This week in summary: Brief introduction
Next week: take the robot apart and put it back together

Firmware:

(1) Install the following:
IDE: MPLab X
Compiler: XC8, XC16

Get the free versions. If it prompts you for a license key, click "next" and it will ask you to select the free version.

(2) Create a new project (use code from robocup repository):

(2a) The Aux board requires the following project setup:

Family: PIC18F4431
Tools: PICKit2
Compiler: XC8
Right click project once project is created | Add Existing Files
Add these files (and only these files) from robocup-ee/firmware:
- bemixnet.c
- bemixnet.h
- mainLogic_newestBB_no_false_positives.c
- pins.h

(2b) The brushless requires the following project setup:

Family: dsPIC30F4011
Tools: PICKit2
Compiler: X16
Right click project once project is created | Add Existing Files
Add these files (and only these files) from robocup-ee/firmware:
- bemix_v2.n
- bemix_v2.h
- main_v2.c
- pins_v2.h

Aux uses 8-bit microcontroller
Brushelss uses 16-bit microcontroller - recently upgraded to nicer (faster) microcontroller

--> microcontrollers have to be programmed slightly differently

Process for loading code onto board:

Note the following:

- on board, there is a 5 pin header pin
- there is a programming cable

Process:

1. plug in board to power (plug it into the robot, with the robot turned on)
2. plug in programmer to the header pin, with the arrow on the programmer pointing to pin 1
3. build project (there is a button in the IDE)
4. program the board (button)
5. toggle power

Order:
Hint: never plug things in backwards! signals go to specific places, and applying the wrong signal to the wrong pin can destroy a board

All brushless boards faces front. Aux board faces front. Kicker board faces the back (to make it fit).
Yellow cable to motor. The connector has a set of "tabs" that you need to loosen in order to remove the cable. Silver side faces up.
Encoder cable. You'll notice on the motherboard, the one pin is marked 1, the other pin is marked 4. On the connector, there is line that is marked black or red. make sure the black or red line is matched up to pin 1.

Random question when looking at schematic:
Thermal - a thin traces that connect a component to the main part of the trace. makes it easier to solder b/c there is less heat loss. However, our traces are usually thin enough that we don't have to lose about heat dissipation while soldering.