

Written Directions for EV3 Wait Block

Description:

The wait block in EV3 programming is a very powerful tool because most robot motion programming can be expressed in the following pattern:

1. Start an Action (Turn motors on, play sound, . . .)
2. Wait for some condition (Touch, Light, Distance, . . .)
3. Stop the Action from Step 1

In this exercise we will use the Wait Block in EV3 to perform a 'Touch Stop'. We want the robot to:

1. Drive forward with motors B and C at 50 power.
2. Keep driving until the touch sensor is pressed.
3. Stop the motors B and C

These lessons are written for a two wheeled robot with the left wheel assigned as C port and the right wheel assigned as B port. The plans for the EV3 educator robot can be found at http://robotsquare.com/wp-content/uploads/2013/10/45544_educator.pdf . This design would work with these directions.

Make sure the following Sensors are plugged into the robot:

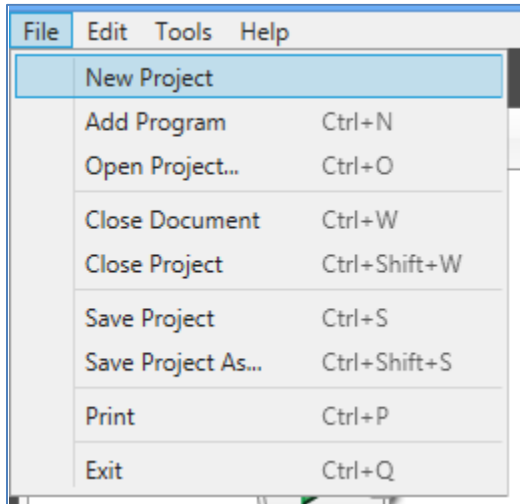
- a. Touch Sensor on Port 1
- b. Light Sensor on Port 3
- c. Sonar Sensor on Port 4

Process:

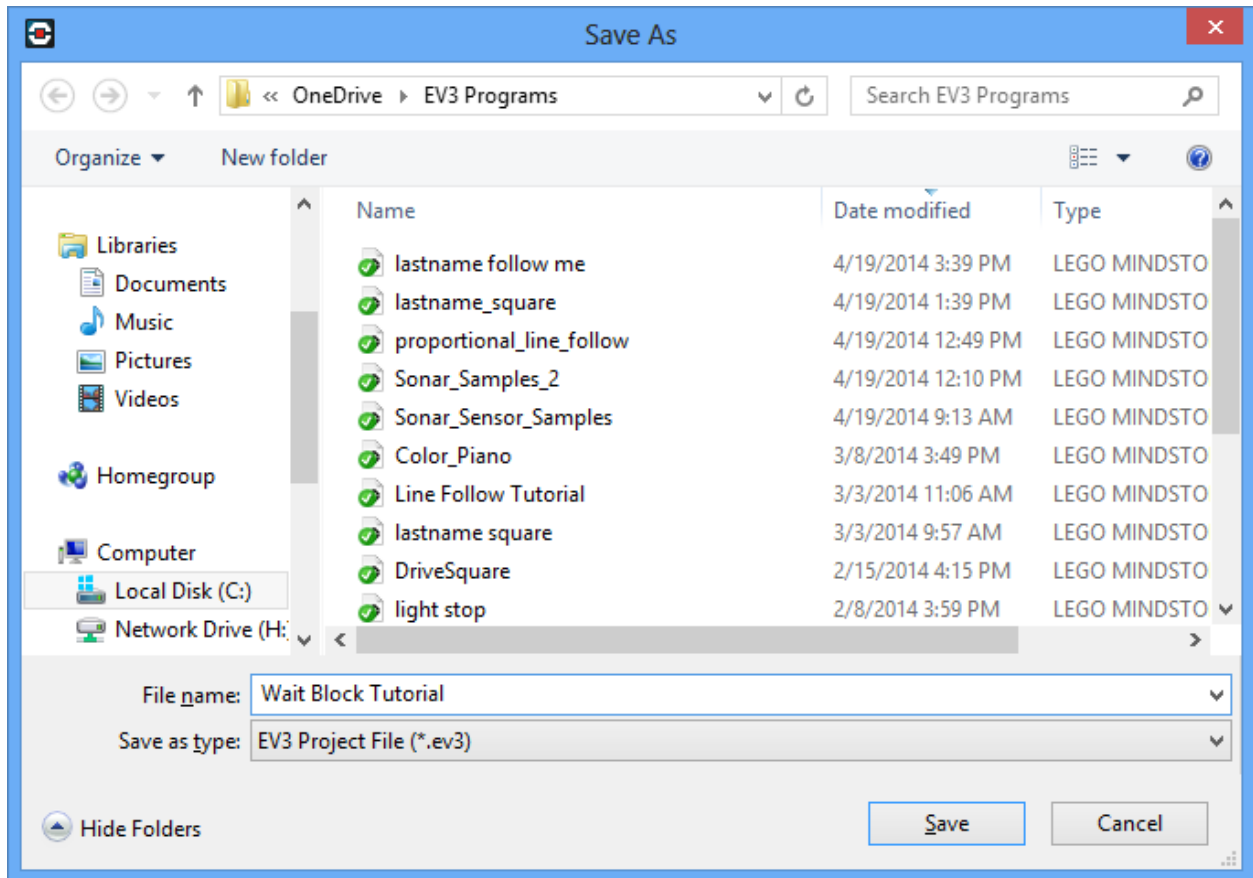
1. Start the EV3 software. (Double click the EV3 icon)



