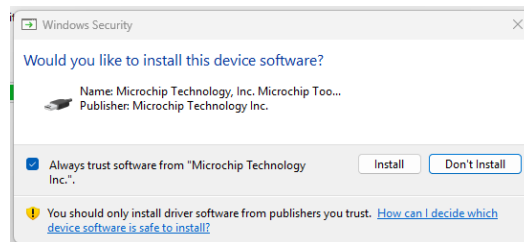


TECH 3230

Installing and Using MPLAB X IDE

Ver 1.0

1. Download MPLAB X IDE from <https://www.microchip.com/en-us/tools-resources/develop/mplab-x-ide>
2. Install the program (using all the defaults). It will bring up the following window about 13 min into the install:



Click install.

After a short period of time, it will bring up another window. Leave all the default checkmarks and click on FINISH.

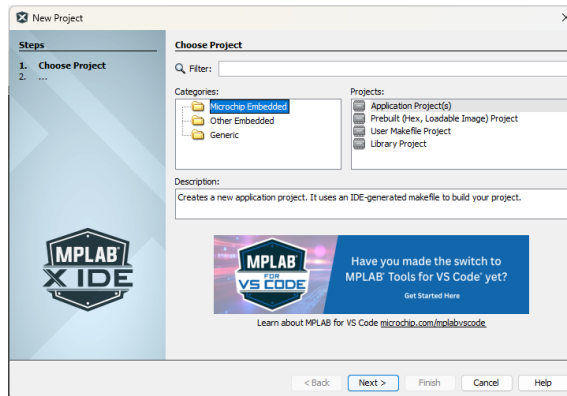
It will then open a window for each of the requested compilers (4 times in total). Accept the license agreement and use the default values for each screen (just click NEXT or FINISH).

The entire install takes aprox 30 min and two new icons should be on your desktop:



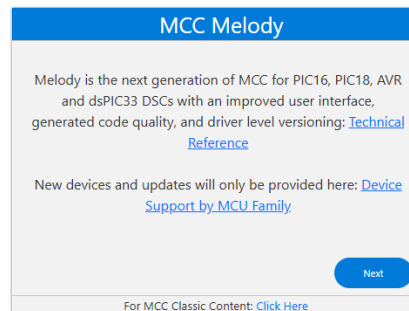
and MPLAB X IDE should open.

3. To start a project, use FILE | New Project. It should bring up the following window:

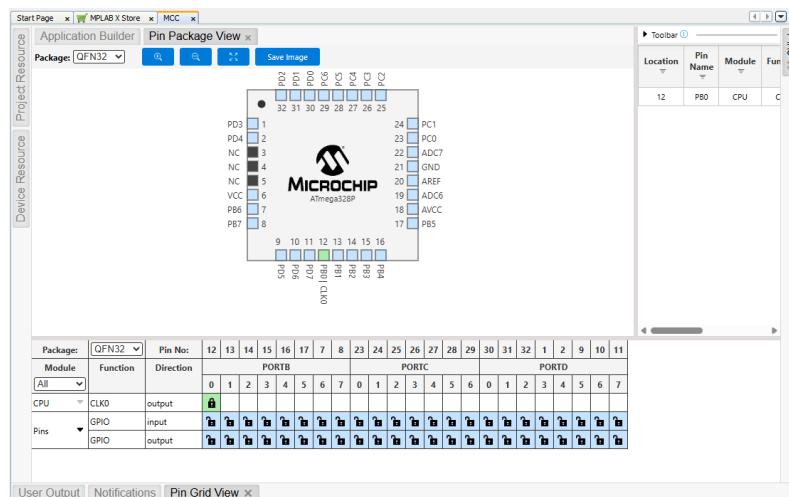


4. Select Microchip Embedded and Application Project(s) and click NEXT
5. On the next window, set the device for ATmega328p and click NEXT
6. On the next window, select XC8 (v3.10) and click NEXT
7. Now give the project a name and click FINISH
8. Be patient....it will take a while but you will eventually get the window shown below:

