the folder we have created in Step-1.



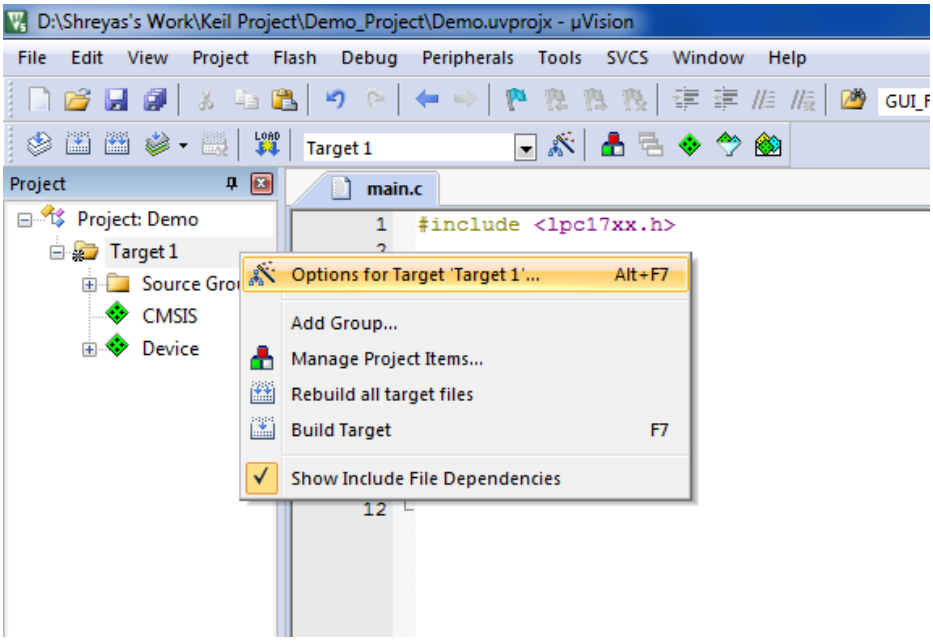
8. In Search bar, type 'LPC 1768' and select the micro-controller as shown bellow.



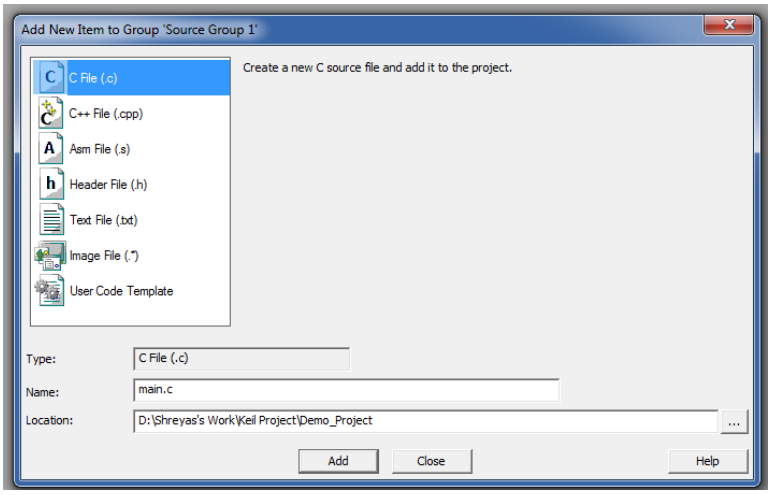
9. Select the Options as shown in following image and click on OK.



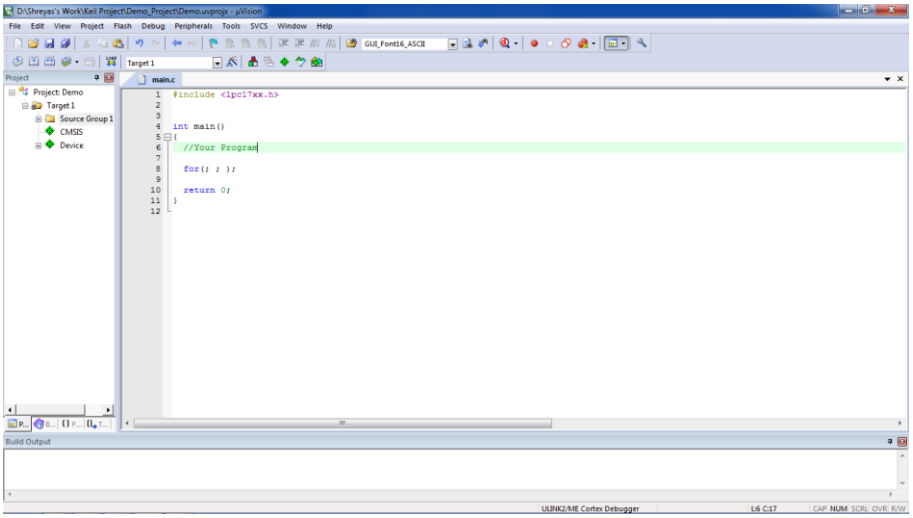
10. Now our project is created. Now into project explorer in left side of window, right click on 'Source Group 1' and select 'Add new Item to group source group 1'.



