TENET TECHNETRONICS

"Simplifying Technology for Life"

2016

Interfacing Temperature sensor with MPLAB Xpress Evaluation Board

Siva A

Tenet Technetronics

Contents

#9/3, Shree Lakshmi Complex, 2nd Floor, Opp. To Vivekananda Park, Girinagar, Bangalore - 560085.
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Introduction

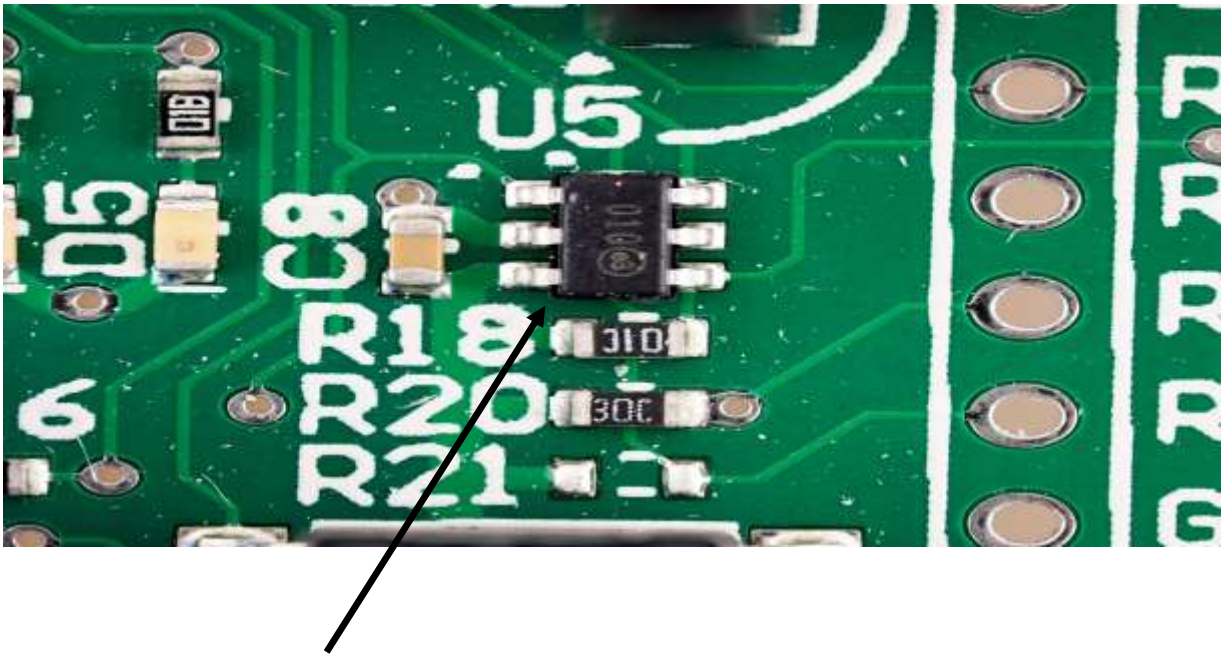
MPLAB Xpress IDE cost free development platform. It's cloud Based IDE available from microchip supporting PIC-based microcontrollers. The platform is comprised of code editor, build automation tools, debugger, code configurator. MPLAB Xpress IDE is an end-to-end solution enabling engineers to develop their applications from initial evaluation to final production.

Component Requirement

- **Hardware:**
  - MPLAB Xpress evaluation tool

- **Software:**
  - MPLAB Xpress IDE

Note: we have onboard Temperature sensor.



Temperature sensor

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Procedure

Step 1: Open **MPLAB X IDE**

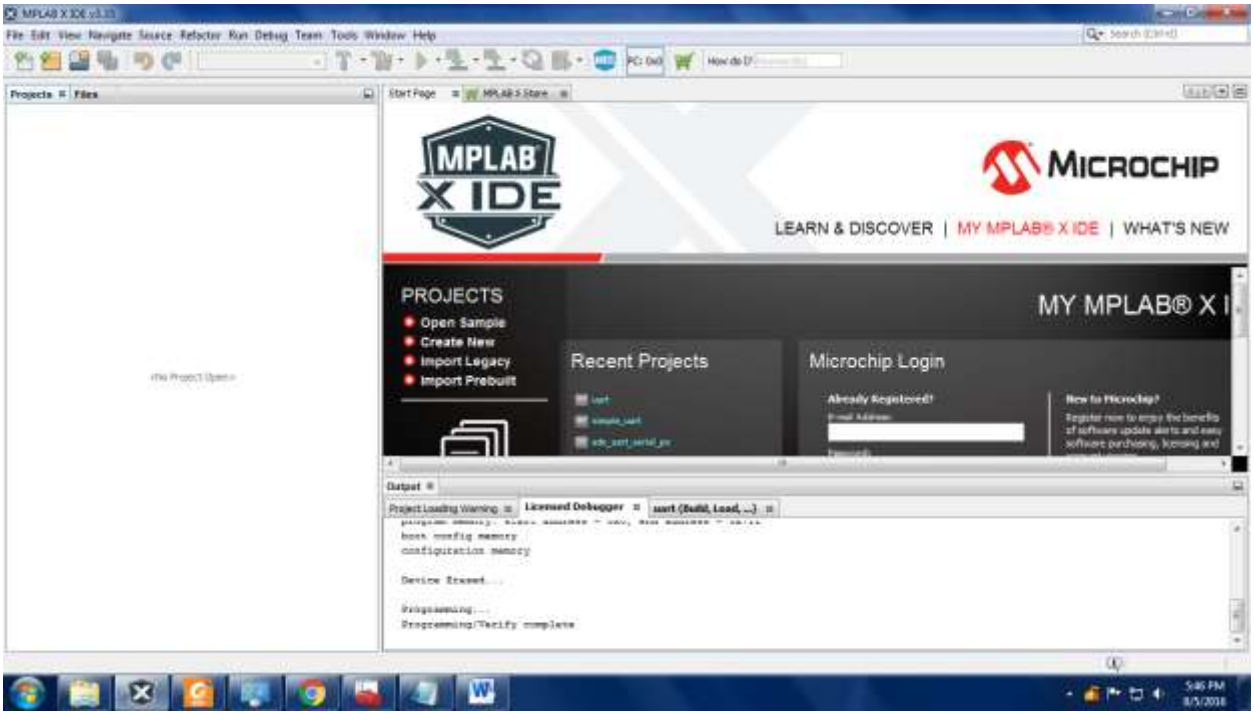

Figure 1 MPLAB X IDE main window

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Step 2: start creating our new project. Go to **File** >> **New Project.** Select **microchip embedded** as well as **standalone project** then click **next**