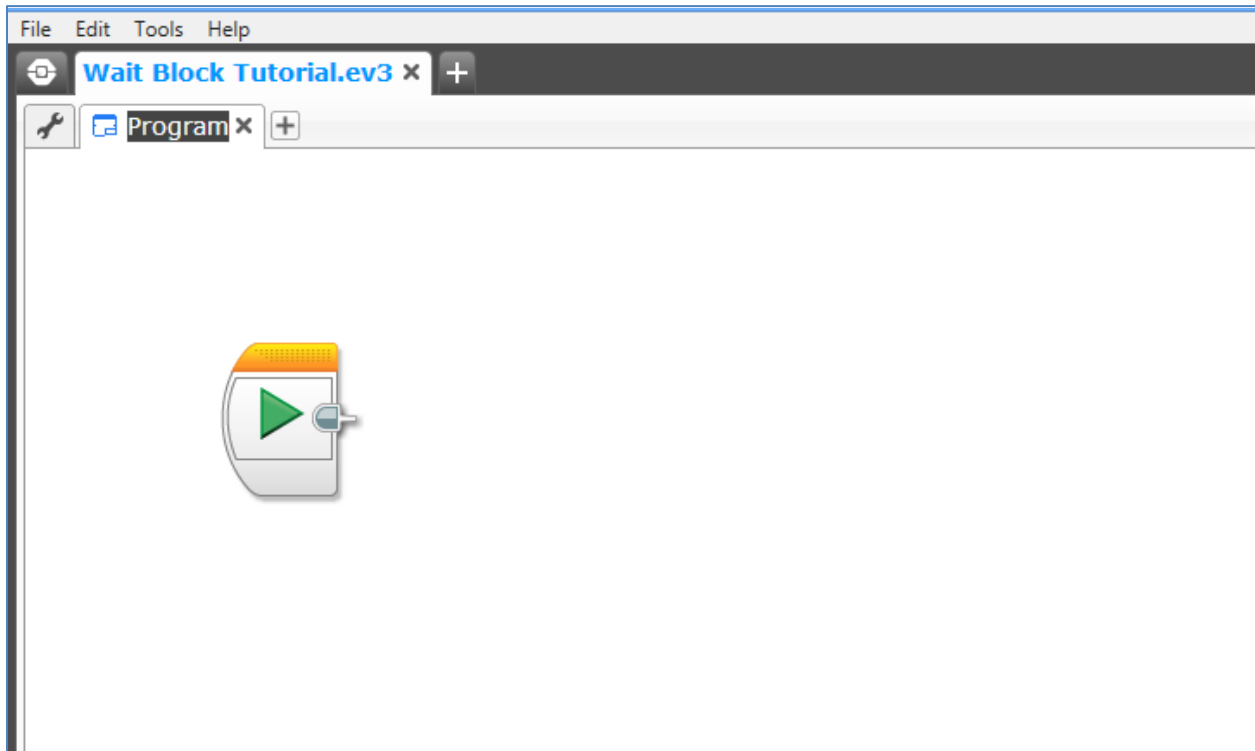
2. Select "File-New Project"



