



2016

IOT Using MPLAB Xpress Evaluation Board



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Version: 1.0

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
 - ESP8266
 - Jumper wires
 - Bread Board
- Software:
 - MPLAB Xpress IDE

Website:

ThingSpeak (<https://thingspeak.com/>)

Note: You must configure your device with your wifi

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Step 1: Open your Browser and go to following link
<https://mplabxpress.microchip.com/mplabcloud/ide>

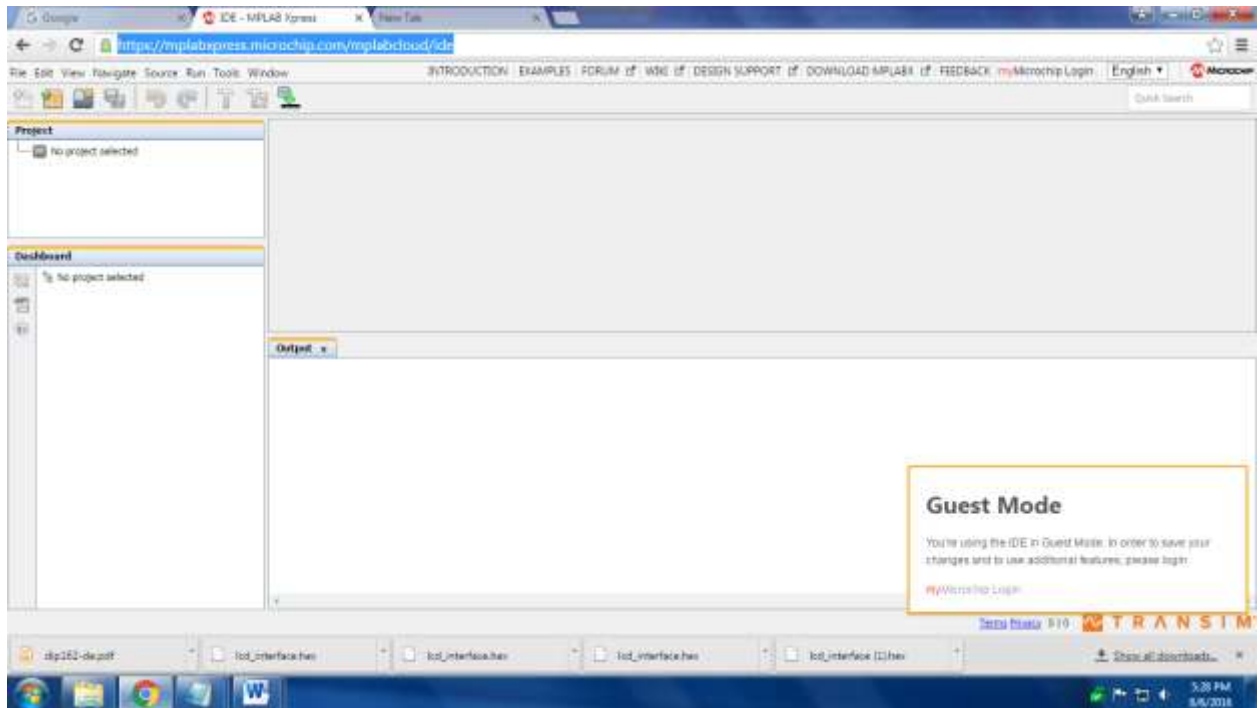


Figure 1 MPLAB Xpress IDE main window

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

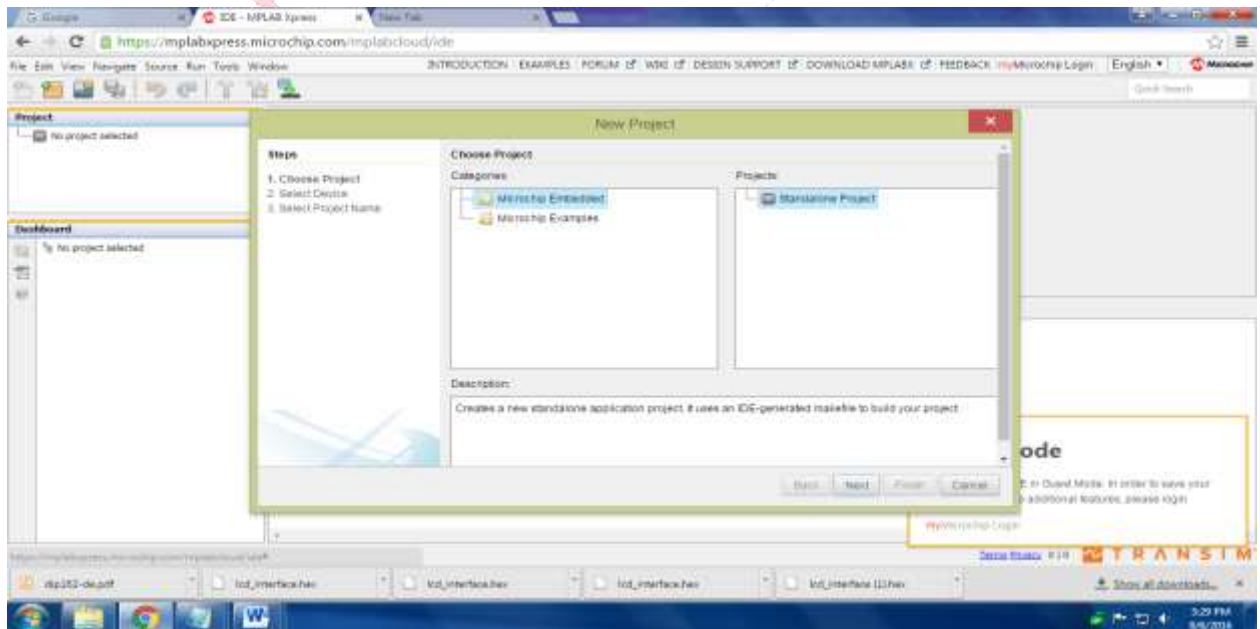


Figure 2 Open new project

Step 3: Select device **PIC16F18855**, and click **next** .

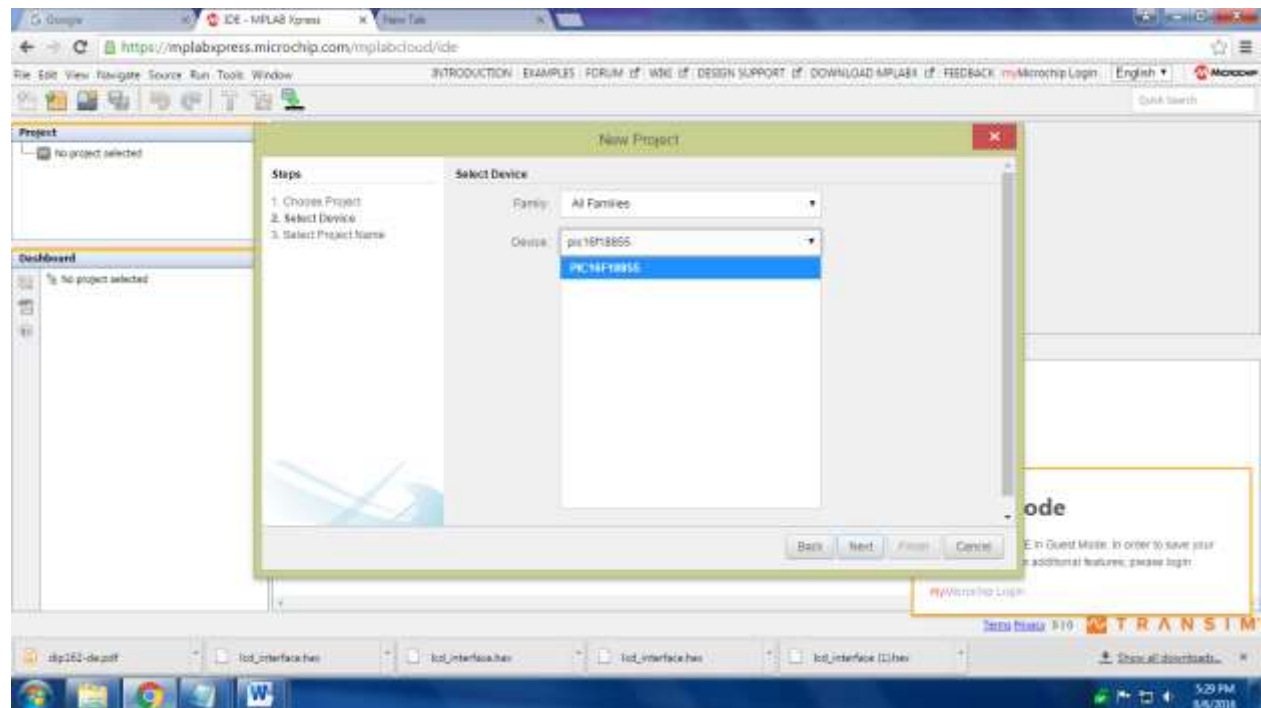


Figure 3 select Device

Step 4: then give project name and click finish.