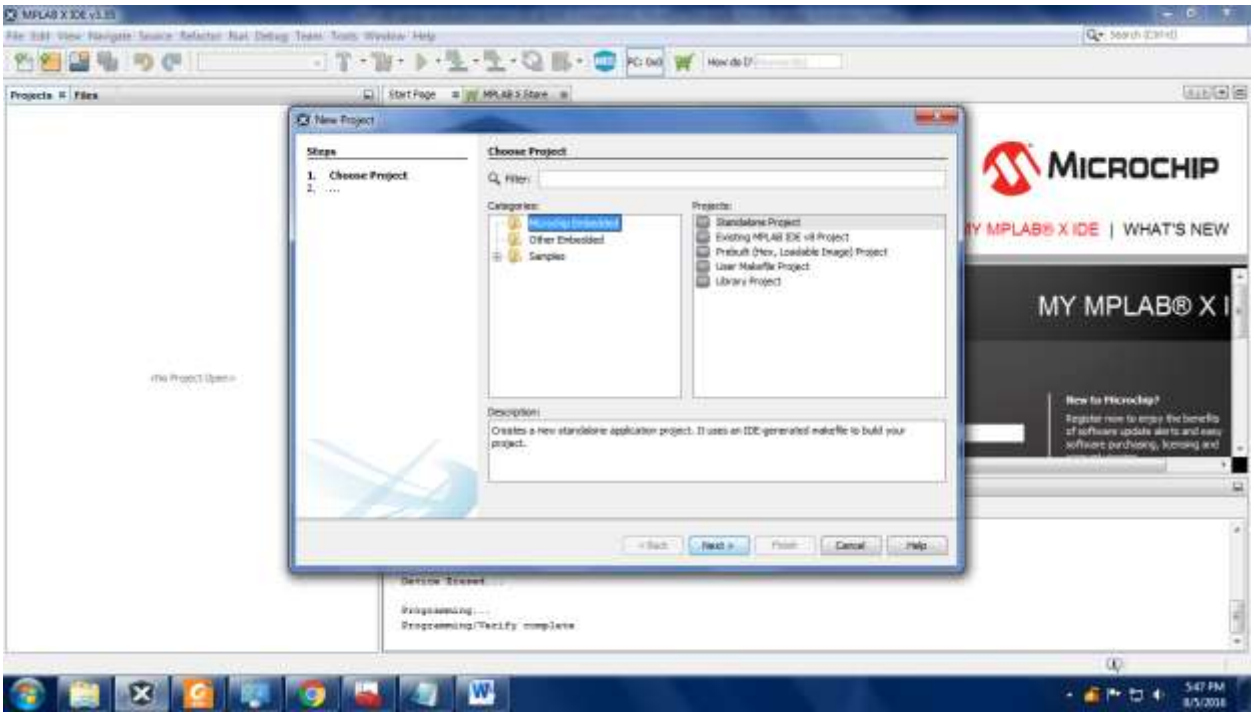

Figure 2 Open new project

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Step 3: Select device **pic16f18855**, and click **next**.

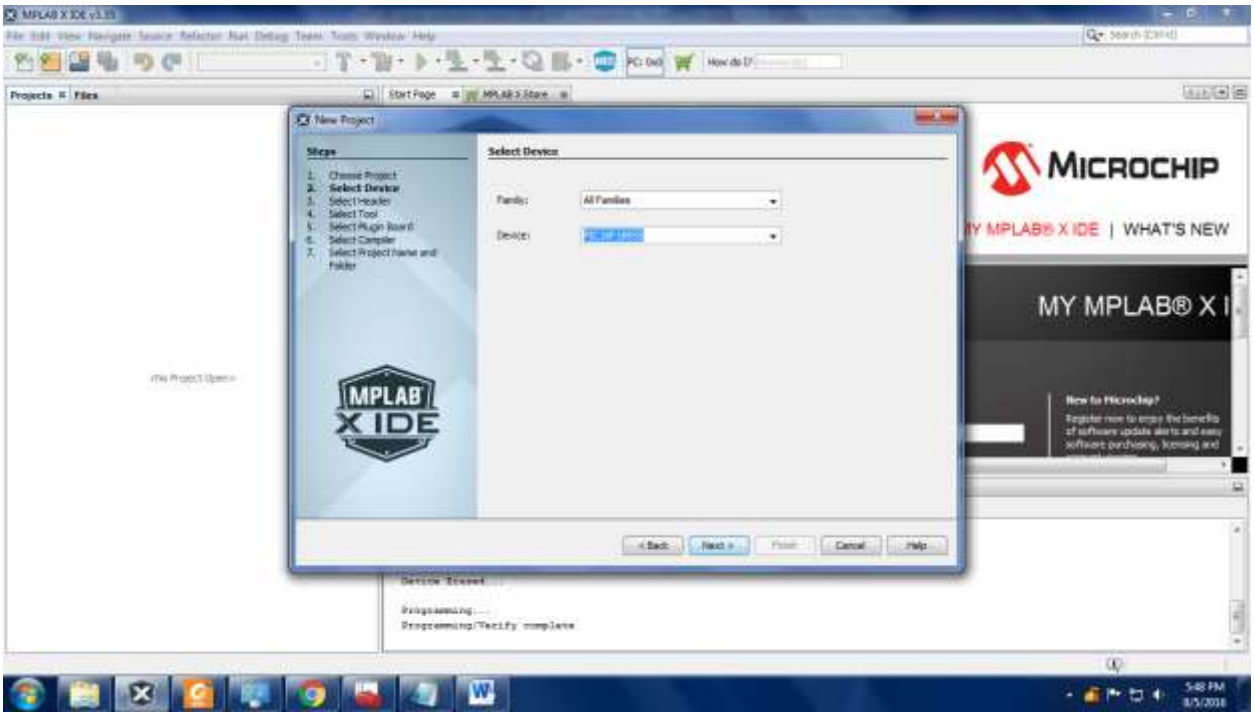

Figure 3 select Device

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Step 4: Now select tool **Licensed Debugger** and click **Next.**