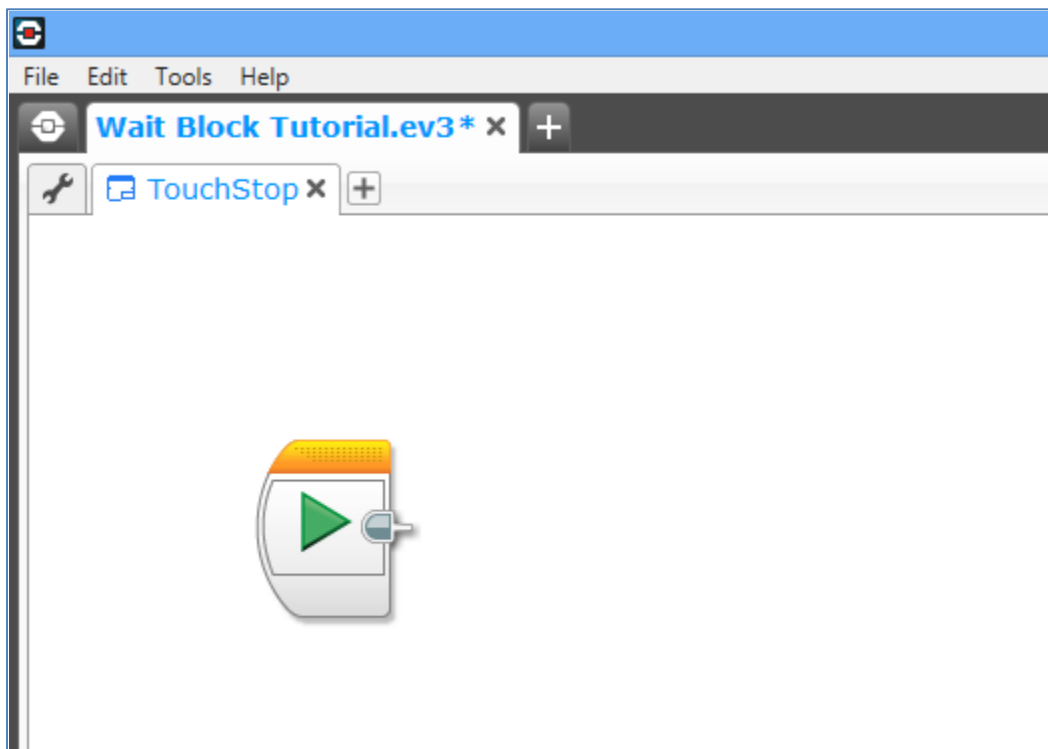
3. Save the project as “Wait Block Tutorial”



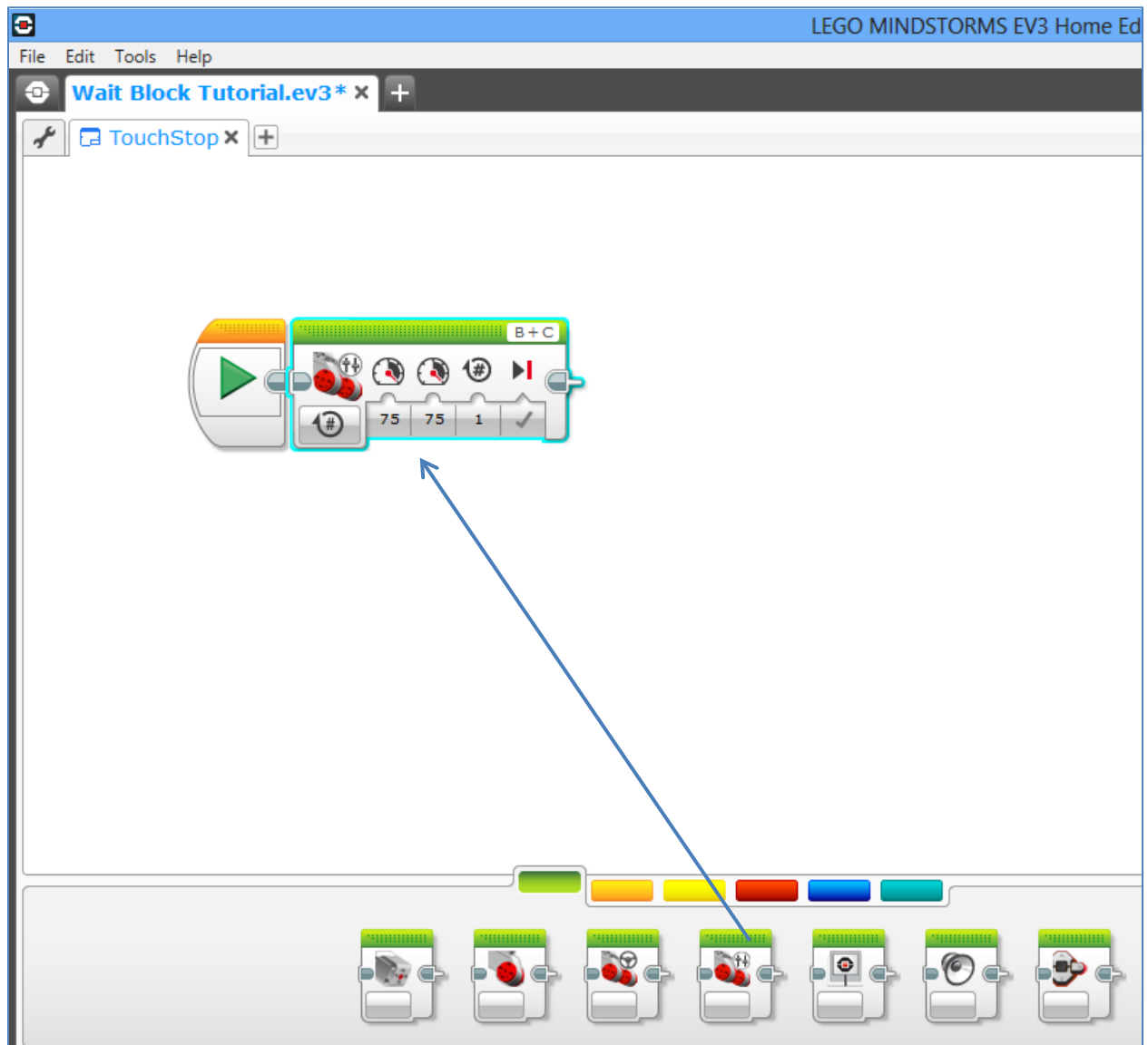
4. Double click on the tab that reads "Program"