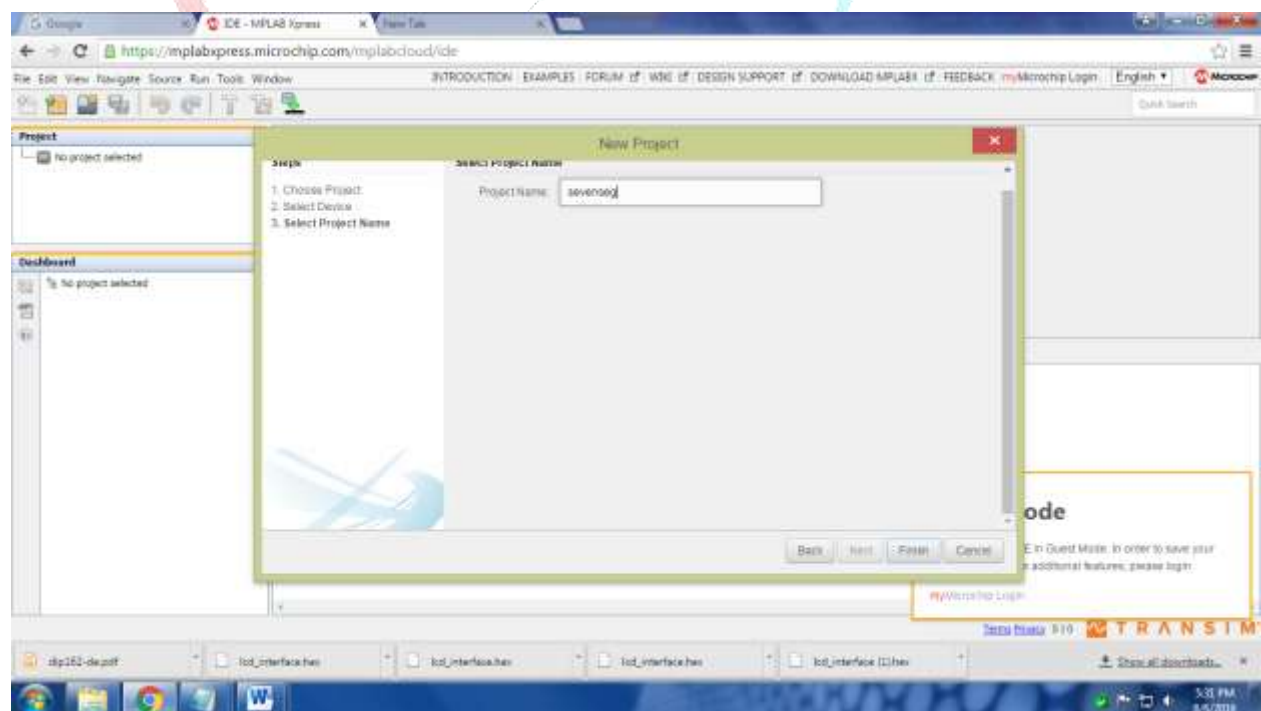


Figure 4 give project name

Step 5: Now choose mplab xpress code configurator if its not present in your Device please Download and install from following