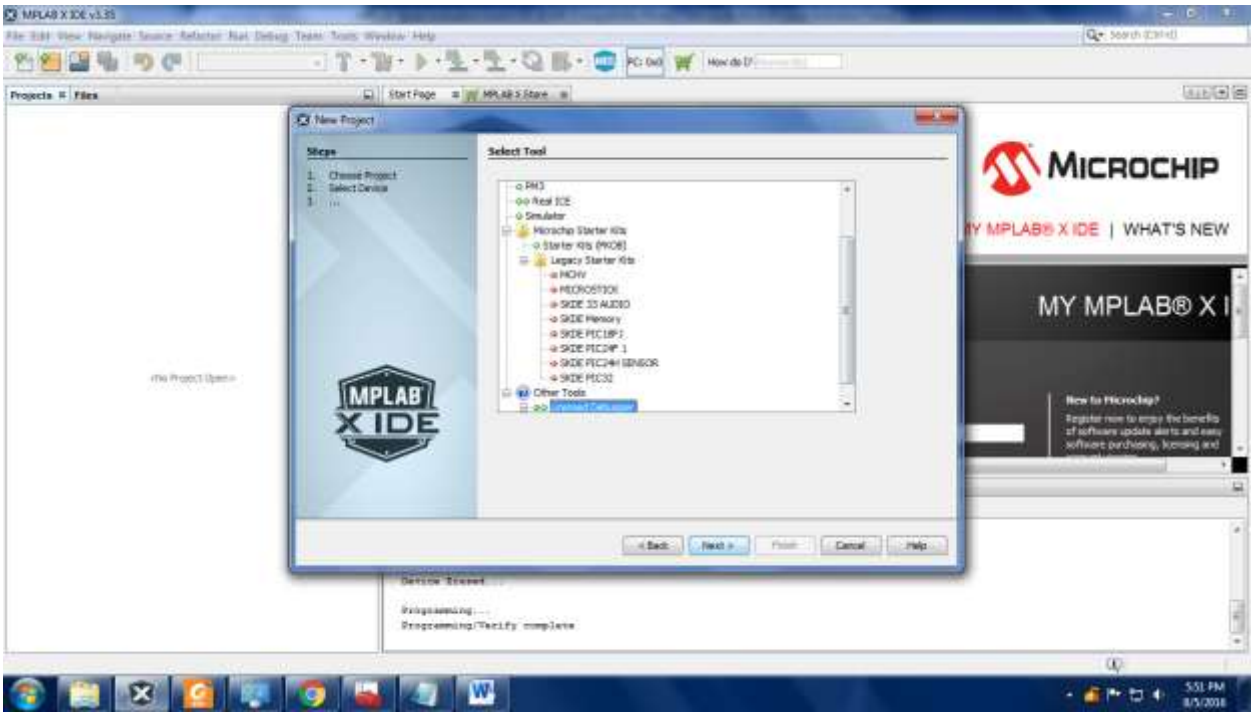

Figure 4 Select Debugger

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Step 5: Now select tool select the **XC8compiler** and click **Next.**

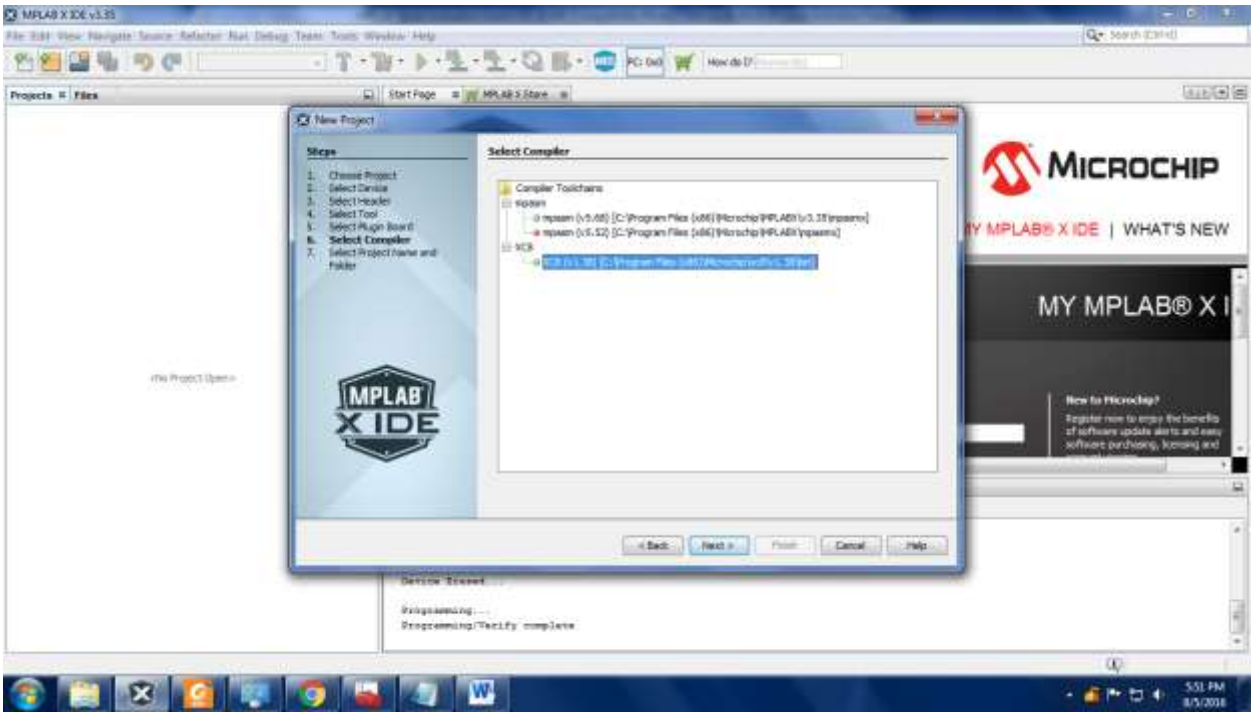

Figure 5 Select Compiler

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Step 6: Now give **project name and project location folder** and click **finish.**