5. Change the word 'Program' to 'TouchStop'

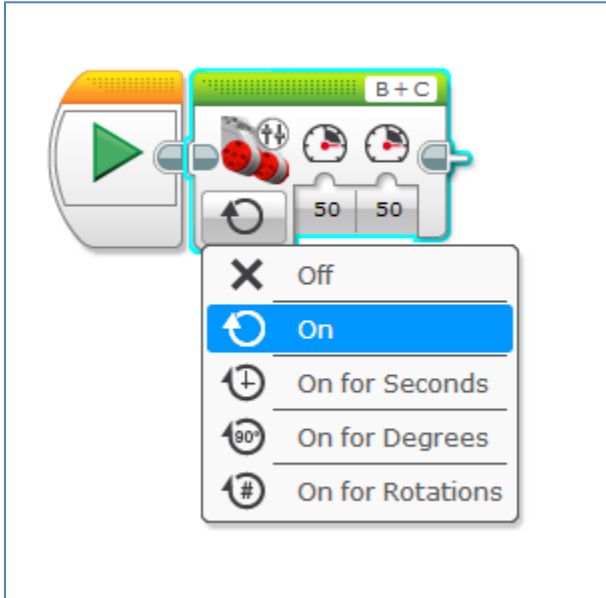


6. We want motors B and C to turn on at 50 power. Place a Tank Drive block in the programming area.