MCC Content Type Wizard

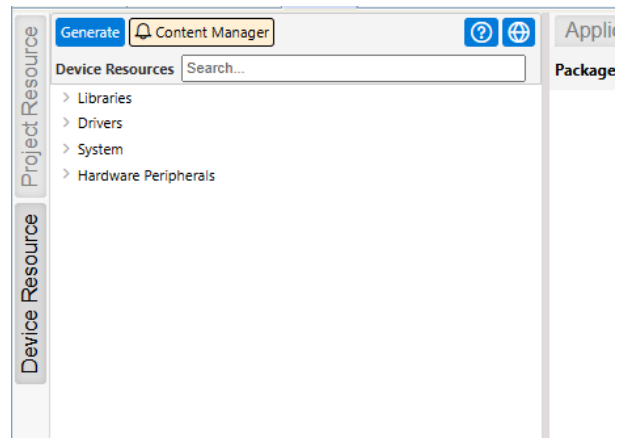


9. Click NEXT
10. Again, this will take a while (and even longer the first time since it needs to down content...if any window pops up, just click accept or next) but eventually you will get the following screen:

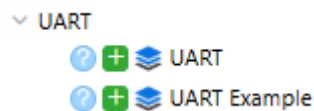


11. This is where you setup drivers (including USART)

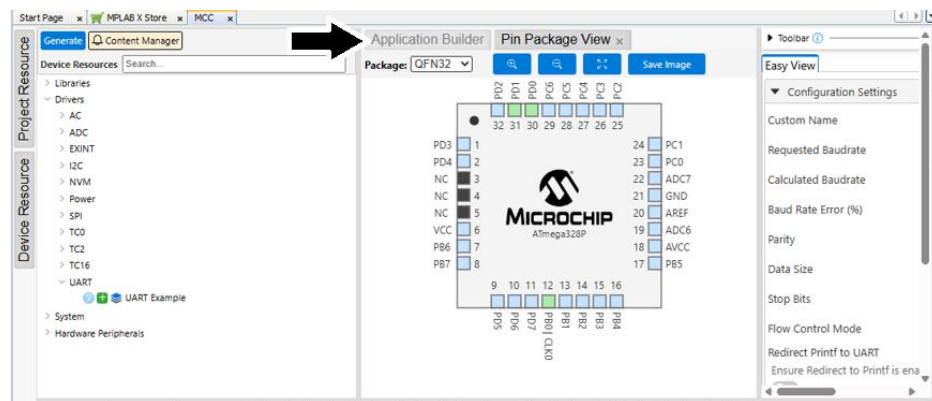
12. Click on the Device Resources on the left hand side and you should get a menu:



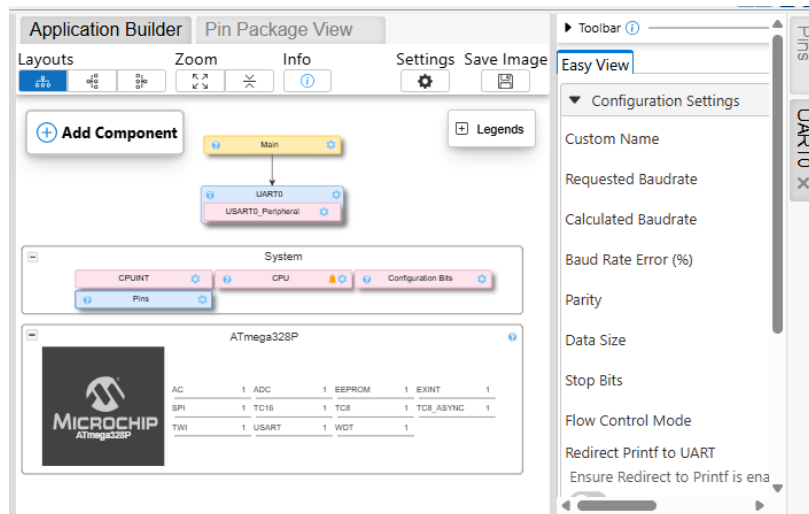
13. Click on Drivers and then UART and then click the green + sign next to UART (you do NOT need UART Example)



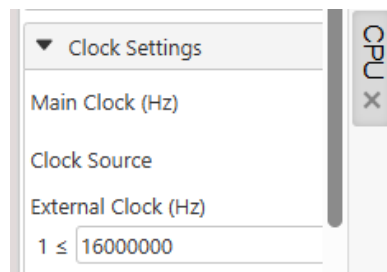
14. Now click on the “Application Builder tab at the top of the screen (as shown here)



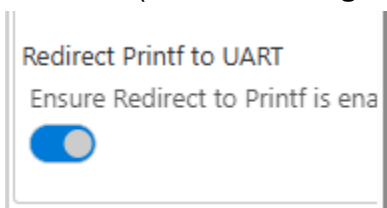
15. Now the Pinout section should be replaced with the following (note you might have to zoom into this window (ctl+ or mouse wheel)):



