

## Lab 1: Hello World

Skip steps 1 & 2 if IDE and Code Configurator already installed

### 1. Download the IDE:

- Open the provided flash drive
- Click on the provided tar, dmg, or exe file labeled **MPLAB X** to start the installation process
- Once the IDE has been installed, click on the provided tar, dmg, or exe file labeled **xc8 Compiler** to start the compiler installation process

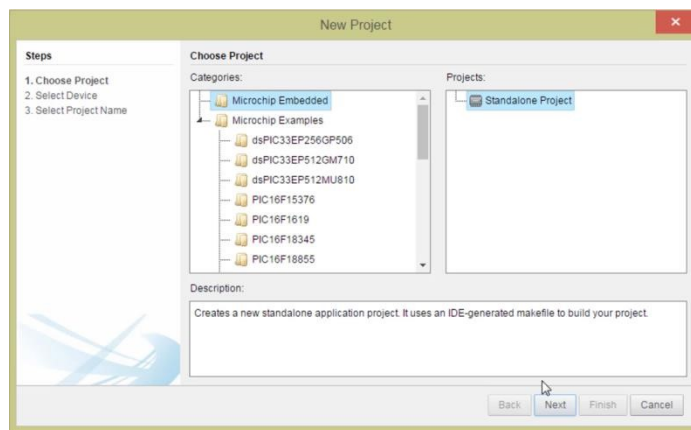
**Note:** Be sure to check the **Add xc8 to the PATH environment variable** checkbox when prompted for compiler settings

### 2. Install MPLAB® Code Configurator

- In the MPLAB® X IDE, select Plugins from the Tools menu
- Select the Available Plugins tab
- Check the box for the MPLAB® Code Configurator and click install

### 3. Creating a New Project:

- From File>New Project, create a new project



- Use Standalone Project for the project type.
- Select PIC16F18446 as the device (Can be searched in the device box)
- Select SN: ATMLXXX as the device tool (Your device needs to be connected to do this step)
- Select XC8 as the compiler
- Give a project name (No space)

### 4. Launching MCC (MPLAB Code Configurator):

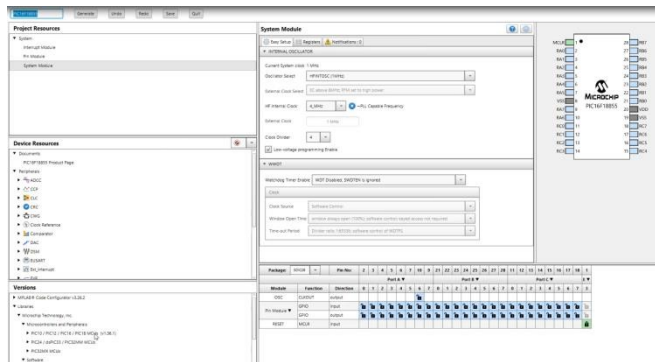
- From the navigation panel click the MCC icon



- Save the prompted config file

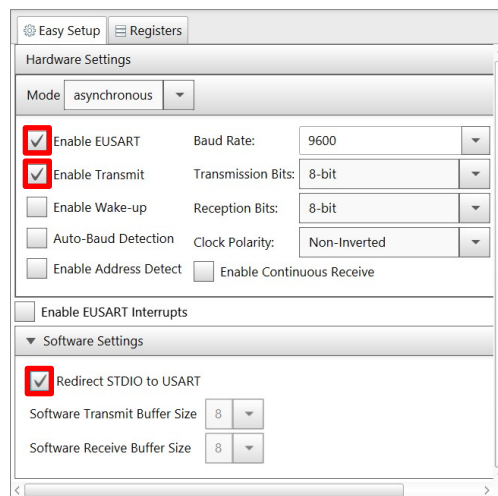
# Future Lab Manual

- c. If you see the following window, MCC Launched properly



## 5. Add a EUSART Peripheral

- a. To print outputs to the screen, data is transferred over EUSART/USB. Add EUSART1 module from the device resources window to the project (Use the EUSART1 [PIC10/PIC12.....] module). Configure the EUSART module as follows: check the **Enable Transmit** box, **Baud Rate = 9600**, transmission and reception = 8 bits and check the **Redirect STDIO to USART** box