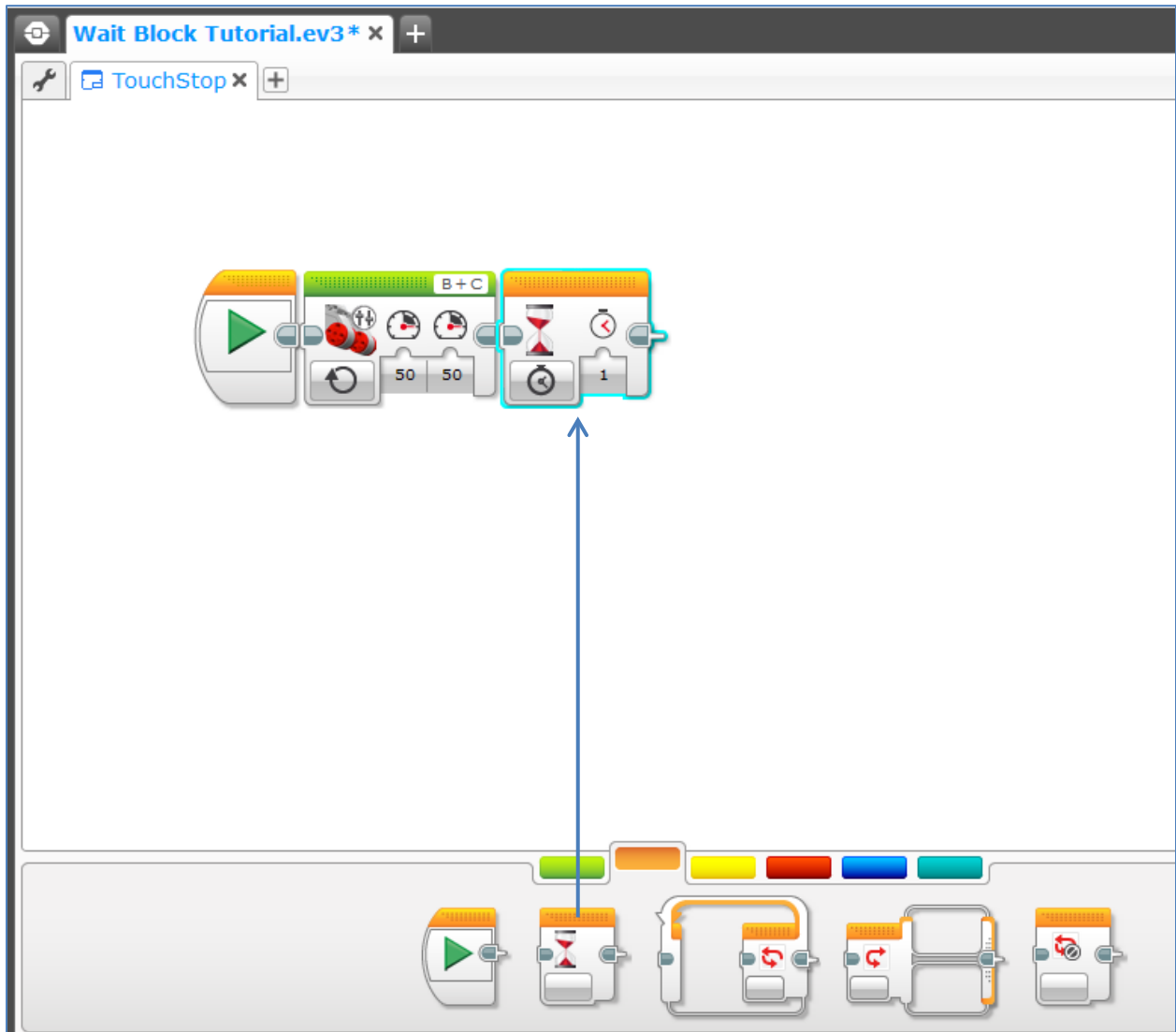


7. Change the parameters to:

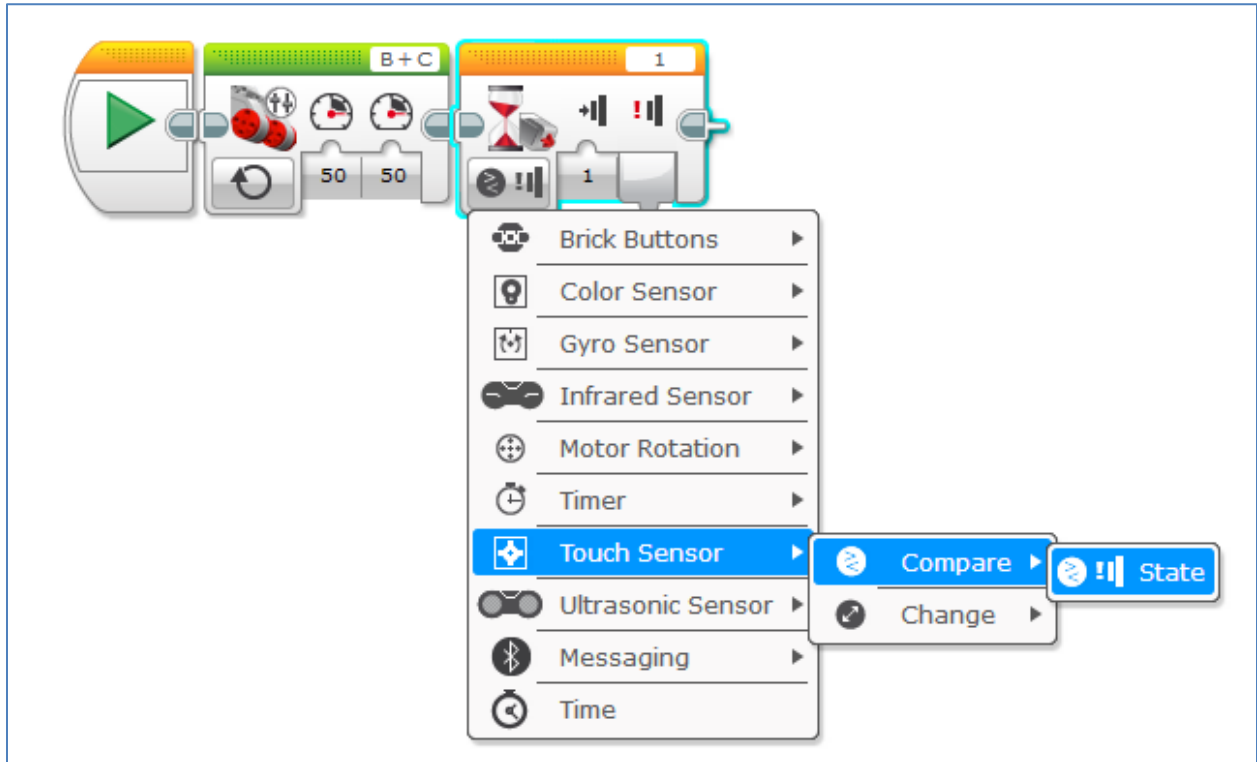
- a. Motors: On
- b. C Power: 50
- c. B Power: 50