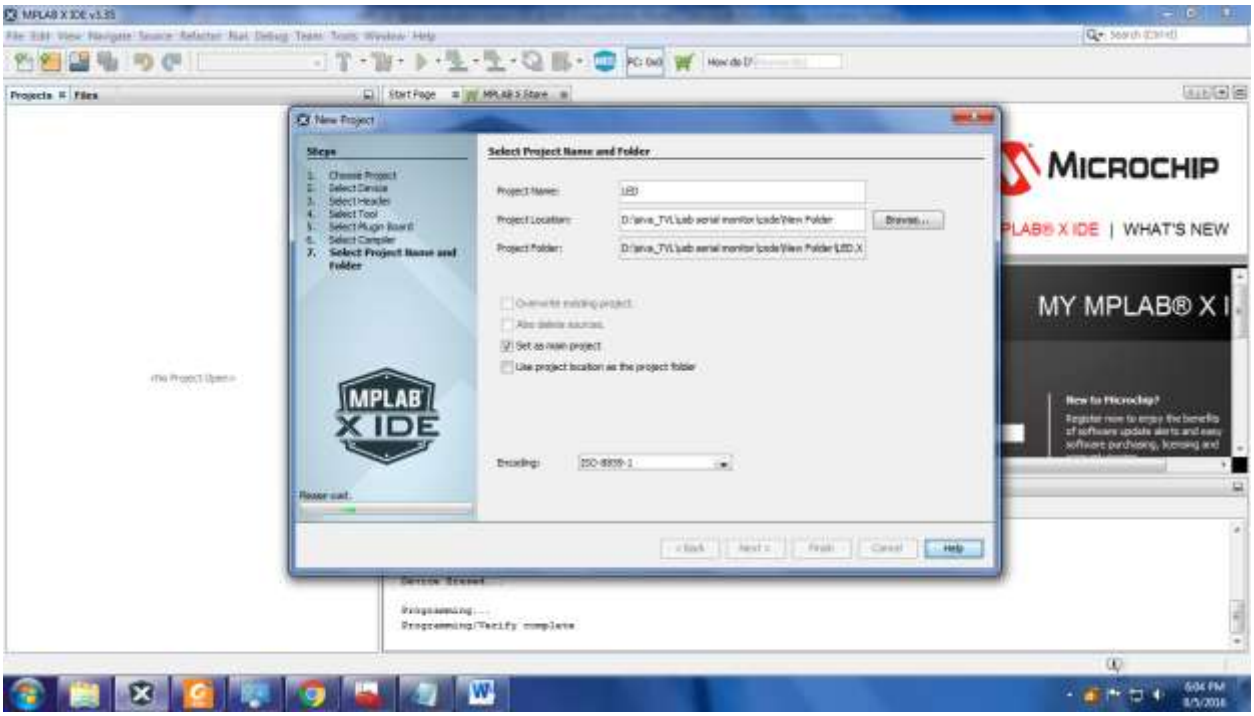

Figure 6 Assign project name

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Step 7: Now we can see our project onto the workspace. Then, go to **File** >> **New file** then choose file type **c** as **main file** then click **next.**