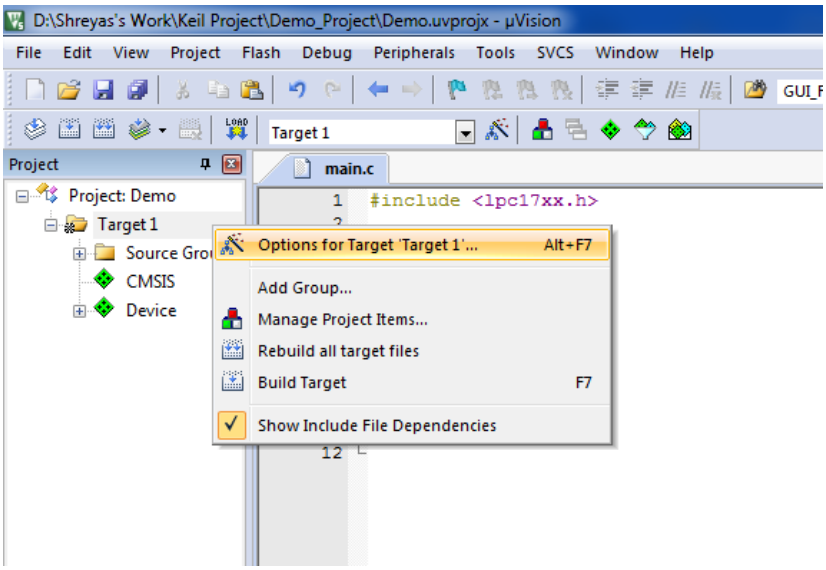
11. Select ‘C File’, name it as “main.c” and click on ‘Add’ button.



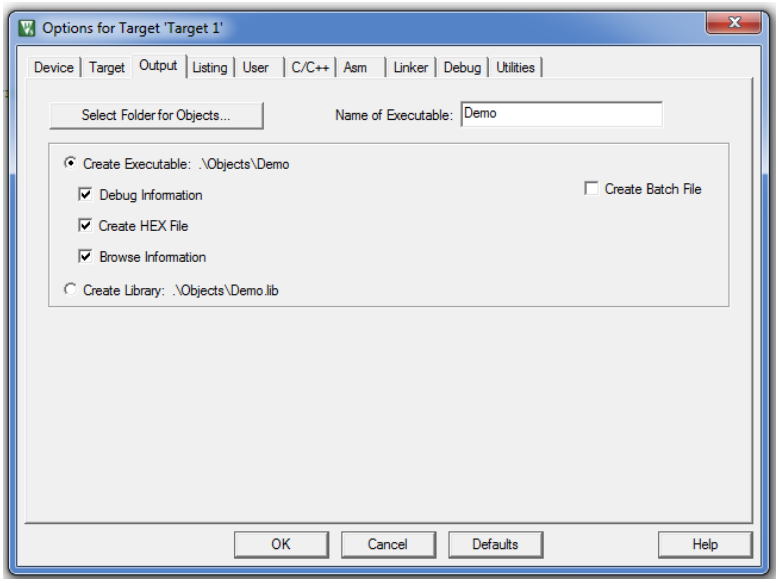
12. Type the code for your project and save it.



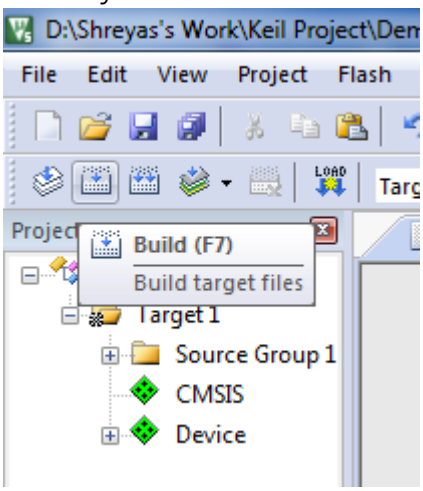
13. Now, again in Project explorer right click on ‘Target 1’ and select ‘Options for target Target1’.