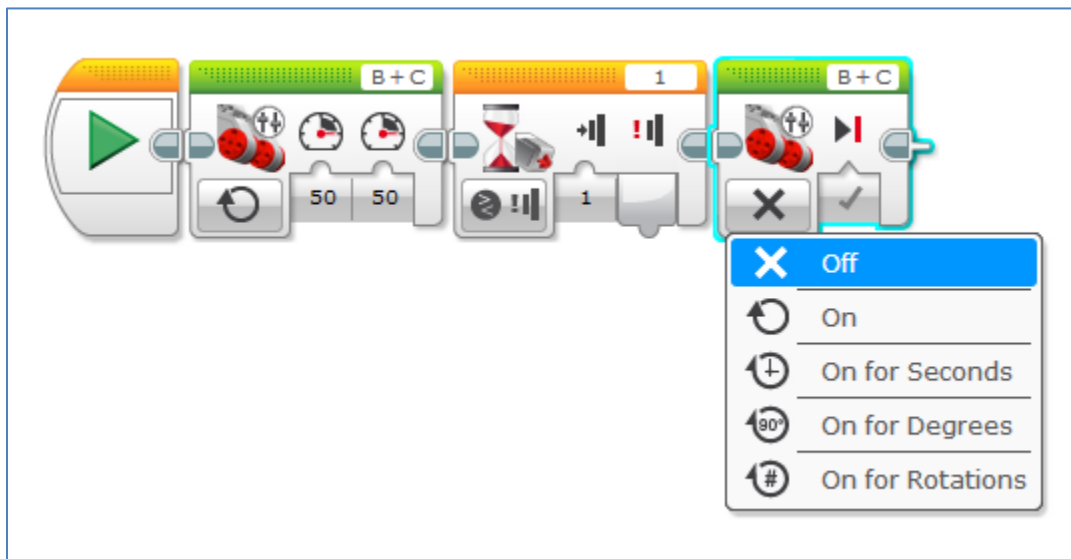
8. Click on the Orange Tab and place a wait block on the program thread.



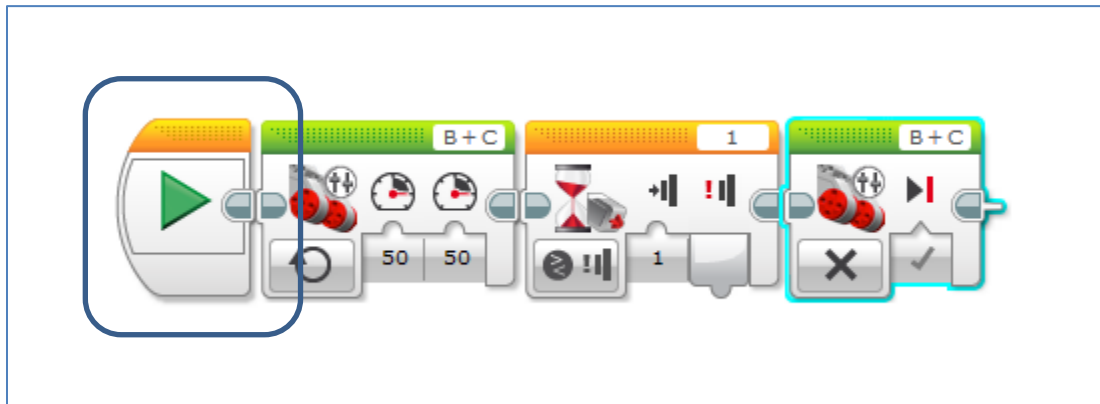
9. Change the Wait block parameters to:
- a. Sensor: Touch
 - b. Event: Pressed