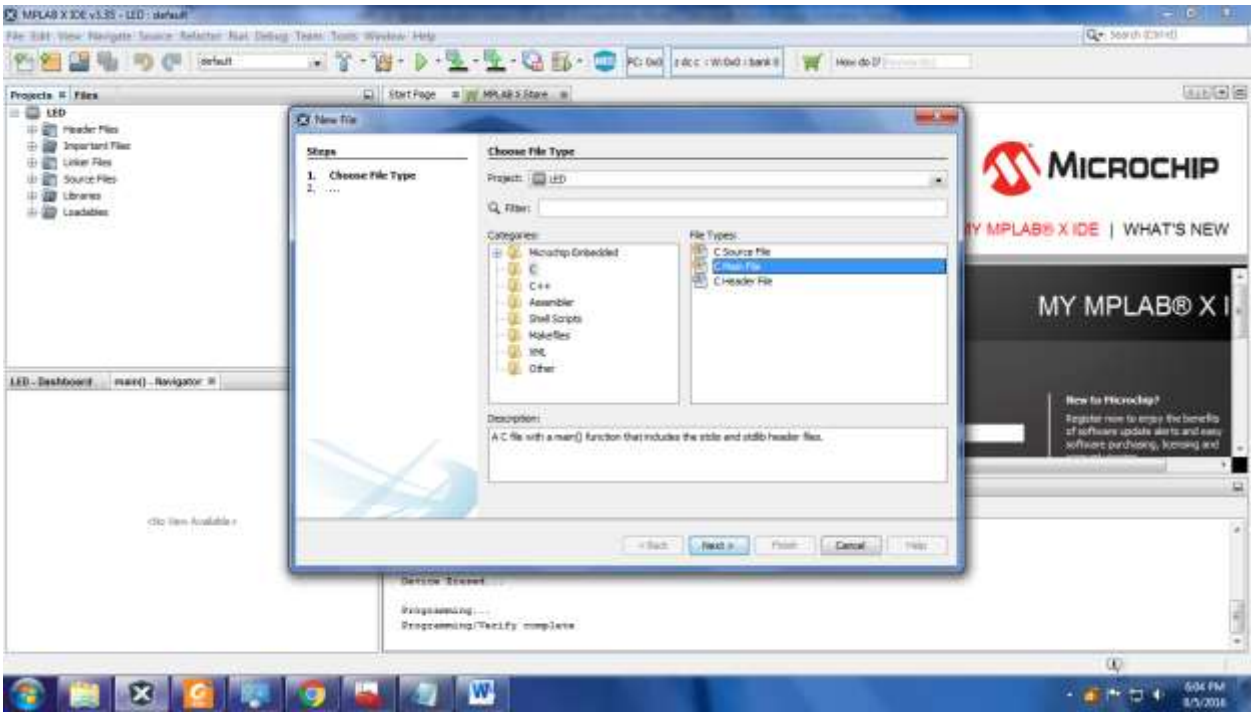

Figure 7 Add new file

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Step 8: Now give **file name and file location folder** and click **finish.**

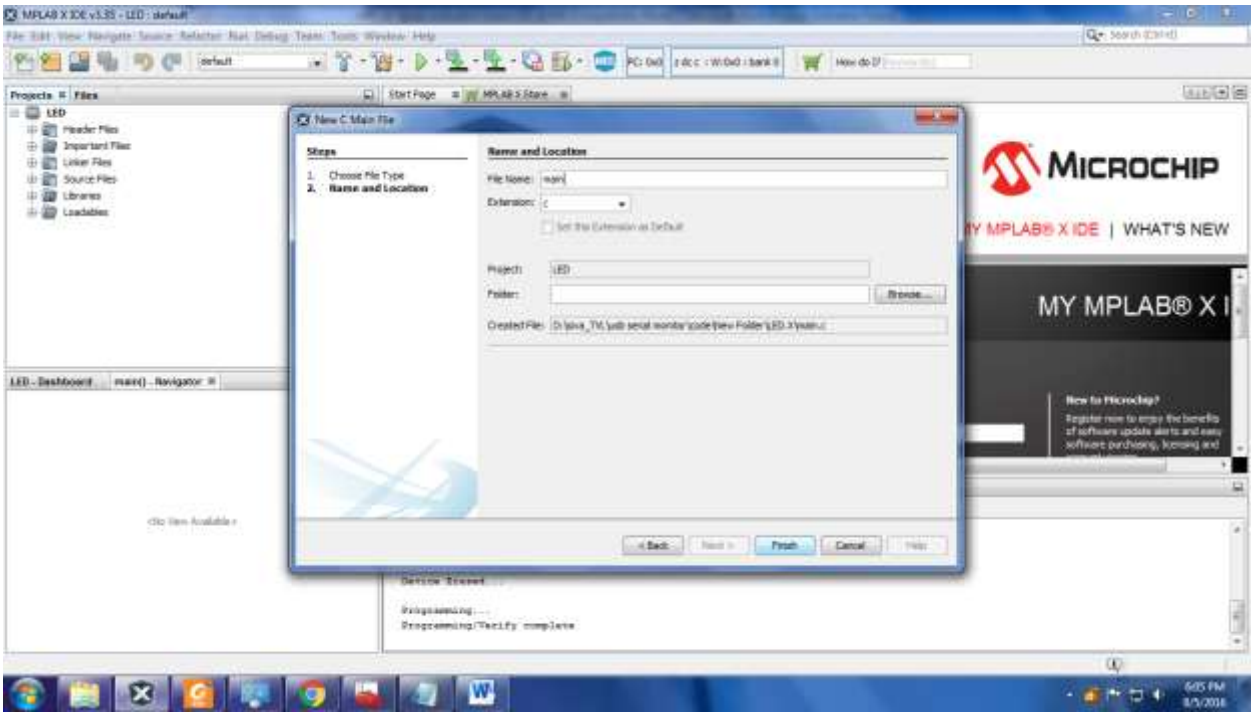

Figure 8 name the file

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Step 9: Erase the template in editor window. Then type following code in the editor window.

