

Connecting RobotC (laptop) to Cortex **

1. **Open Robot C:**

- a. Double click Icon in the 'Task bar' (*if that doesn't work, go to step b*)
- b. Computer > Windows (C:) > Program Files (x86) > Robomatter Inc > ROBOTC Development Environment 4.X > RobotC

2. **Open Template:**

Programming

- a. File > Open Sample Program > This PC > Windows (C:) > Program Files (x86) > Robomatter Inc > ROBOTC Development Environment 4.X > Sample Programs > VEX2 > PLTW > PLTW template

Remote control for clawbot

- b. File > Open Sample Program > This PC > Windows (C:) > Program Files (x86) > Robomatter Inc > ROBOTC Development Environment 4.X > Sample Programs > VEX2 > Remote Control > Clawbot Single Joystick Control
- c. Save Template: Save As: change name and location

3. **Initial Settings:**

- a. Robot > Platform Type > VEX Robotics > VEX 2.0 Cortex
- b. Robot > Platform Type > Natural Language PLTW
- c. (*Programming*) Robot > VEX Cortex Communication Mode > USB Only
- d. (*Clawbot w/remote*) Robot > VEX Cortex Communication Mode > VEXnet or USB

4. **Connect to Cortex:**

- a. Plug in USB to computer and Cortex
- b. Plug in battery to Cortex
- c. Turn on power to Cortex
- d. Robot > Download Firmware > Automatically Update VEX Cortex
- e. Go through the update steps "OK"
- f. If it does NOT need an update, you are ready to go
- g. If it does update, then "power cycle"



5. **Power cycle:**

- a. Turn off Cortex power (don't unplug)
- b. Unplug USB cable, wait 5 seconds
- c. Plug in USB, wait 5 seconds
- d. Turn on Cortex power
- e. You should see the two outside green lights with no red lights. If the middle light is on, you are not in "USB ONLY" mode.

Name1: _____ Name1: _____

Beginning Programming

Complete each task and show me when you are done. Please write notes or save code to Google drive to help you remember how you did each task ... you may need them later.

Part 1 - Programming

1. Write a program that will do the following. Add comments at the end of each command line to explain the purpose of each step: *** Teacher verification _____

1. Turn on green LED for 1 sec, turn off green LED for 1 sec
2. Turn on red LED for 1 sec, turn off red LED for 1 sec
3. Repeat one more time

```
21 task main()
22 {
23     turnLEDOn(LEDred);
24     wait1Msec(1000);
25     turnLEDOff(LEDred);
26 }
```

2. Write a program that will do the following: *** Teacher verification _____

1. Turn on the left motor at half speed (127 is full speed) forward for 2 seconds
2. After 2 seconds, the left motor stops and the right motor starts backwards at half speed.
3. After 2 seconds, right motor stops and the LED turns on
4. After 3 seconds, the LED turns off and the program ends

```
23 task main()
24 {
25     startMotor(rightMotor, 65);
26     wait1Msec(2000);
27     stopMotor(rightMotor);
28 }
```

3. Modify the last program by adding the following: turn both motors on CW at full speed for 1 second AFTER the LED turn off and then end program. *** Teacher verification _____

4. Modify the last program by adding a bump switch to start the program and a limit switch to turn off the LED and end the program. *** Teacher verification _____

5. Write a new program that will do the following: *** Teacher verification _____

1. Turn on the left motor at half speed forward
2. When the bump switch is pushed, the left motor turns off, and the right motor turns on backward half-speed
3. When the limit switch is pressed the right motor turns off and the LED turns on
4. When the bump switch is pressed again, the LED turns off and the program ends.

6. Write a new program that will do the following:

*** Teacher verification _____

1. Both motors turn on half speed when you press the bump switch
2. Motors continue running until you press the limit switch using the "estop" function

```
22 task estop()
23 {
24     while(true)
25     {
26         if(SensorValue[limit]==1)
27         {
28             stopAllTasks();
29         }
30     }
31 }
32 task main() //Program beg
33 {
34     startTask(estop);
```