10. Now place a Tank Drive motor block at the end of the thread and set the motors to off.



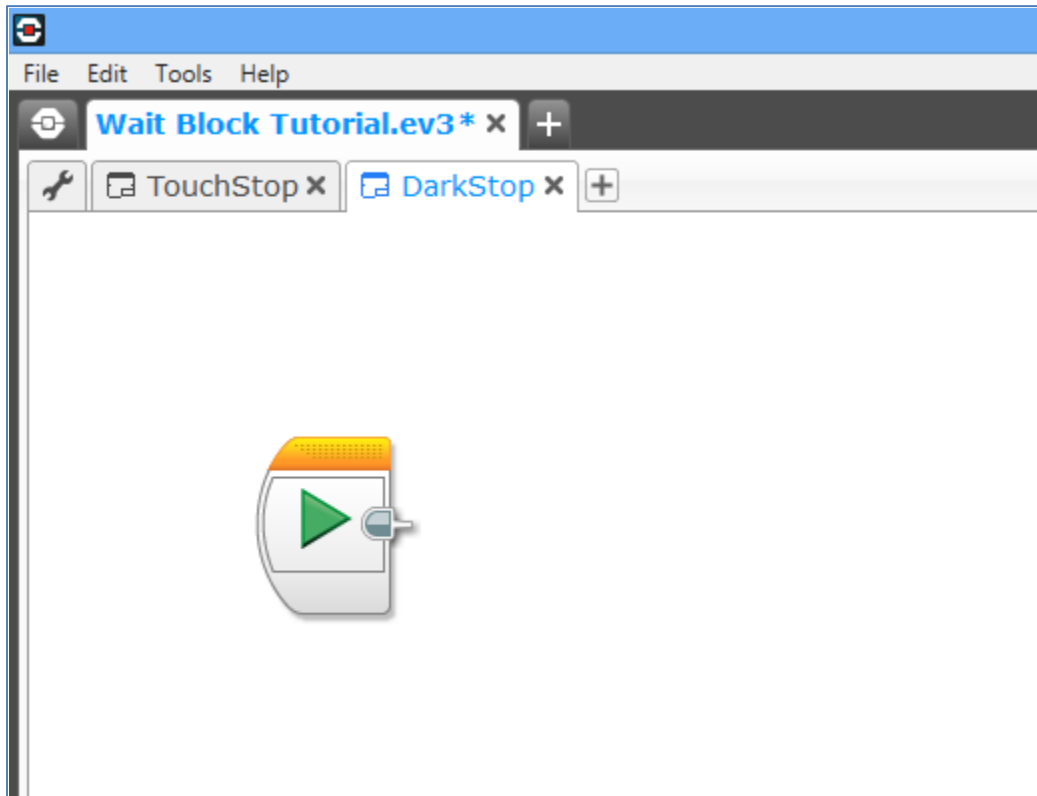
11. Plug in your robot and click the Green Triangle to download and run the program.



12. We have created a 'TouchStop' program. We will now create a 'DarkStop' program. Click the + sign near the program tabs to start a new program file.