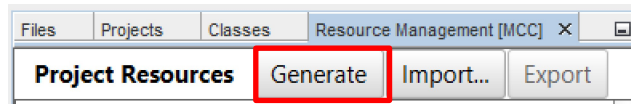
- b. In the pin manager: configure the EUSART Transmit pin: TX = RB4

Notifications			Output	Notifications [MCC]	Pin Manager: Grid View																		
Package:		QFN20		Pin No:	16	15	14	1	20	19	10	9	8	7	13	12	11	4	3	2	5	6	
					Port A ▼					Port B ▼				Port C ▼									
Module		Function	Direction	0	1	2	3	4	5	4	5	6	7	0	1	2	3	4	5	6	7		
EUSART1 ▼		RX1	input																				
		TX1	output																				
OSC		CLKOUT	output																				
Pin Module ▼		GPIO	input																				
		GPIO	output																				
RESET		MCLR	input																				

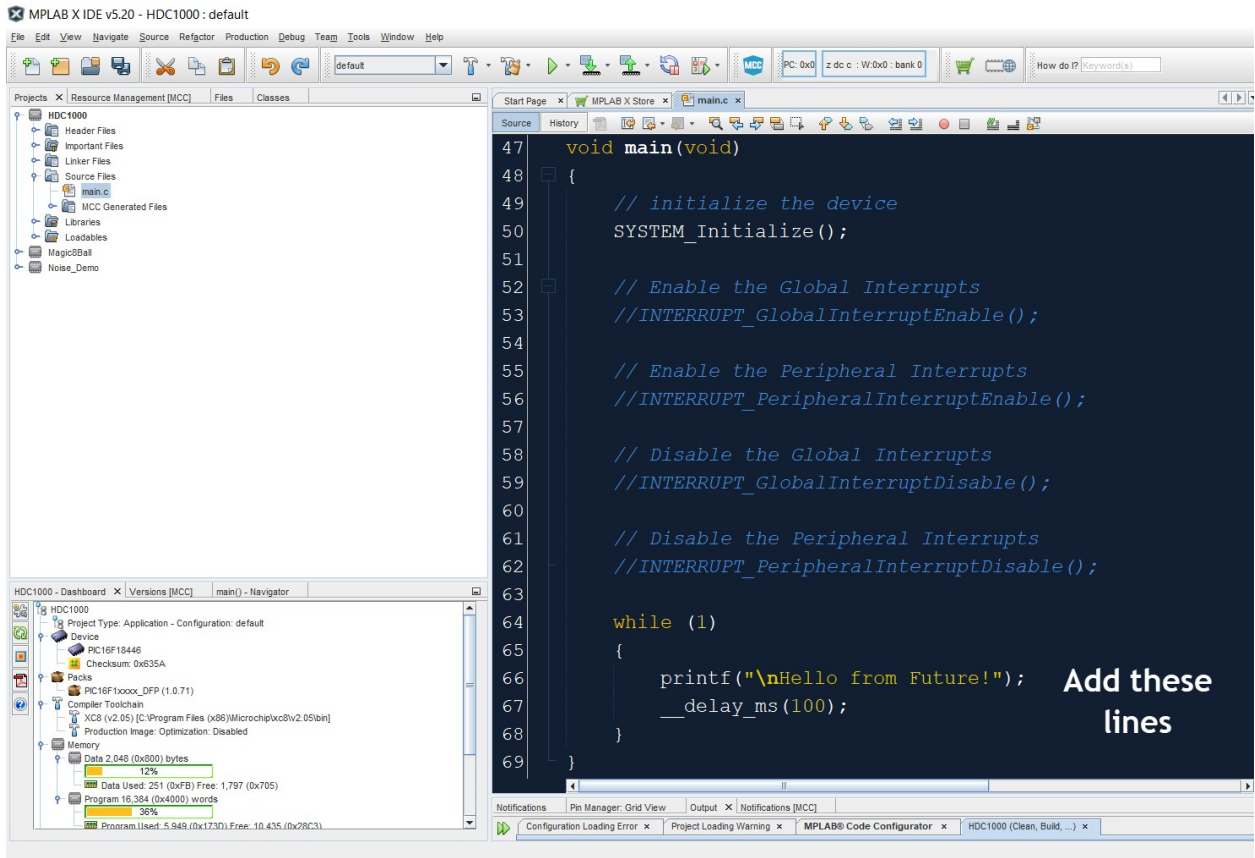
**Note:** You may need to uncheck the lock on RB7