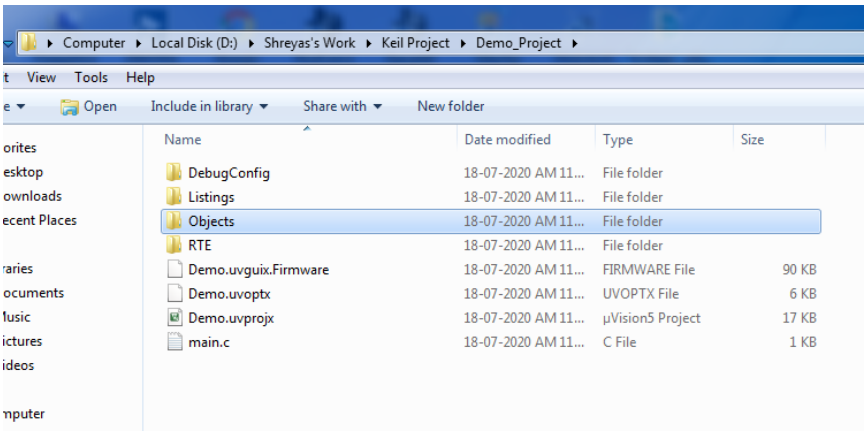
14. Go to output tab and select ‘Create HEX file’ and click on ‘OK’



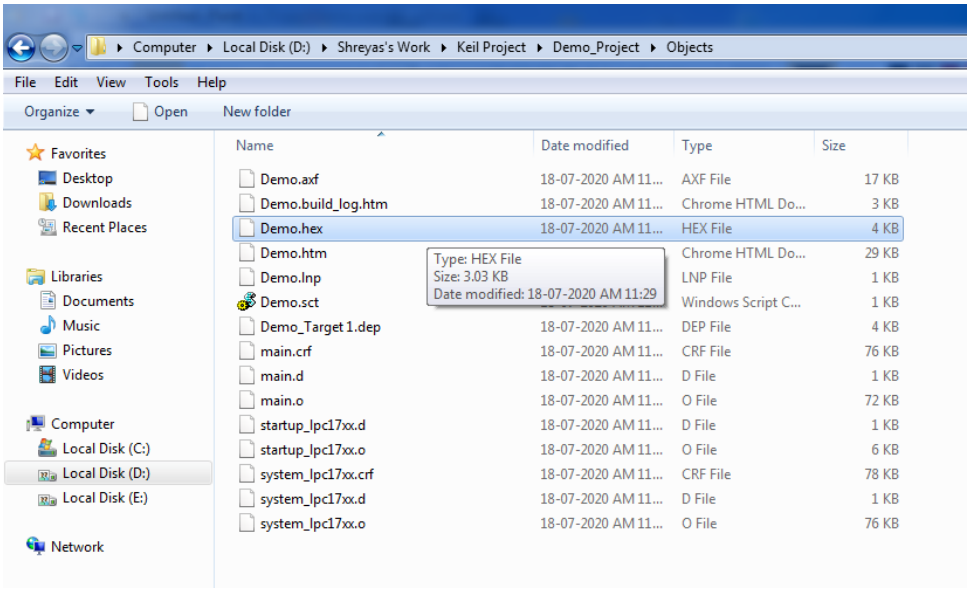
15. Now above the project explorer, click on the ‘Build’ icon or simply press ‘F7’ function key on the keyboard.