link. <http://www.microchip.com/mplab/mplab-code-configurator>

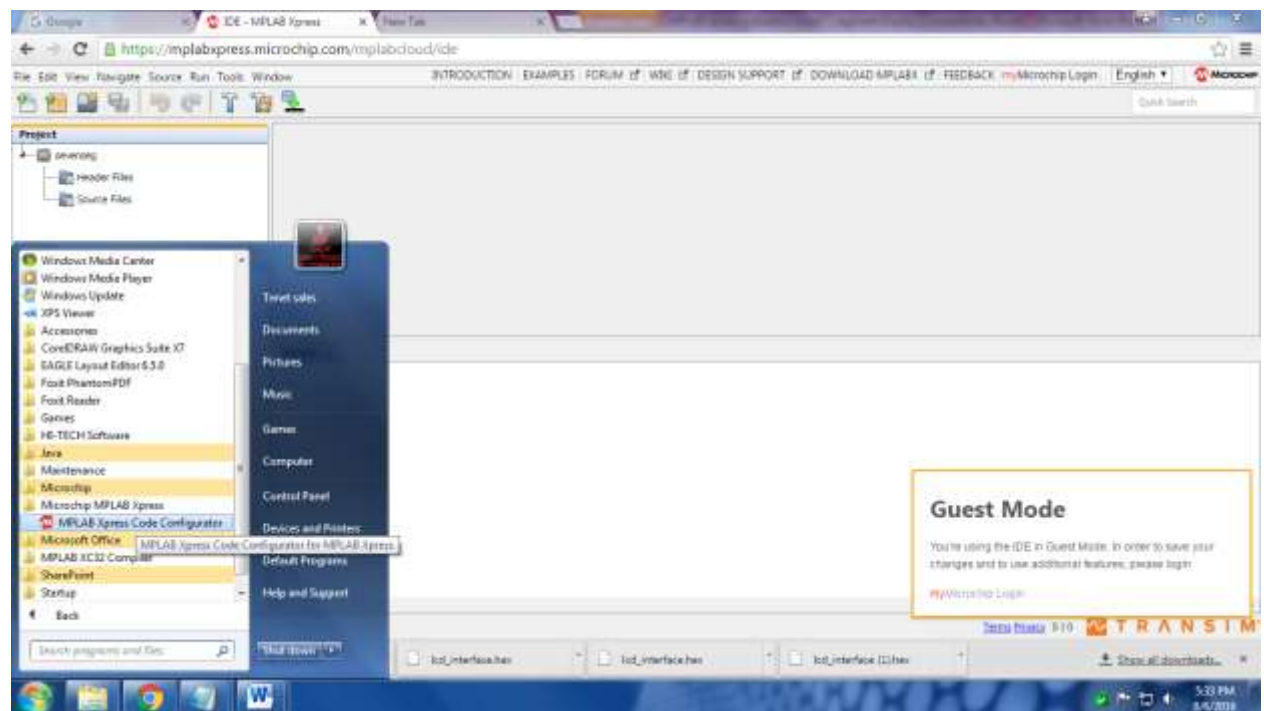
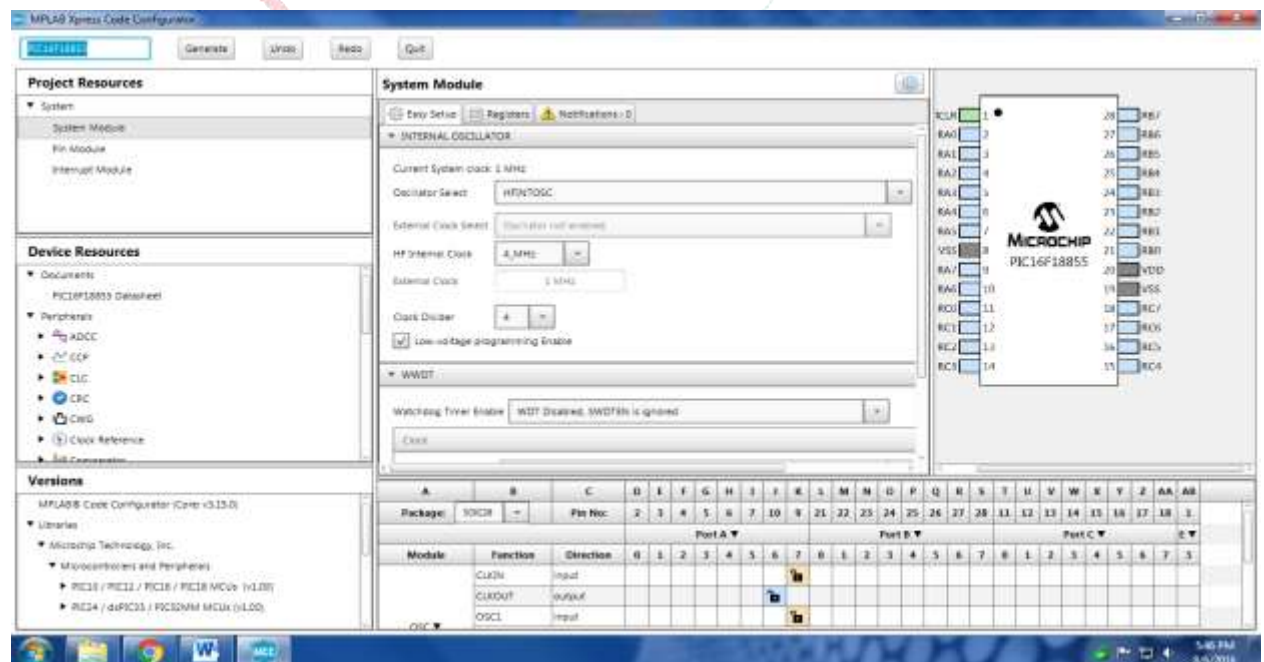
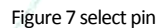