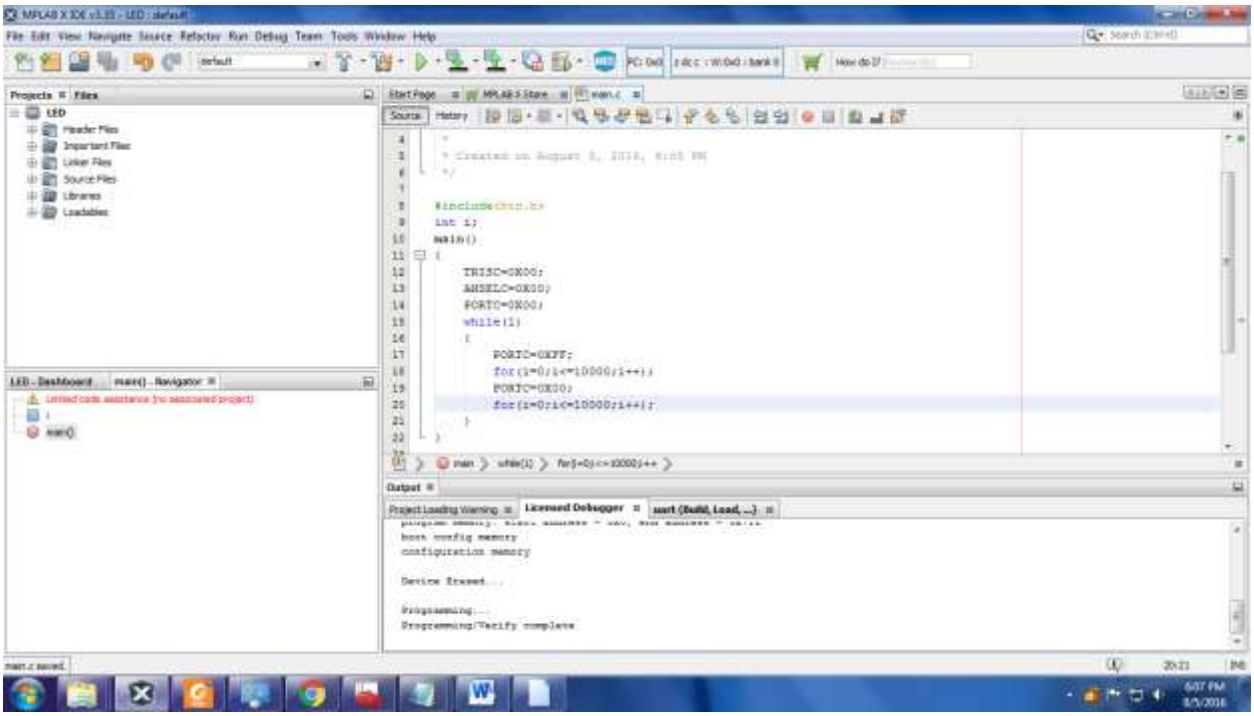

Figure 9 Editor Window with Code

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SOURCE CODE:

```
#include<htc.h>

#define OUT PORTC

void ADCC_Initialize(void)

{

// set the ADCC to the options selected in the User Interface

// ADDSEN disabled(ONE conversion perform each triger);

ADGPOL digital_low;

ADIPEN disabled; ADPPOL VSS;

ADCON1 = 0x00;

// ADCRS 0; ADMD Basic_mode; ADACLR disabled; ADPSIS ADFLTR;

ADCON2 = 0x00;

// ADCALC First derivative of Single measurement; ADTMD disabled;
ADSOI ADGO not cleared;

   ADCON3 = 0x00;

   // ADACT disabled;

   ADACT = 0x00;

   // ADAOV ACC or ADERR not Overflowed;

   ADSTAT = 0x00;

  // ADCCS FOSC/2;
```


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```
ADCLK = 0x00;

// ADNREF VSS; ADPREF VDD;

ADREF = 0x00;

// ADCAP 0;

ADCAP = 0x00;

// ADPRE 0;

ADPRE = 0x00;

// ADACQ 1;

ADACQ = 0x05;

// ADPCH ANA0;

ADRPT = 0x00;

// ADLTHL 0;

ADLTHL = 0x00;

// ADLTHH 0;

ADLTHH = 0x00;

// ADUTHL 0;

ADUTHL = 0x00;

// ADUTHH 0;

ADUTHH = 0x00;

// ADSTPTL 0;
```


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```
  ADSTPTL = 0x00;

  // ADSTPTH 0;

  ADSTPTH = 0x00;


  // ADGO stop; ADFM right; ADON enabled; ADCONT disabled;
ADCS   FOSC/ADCLK;

ADCON0 = 0x84;

}

int ADCC_GetSingleConversion()

{

// select the A/D channel

ADPCH = 6;    //temperature sensor

// Turn on the ADC module

ADCON0bits.ADON = 1;

//Disable the continuous mode.

ADCON0bits.ADCONT = 0;

// Start the conversion

ADCON0bits.ADGO = 1;

// Wait for the conversion to finish

while (!ADCON0bits.DONE);
```


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```
// Conversion finished, return the result

return  ADRESL;

}

char adc_value;

main()

{

TRISC=0X00;

TRISA4=1;

ANSA4=1;

ANSELC=0X00;

ADCC_Initialize();

while(1)

{

OUT=ADCC_GetSingleConversion();

}

}
```


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Step 10: After writing code, save it then Go to **Run** >> **Clean and Build main project**.

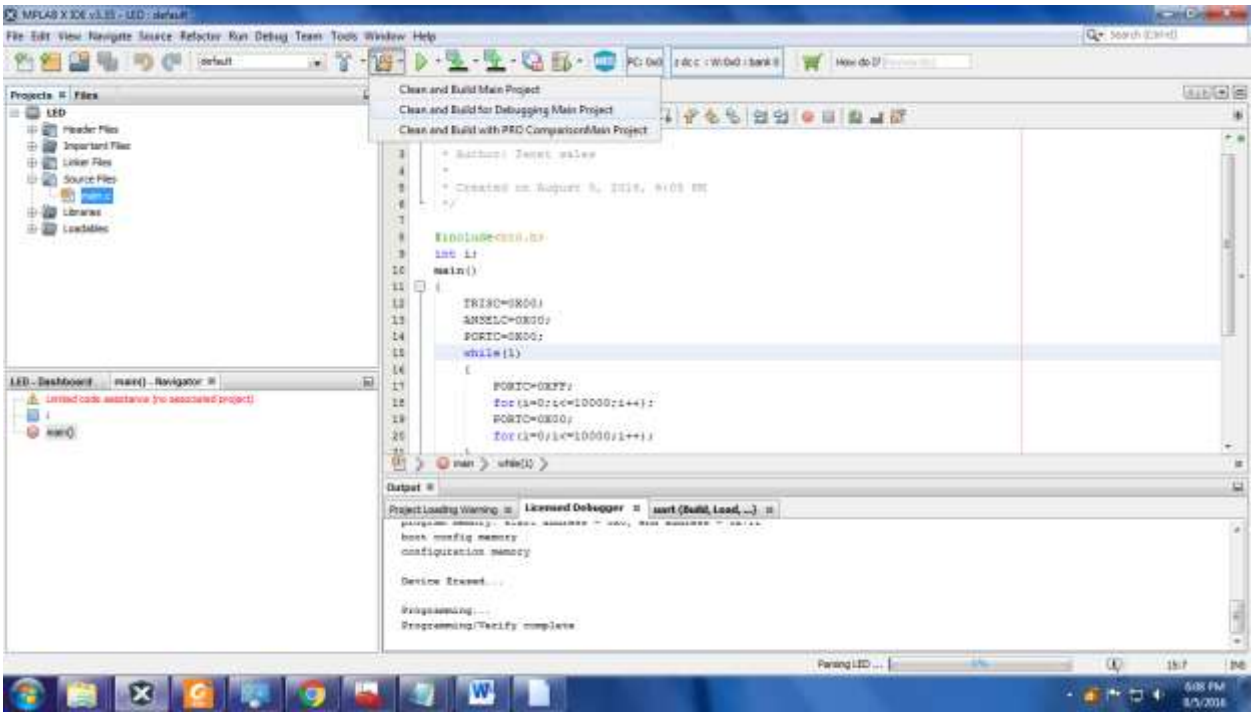

Figure 10 Build the project

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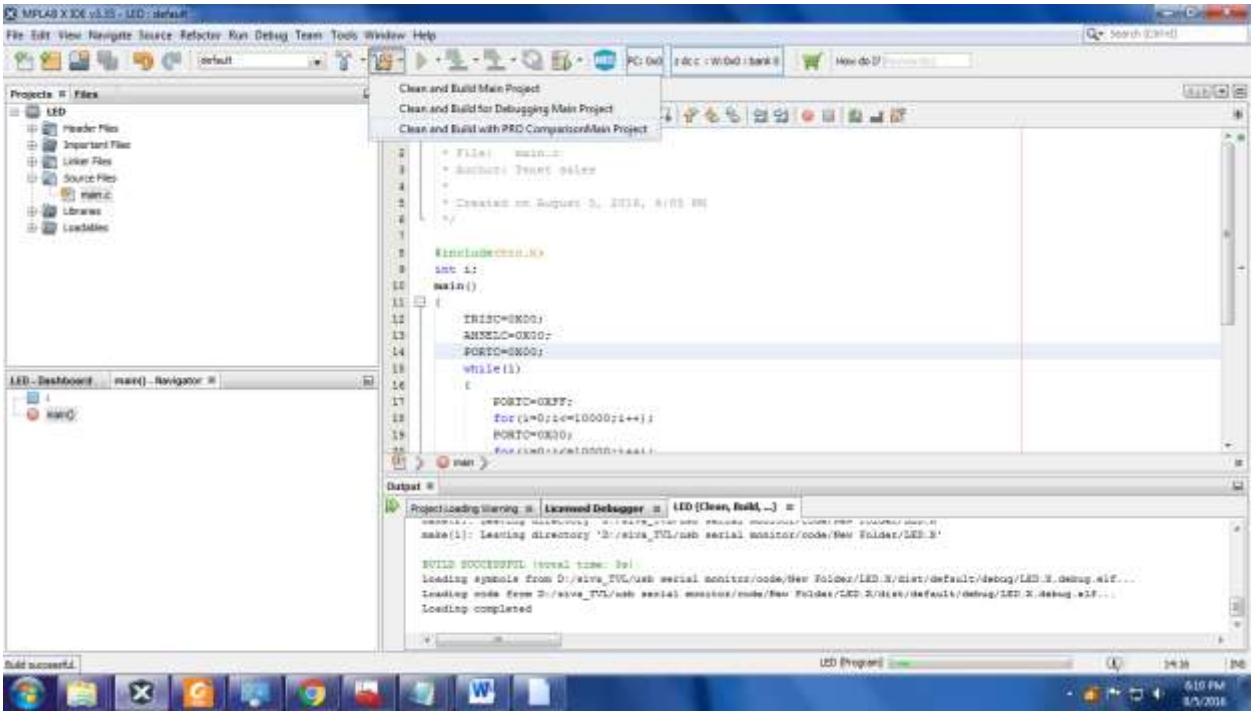
Step 11: Now, if all goes well connect the Micro B cable to pic16f18855 (pic demonstration board).



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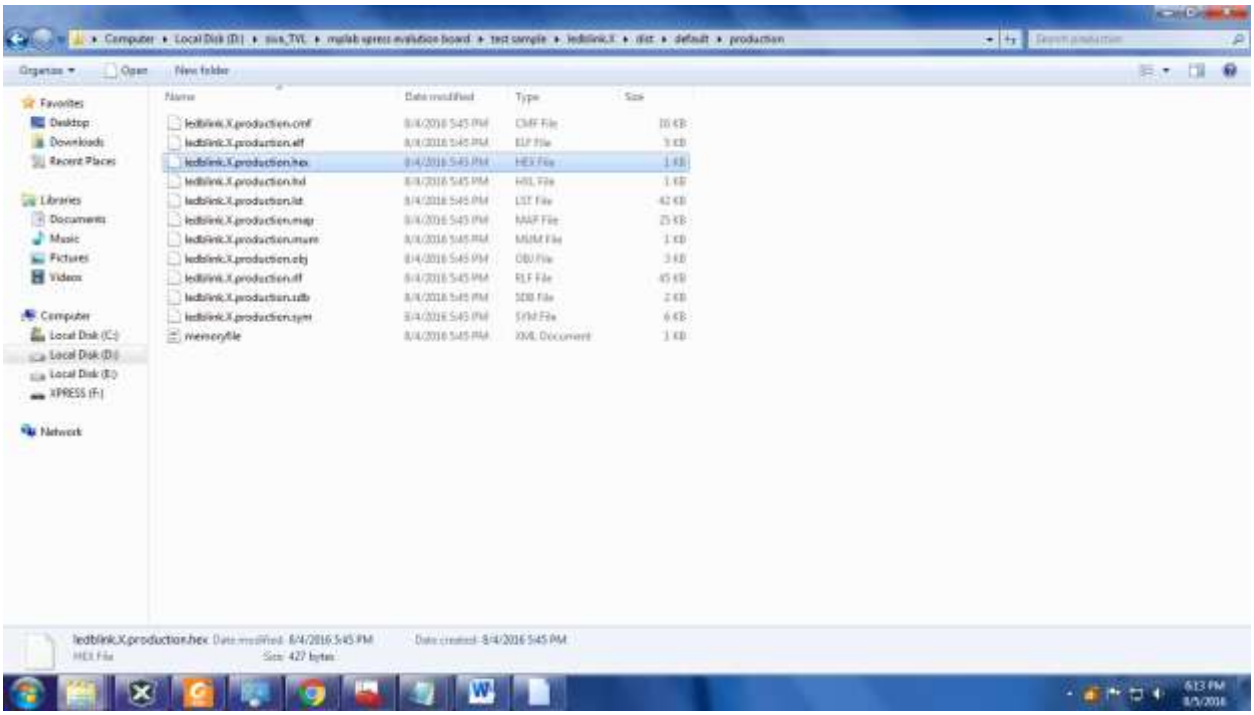