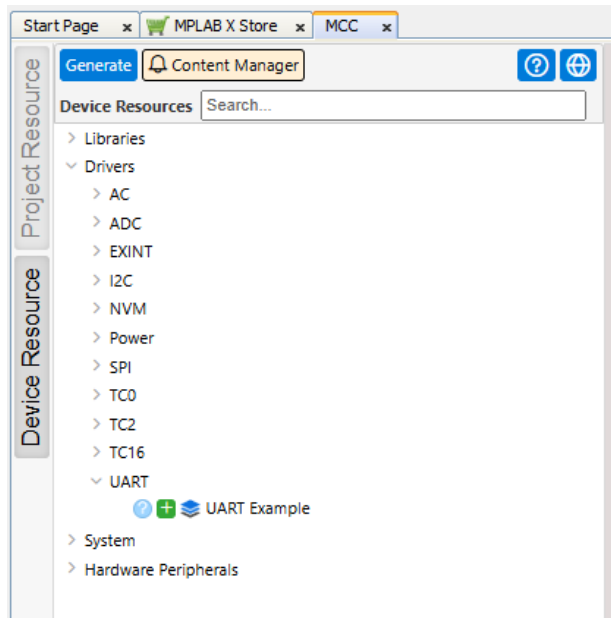
16. If you click on the CPU box, off the right side you will get a menu. Look for Clock Source and use the pulldown menu to select External Clock. Then set the clock to 16000000 in the box below (as shown):



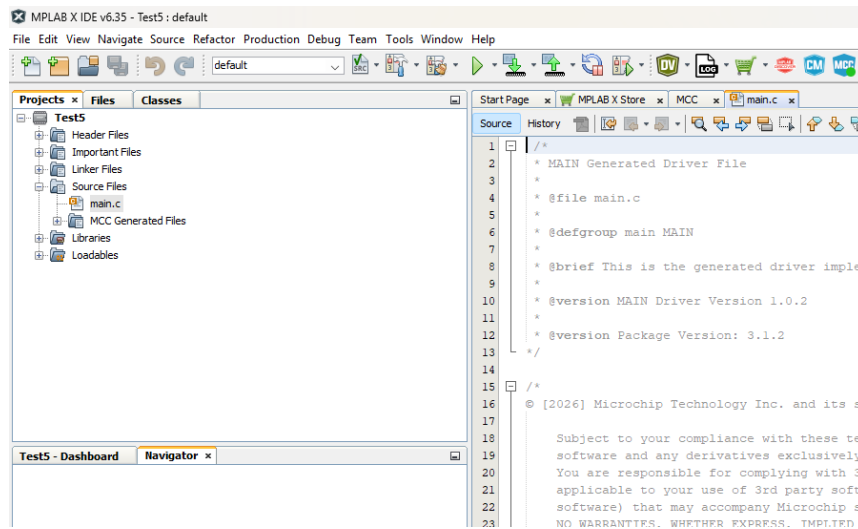
17. Now click on the UART0 in the **BLUE PART OF THE BOX**. Scroll down to “Redirect Printf to UART” and turn on the switch (it should change color):



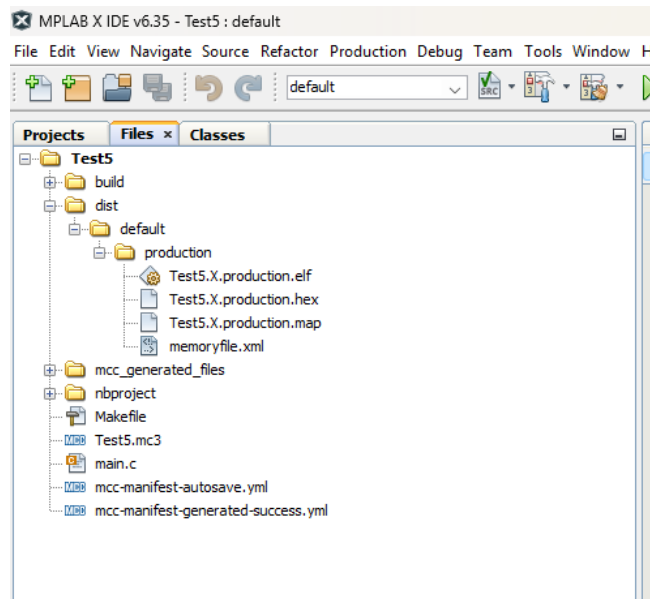
18. Now click on the GENERATE button to complete the setup process



19. At this point you can go into the Projects tab and click the + next to Source Files and double click on main.c to bring up the program editor window