Figure 5 Select mplab xpress code configurator

Step 6: Now we can see our mplab xpress configuration window and select system module in mplab xpress configuration window .



Step 7: Make oscillator configuration and select required pin .



The screenshot displays the MPLAB Xpress IDE interface for configuring a PIC16F18055 microcontroller. The 'Pin Module' window is open, showing a table of pin configurations and a physical pinout diagram.

Pin Module Table:

Pin Name	Module	Function	Custom Name	Start High	Analog	Output	WDT
RA0	Pin Module	GPIO	ID_RA0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA1	Pin Module	SPID	ID_RA1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA2	Pin Module	GPIO	ID_RA2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA3	Pin Module	GPIO	ID_RA3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA4	Pin Module	SPID	ID_RA4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA5	Pin Module	GPIO	ID_RA5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA6	Pin Module	SPID	ID_RA6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RA7	Pin Module	GPIO	ID_RA7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Physical Pinout Diagram:

The diagram shows the physical layout of the PIC16F18055 microcontroller package. The pins are labeled as follows:

- Pin 1: NC
- Pin 2: VDD
- Pin 3: VSS
- Pin 4: NC
- Pin 5: VDD
- Pin 6: VSS
- Pin 7: NC
- Pin 8: VDD
- Pin 9: VSS
- Pin 10: NC
- Pin 11: VDD
- Pin 12: VSS
- Pin 13: NC
- Pin 14: VDD
- Pin 15: VSS
- Pin 16: NC
- Pin 17: VDD
- Pin 18: VSS
- Pin 19: NC
- Pin 20: VDD
- Pin 21: VSS
- Pin 22: NC
- Pin 23: VDD
- Pin 24: VSS
- Pin 25: NC
- Pin 26: VDD
- Pin 27: VSS
- Pin 28: NC
- Pin 29: VDD
- Pin 30: VSS
- Pin 31: NC
- Pin 32: VDD
- Pin 33: VSS
- Pin 34: NC
- Pin 35: VDD
- Pin 36: VSS
- Pin 37: NC
- Pin 38: VDD
- Pin 39: VSS
- Pin 40: NC
- Pin 41: VDD
- Pin 42: VSS
- Pin 43: NC
- Pin 44: VDD
- Pin 45: VSS
- Pin 46: NC
- Pin 47: VDD
- Pin 48: VSS
- Pin 49: NC
- Pin 50: VDD
- Pin 51: VSS
- Pin 52: NC
- Pin 53: VDD
- Pin 54: VSS
- Pin 55: NC
- Pin 56: VDD
- Pin 57: VSS
- Pin 58: NC
- Pin 59: VDD
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- Pin 62: VDD
- Pin 63: VSS
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- Pin 65: VDD
- Pin 66: VSS
- Pin 67: NC
- Pin 68: VDD
- Pin 69: VSS
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- Pin 89: VDD
- Pin 90: VSS
- Pin 91: NC
- Pin 92: VDD
- Pin 93: VSS
- Pin 94: NC
- Pin 95: VDD
- Pin 96: VSS
- Pin 97: NC
- Pin 98: VDD
- Pin 99: VSS
- Pin 100: NC
- Pin 101: VDD
- Pin 102: VSS
- Pin 103: NC
- Pin 104: VDD
- Pin 105: VSS
- Pin 106: NC
- Pin 107: VDD
- Pin 108: VSS
- Pin 109: NC
- Pin 110: VDD
- Pin 111: VSS
- Pin 112: NC
- Pin 113: VDD
- Pin 114: VSS
- Pin 115: NC
- Pin 116: VDD
- Pin 117: VSS
- Pin 118: NC
- Pin 119: VDD
- Pin 120: VSS
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- Pin 122: VDD
- Pin 123: VSS
- Pin 124: NC
- Pin 125: VDD
- Pin 126: VSS
- Pin 127: NC
- Pin 128: VDD
- Pin 129: VSS
- Pin 130: NC
- Pin 131: VDD
- Pin 132: VSS
- Pin 133: NC
- Pin 134: VDD
- Pin 135: VSS
- Pin 136: NC
- Pin 137: VDD
- Pin 138: VSS
- Pin 139: NC
- Pin 140: VDD
- Pin 141: VSS
- Pin 142: NC
- Pin 143: VDD
- Pin 144: VSS
- Pin 145: NC
- Pin 146: VDD
- Pin 147: VSS
- Pin 148: NC
- Pin 149: VDD
- Pin 150: VSS
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- Pin 157: NC
- Pin 158: VDD
- Pin 159: VSS
- Pin 160: NC
- Pin 161: VDD
- Pin 162: VSS
- Pin 163: NC
- Pin 164: VDD
- Pin 165: VSS
- Pin 166: NC
- Pin 167: VDD
- Pin 168: VSS
- Pin 169: NC
- Pin 170: VDD
- Pin 171: VSS
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- Pin 173: VDD
- Pin 174: VSS
- Pin 175: NC
- Pin 176: VDD
- Pin 177: VSS
- Pin 178: NC
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- Pin 190: NC
- Pin 191: VDD
- Pin 192: VSS
- Pin 193: NC
- Pin 194: VDD
- Pin 195: VSS
- Pin 196: NC
- Pin 197: VDD
- Pin 198: VSS
- Pin 199: NC
- Pin 200: VDD
- Pin 201: VSS
- Pin 202: NC
- Pin 203: VDD
- Pin 204: VSS
- Pin 205: NC
- Pin 206: VDD
- Pin 207: VSS
- Pin 208: NC
- Pin 209: VDD
- Pin 210: VSS
- Pin 211: NC
- Pin 212: VDD
- Pin 213: VSS
- Pin 214: NC
- Pin 215: VDD
- Pin 216: VSS
- Pin 217: NC
- Pin 218: VDD
- Pin 219: VSS
- Pin 220: NC
- Pin 221: VDD
- Pin 222: VSS
- Pin 223: NC
- Pin 224: VDD
- Pin 225: VSS
- Pin 226: NC
- Pin 227: VDD
- Pin 228: VSS
- Pin 229: NC
- Pin 230: VDD
- Pin 231: VSS
- Pin 232: NC
- Pin 233: VDD
- Pin 234: VSS
- Pin 235: NC
- Pin 236: VDD
- Pin 237: VSS
- Pin 238

9/3, 2nd floor, SreeLakshmi Complex, opp, to Vivekananda Park, Girinagar, Bangalore - 560085,
Email: info@tenettech.com. Phone: 080 - 26722726

Step 9:Now click Generate option.

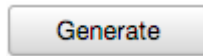


Figure 9 click Generate

SOURCE CODE:

```
#include "mcc_generated_files/mcc.h"
void main(void)
{
    // initialize the device
    SYSTEM_Initialize();
    // Enable the Global Interrupts
    INTERRUPT_GlobalInterruptEnable();

    // Enable the Peripheral Interrupts
    INTERRUPT_PeripheralInterruptEnable();
    while (1)
    {
        printf("AT\r\n");
        //for(i=0;i<=500000;i++);
        __delay_ms(3000);

        printf("AT+CIPSTART=\"TCP\", \"api.thingspeak.com\",80\r\n");
        __delay_ms(3000);
    }
}
```

```
printf("AT+CIPSEND=%d\r\n",80); // our length to sent

__delay_ms(3000);

        //apk key past here

printf("GET /update?api_key=C61KN6L8SHTJFLVC&field1=%d",0); // given our value for
plot the graph (0,1,2,3,4,5,6 etc..)

printf("HTTP/1.1 \nHOST: api.thingspeak.com \r\n\r\n");
__delay_ms(3000);

printf("AT+RST\r\n");
__delay_ms(3000);

    }
}
/**
End of File
*/
```

Note: you must be configured your Device with your wifi or else it not possible.

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Step 10: Go to your MPLAB xpress IDE Erase all existing code and copy above code past there and add header file from given file then make clean and build for Export . if you done this go to download you can see hex file for your project.