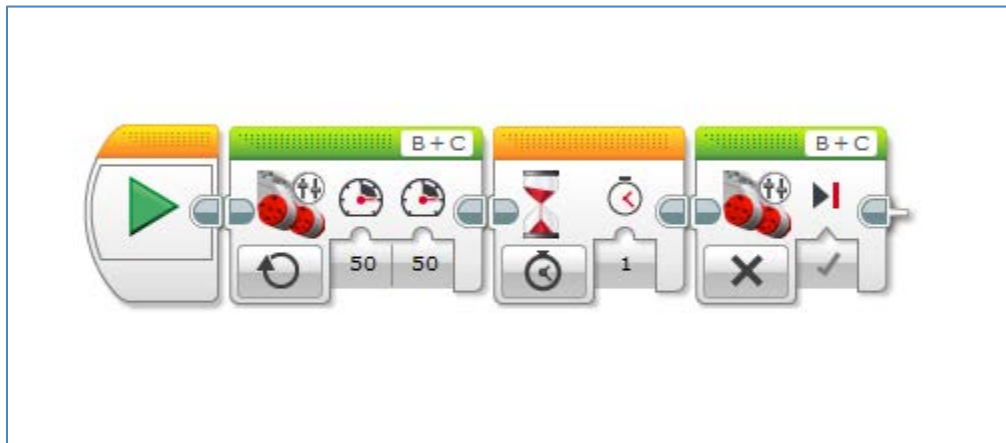


13. Change the name to 'DarkStop'

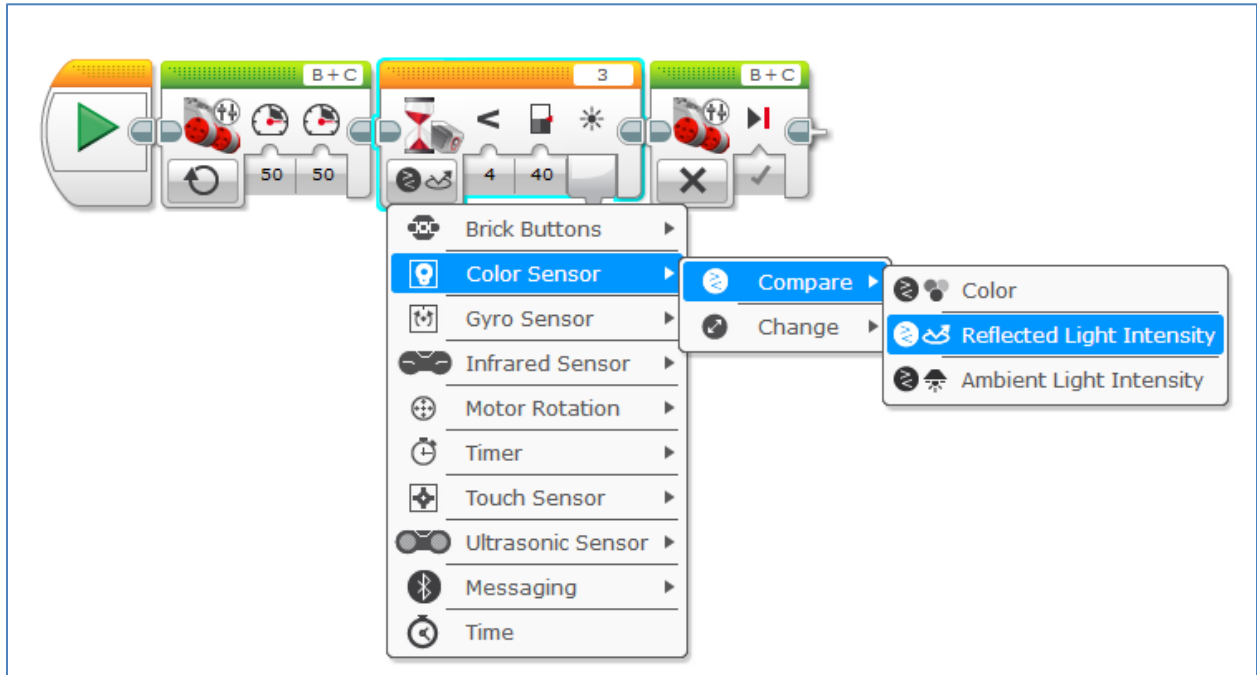


14. We will now build up the same pattern as the Touch stop. Place these three blocks in the programming area:

- a. Tank Drive B and C on to 50 Power
- b. Wait Block
- c. Tank Drive B and C to stop.



15. We will now change the Wait Block from time to Light Sensor.
 - a. Select Sensor Type to Compare->Reflected Light Intensity
 - b. Set the compare to <
 - c. Set the value to 40



16. Click the Green Arrow to download and test your program. The robot should stop at a dark surface.

17. On your own, try these challenges:

- a. Create a new sub program called "SonarStop" and have the robot stop when within 20 centimeters of an object using the Sonar.
- b. Using a loop, create a program that stops, and then backs up and turns when the robot encounters an object by touch, light, or sonar.