16. In your project folder, you will find a folder gets created called as ‘Objects’ . Open that folder.

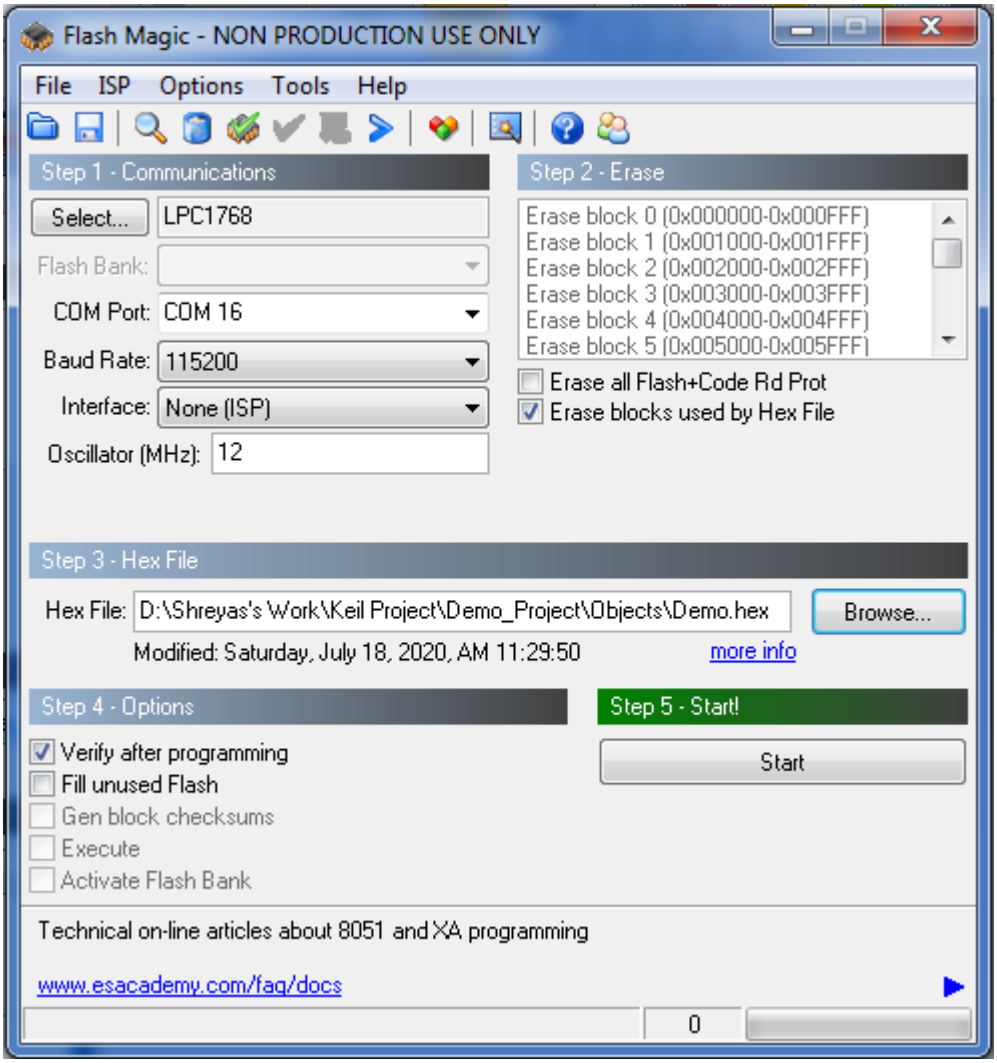


17. In that folder you can see the HEX file generated at the time of build process.

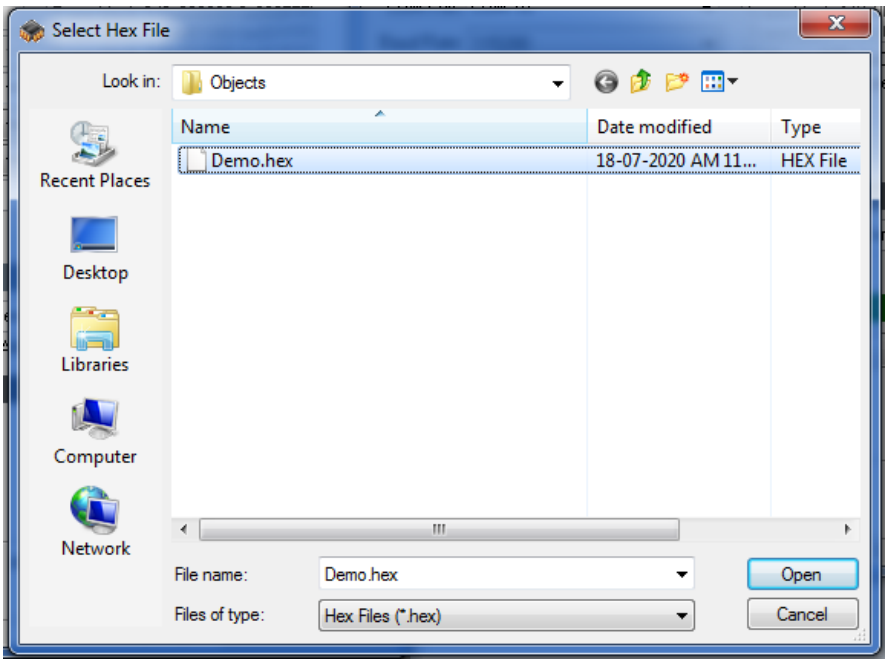


Uploading Hex file to micro-controller.