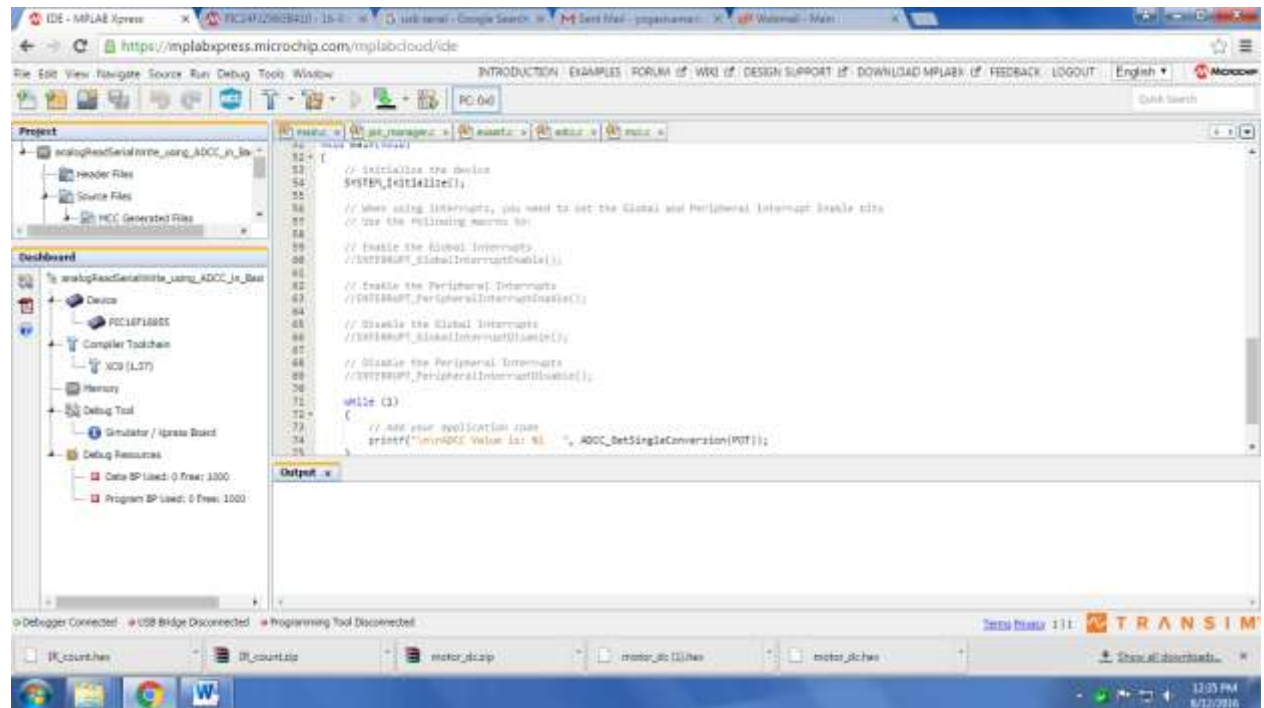
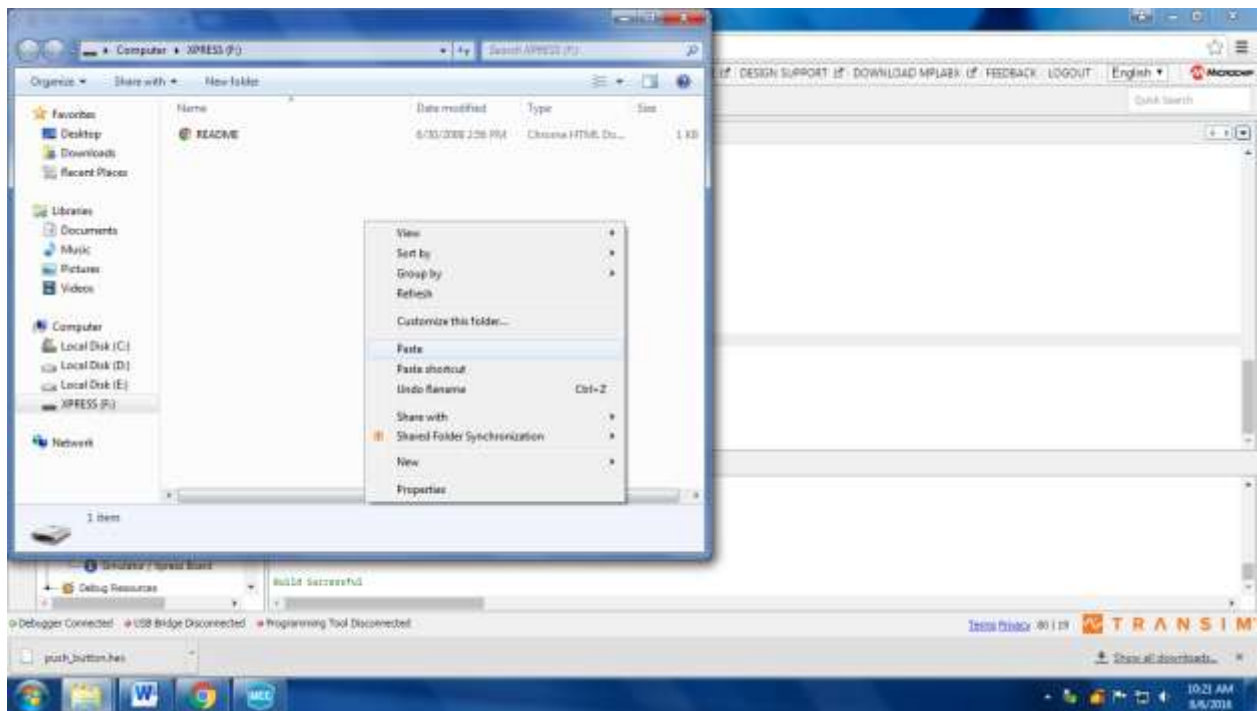