# Future Lab Manual

6. **Generate Code:** Click on generate code from top of the MCC window



7. **Navigate to main.c:** Click the **Projects** tab in the top left corner of the IDE. Expand the Source Files drop down. Double click on **Main.c**. Make the following change:

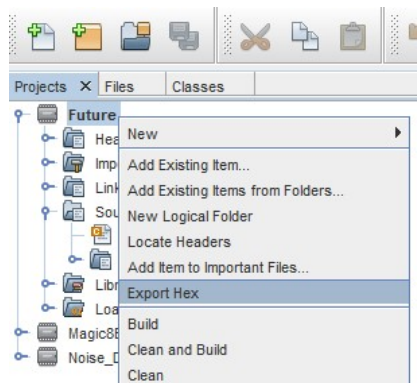


**Note:** The delay is to ensure that all characters get printed to the serial terminal before the printf statement is called again

8. **Connect and turn on your device:** Make sure that your device is connected to your computer and ensure that the power switch is turned on.

**Important:** Without doing this your board will not write the hex file to memory and the program will not work.

9. **Compile and Program:** In the projects tab on the left-hand side, go to the top level of your project and right click. In the dropdown menu you will see **Export Hex**. It will then ask you to provide a file name. Do this and click save.



# Future Lab Manual

- 10. Download CoolTerm:** In google search for “CoolTerm” and use the third link from the top to download the software to your machine.

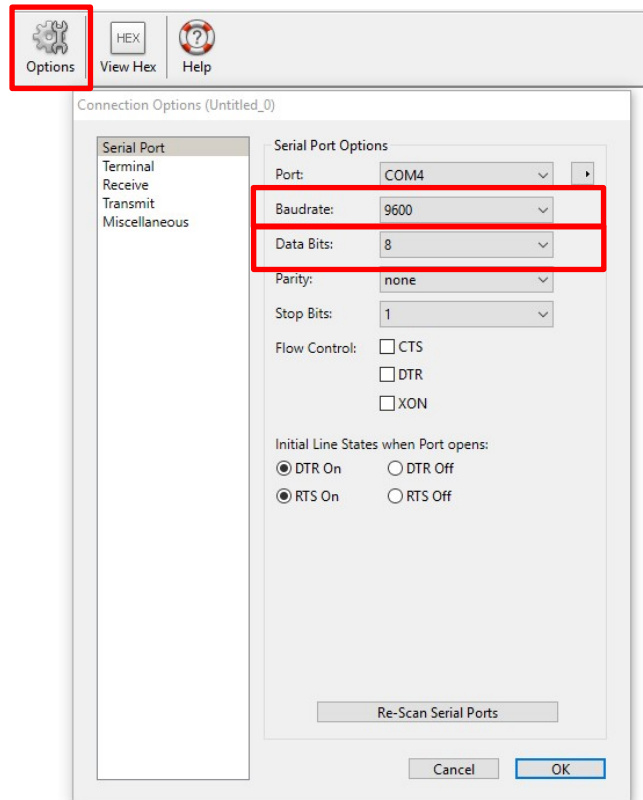
[CoolTerm - Free download and software reviews - CNET Download.com](#)

[download.cnet.com](#) > ... > [Utilities & Operating Systems](#) > [System Utilities](#) ▾

★★★★★ Rating: 4.2 - 4 reviews - Free - Windows - Utilities/Tools

Jan 21, 2018 - From Roger's Freeware: CoolTerm is a simple serial port terminal application (no terminal emulation) that is geared towards hobbyists and professionals with a need to exchange data with hardware connected to serial ports such as servo controllers, robotic kits, GPS receivers ...

- 11. Configure Your Terminal:** In the toolbar, click on the Options tab. Change your Port to the port of your currently connected MPLAB X USB connection. Verify that your Baudrate is set to 9600.



- 12. Connect and See Output:** In the toolbar, click on the Connect tab. If everything is configured correctly then you should see “Hello from Future!” output in your serial terminal.