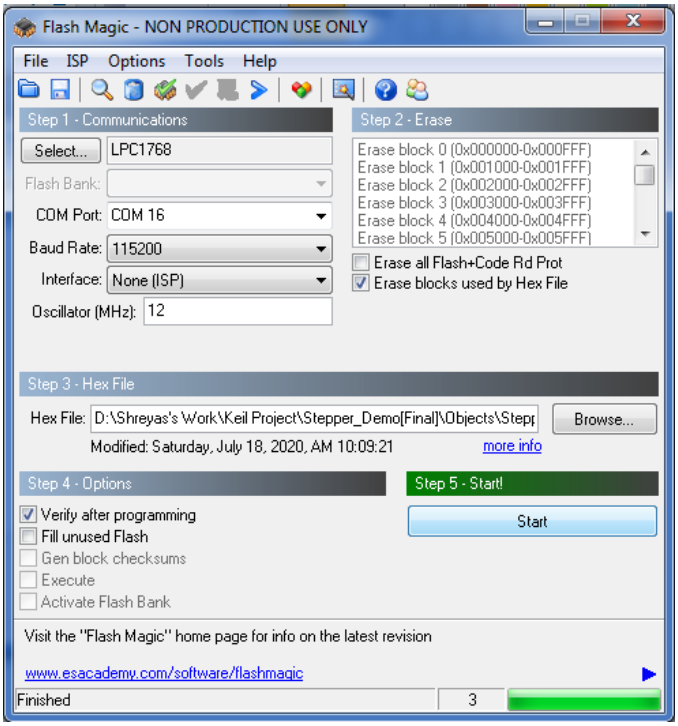
1. Open Flash Magic Software and make the settings as shown bellow. (**Just Select the COM port Number for your computer. It's not fixed to 'COM-16' it gets changes for every computer.**)



2. Now in Step-3 in above window we have to choose the hex file. Here we have to choose the HEX file which is located in 'Objects' folder in our project folder.



3. Keep Open the flash magic and make sure you have completed the hardware connections and then go to Step-4.
4. On LPC1768 board, put the Switch S3 in UART0 mode.(Press once)
5. Now press and hold the 'Program' button on the LPC1768 board, now in flash magic click on 'Start' button, and then release the 'Program' button. This will start the uploading HEX file to microcontroller and after uploading file you can see the 'Finish' message at the bottom of the flash magic.



6. Now you can remove the USB cable from LPC 1768 board and use the board using DC power adapter.

   NOTE: For DC motor we have provided the Test code along with HEX file. You can directly burn that file and check the working of the motor.

Testing DC motor

1. Upload the test code for DC motor in microcontroller
2. On Motor Interfacing Card, Press **START/FWD** button to run the motor in forward direction.
3. Press the **REV** button to run the motor in Reverse direction.
4. Press the **INR** button to increase the speed of the motor.
5. Press the **DCR** button to decrease the speed of the motor.
6. Press **STOP** button to stop the DC motor.

Stepper Motor Interfacing

Hardware Connections

1. Connect the connector **SV4** on LPC1768 board to the connector **J17** on Motor Interfacing Card, using 10 pin FRC(Flat Ribbon Cable).
2. Connect the connector **SV5** on LPC1768 board to the connector **J1** on Motor Interfacing Card, using 10 pin FRC(Flat Ribbon Cable).
3. On Motor Interfacing Card, short the **2nd** and **3rd** Pin of **JP6** and **JP7** jumper to select Stepper motor mode.
4. Connect the 6 pin **Stepper motor wire** to Stepper motor connector on Motor Interfacing Board.
5. Connect the **USB cable** between Computer and LCP1768 board.
6. Connect the 12V DC adapter pin to DC jack on LPC1768 board.

Programming

We have given the test code for Stepper motor along with HEX file. The Programming and HEX file upload procedure is same as DC motor mentioned in section 1.2 and 1.3. The only difference is code for stepper motor instead of DC motor.

Testing Stepper Motor

1. Make the connections as mentioned in **Section 2.1**.
2. Upload the HEX file of test code of Stepper motor.
3. On Motor Interfacing Card, Press **START/FWD** button to run the motor in forward direction.
4. Press the **REV** button to run the motor in Reverse direction.
5. Press the **INR** button to increase the speed of the motor.
6. Press the **DCR** button to decrease the speed of the motor.
7. Press **STOP** button to stop the Stepper motor.

Note: While running the Stepper motor complete its step count and then accepts the signal from button. So you have to pres and hold the button to take effect.