Figure 10 Build the project

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Step 11: Now, if all goes well connect the Micro B cable to pic16f18855 (mplab xpress demonstration board) and connect it to your computer. If you done you can see your devise. And copy that Hex file to your device. And make hardware connection.



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OUTPUT:

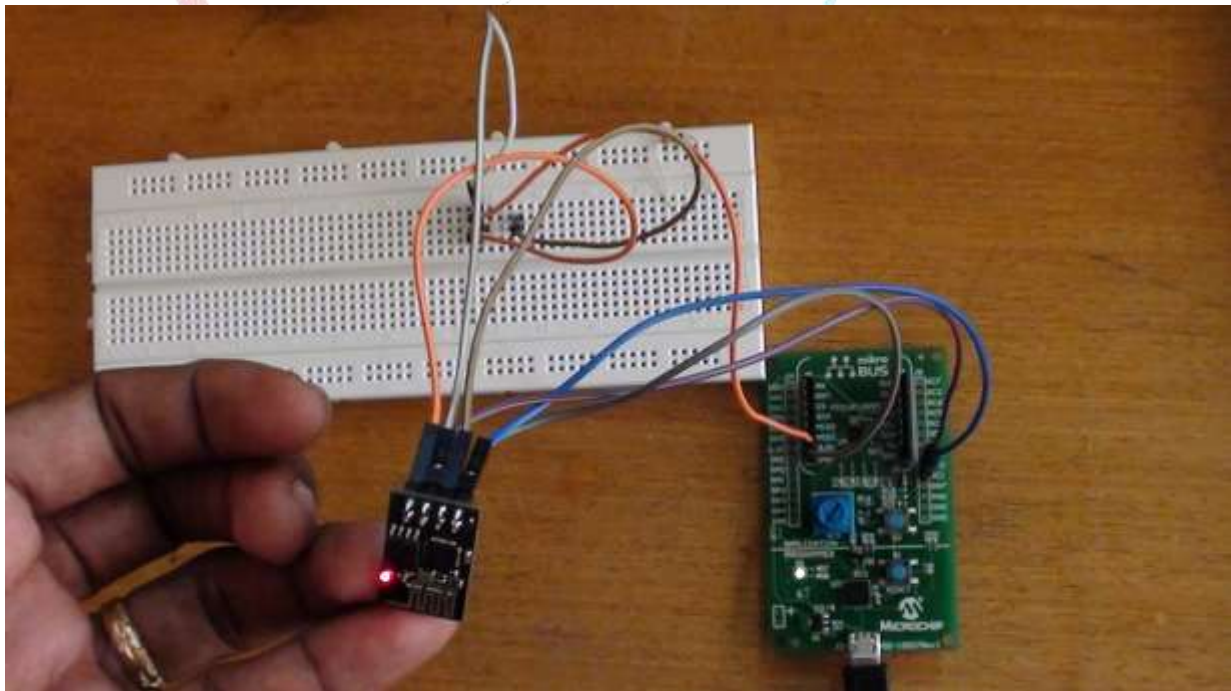
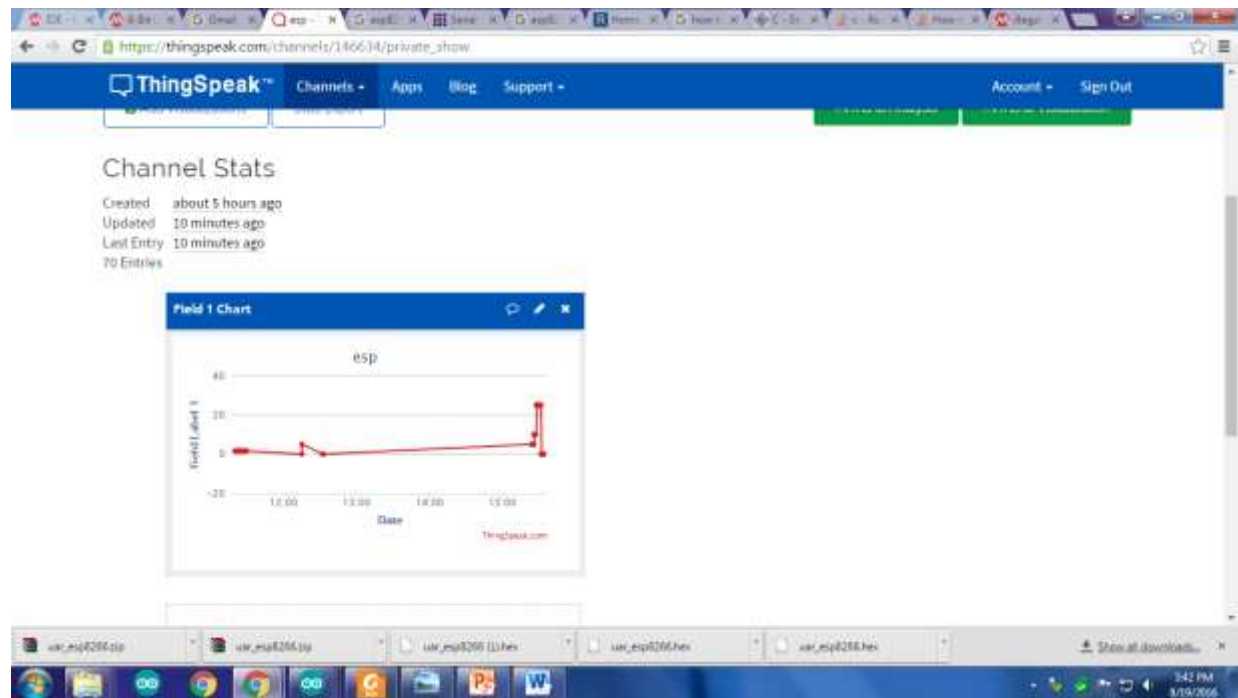
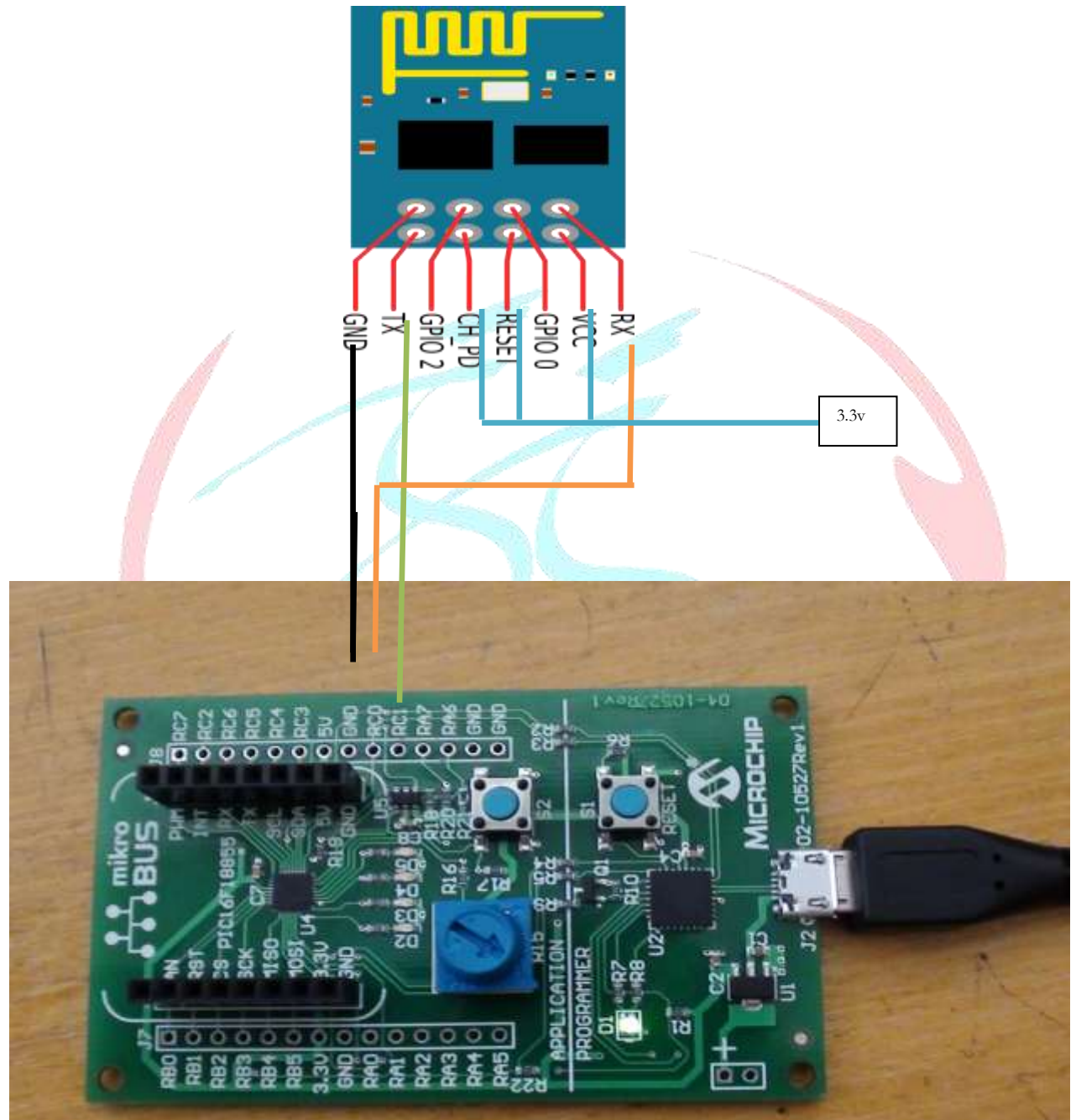


Figure 12 output

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Circuit connection:



For more information please visit: www.tenettech.com

For technical query please send an e-mail: info@tenettech.com

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