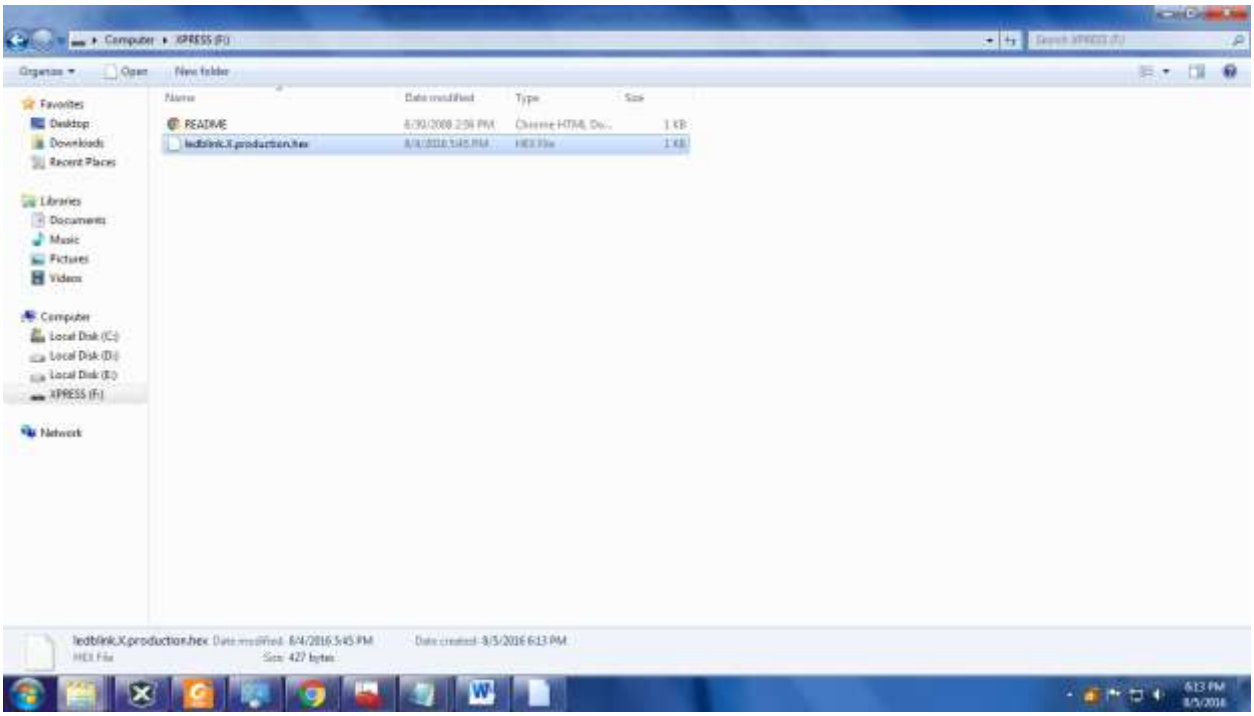
Step 12: To upload the project file, copy your hex file(.hex) past to your device. Ensure your device connection.





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Output:

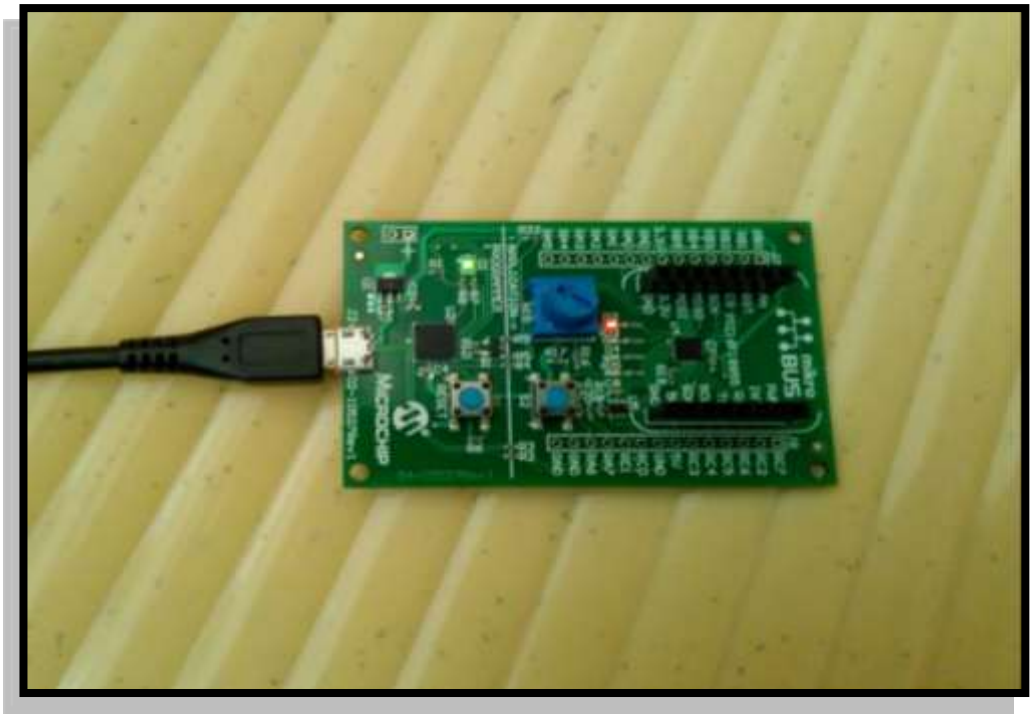

Figure 12 output

For product link:

http://www.tenettech.com/product/8828/mplab-xpress-development-board

For more information please visit: www.tenettech.com

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