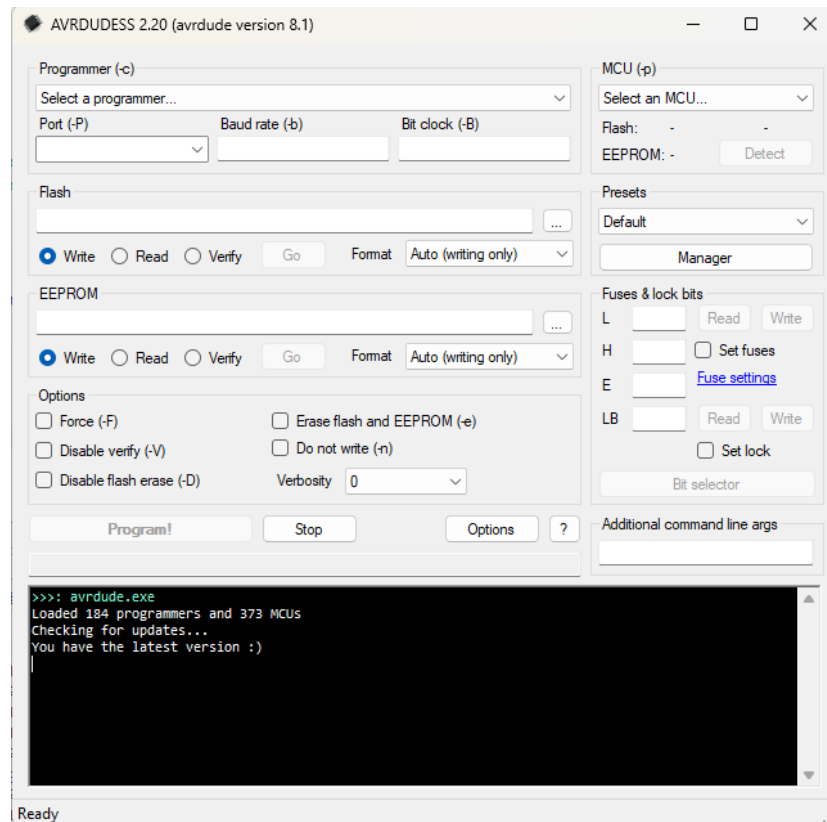


20. This completes the setup for your program (and printf can be used to display output to putty).
21. Once you are done writing your code, you can do Production | Build Main Project to compile the project.
22. After debugging any errors, the program will generate a .hex file (you can see it if you change to the FILES tab and look under dist\production*.hex)

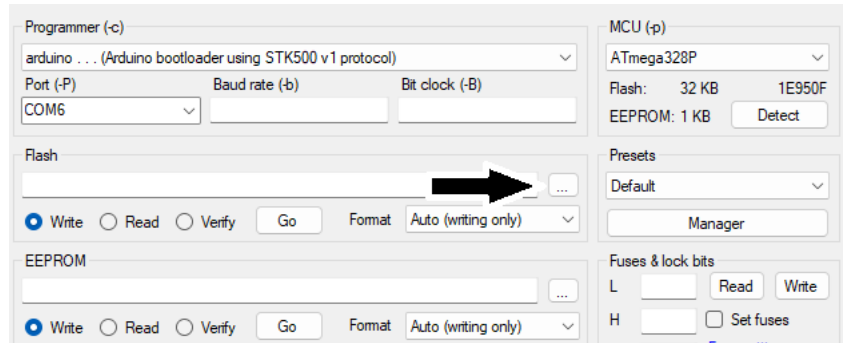


23. But now we have to get it to the Arduino board. MPLAB X IDE does NOT have a way to do this, so we need to install another program that will do this for us. Goto <https://blog.zakkemle.net/avrdude-a-gui-for-avrdude/> and download AVRDUDESS and install it. Use all the defaults (although I would suggest you do put an AVRDUDESS icon on your desktop)

24. Open AVRDUDESS and you should have this window:



25. Select the programmer as “Arduino....(Arduino bootloader using STK500 V1 protocol)”, the port (COMx and found in Device manager) and then click the “Detect” button in the MCU box in the upper right side of the window. To select the .hex file, click on the button shown below:



26. This will bring up a file explorer....you will need to select THIS PC then C: then the path C:\Users\<your account\MPLABXProjects\<current project>\dist\default\production\<filename.hex>
27. Now you can click on the Program! Button and send the code to the board. You do not need to close the AVRDUDESS window to open Putty (but Putty MUST be closed if you need to resend the code)
28. If it succeeds uploading the code, your window should look like this:

