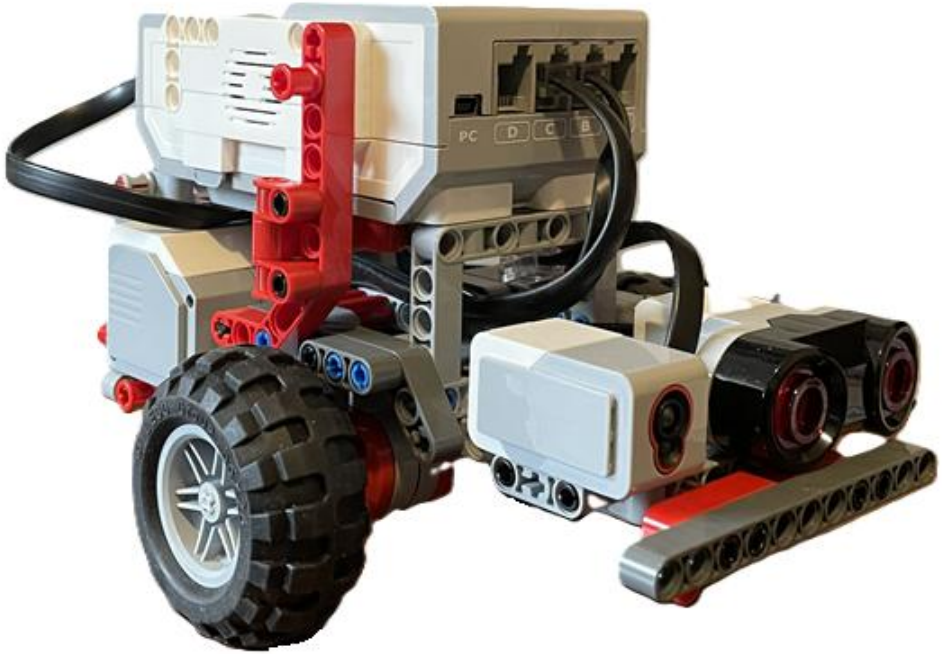
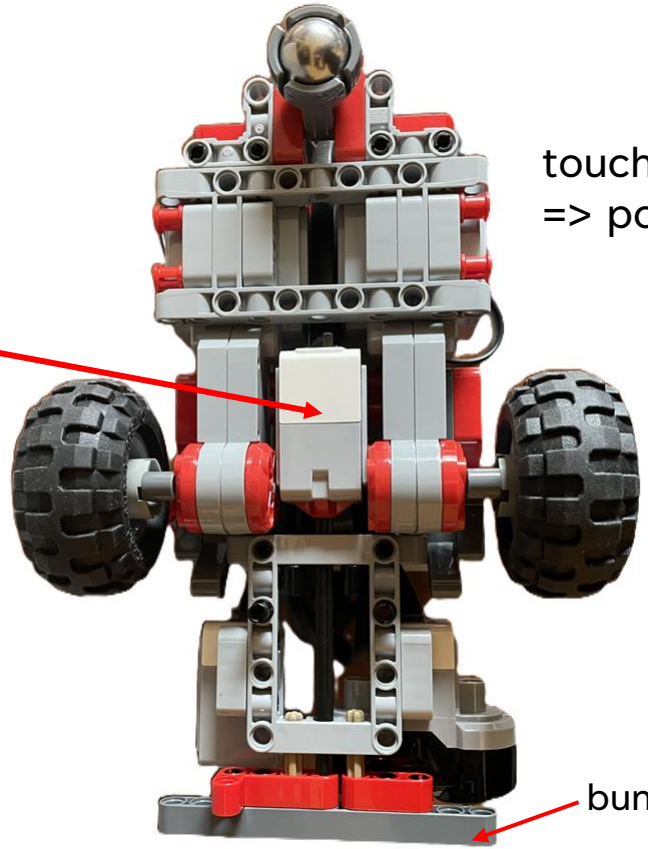
TOUCH SENSOR



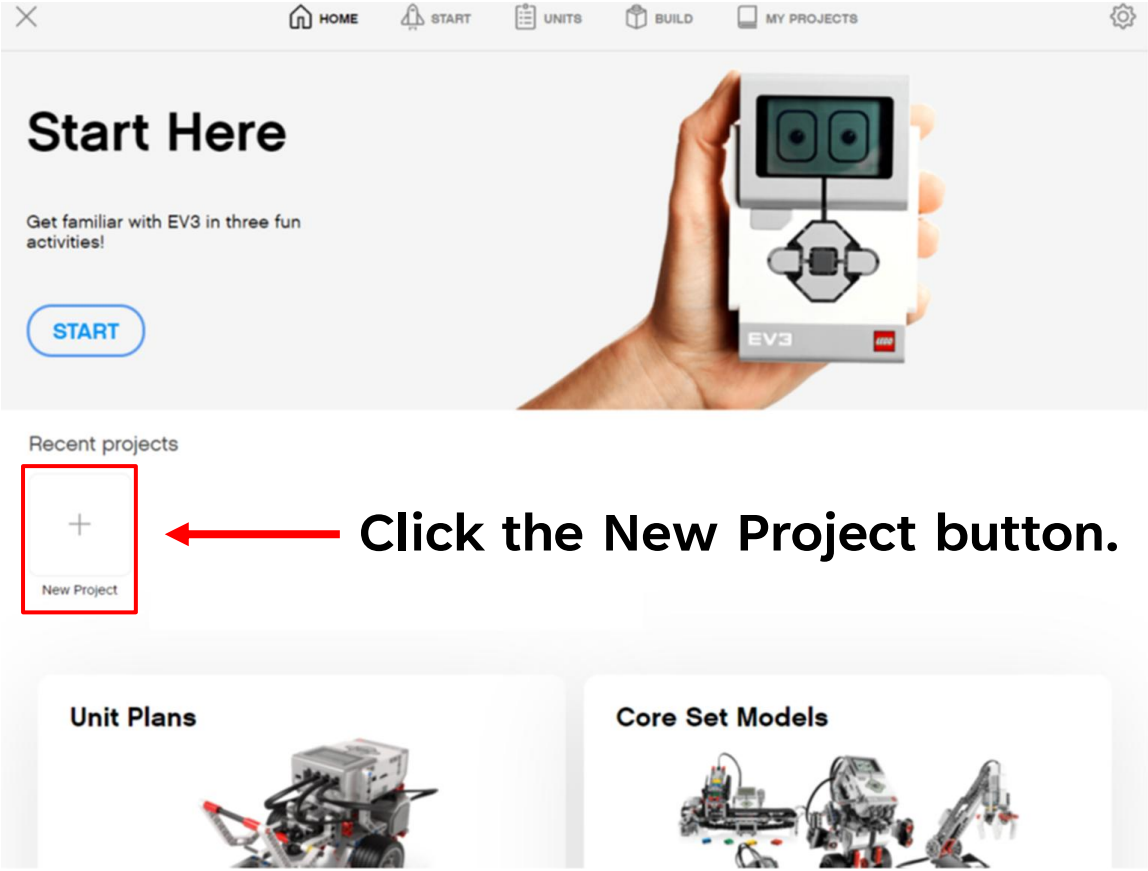
TOUCH SENSOR

This is the LEGO EV3 touch sensor.



The touch sensor is essentially a push button switch.
Pushed it is on, released it is off.

TOUCH SENSOR



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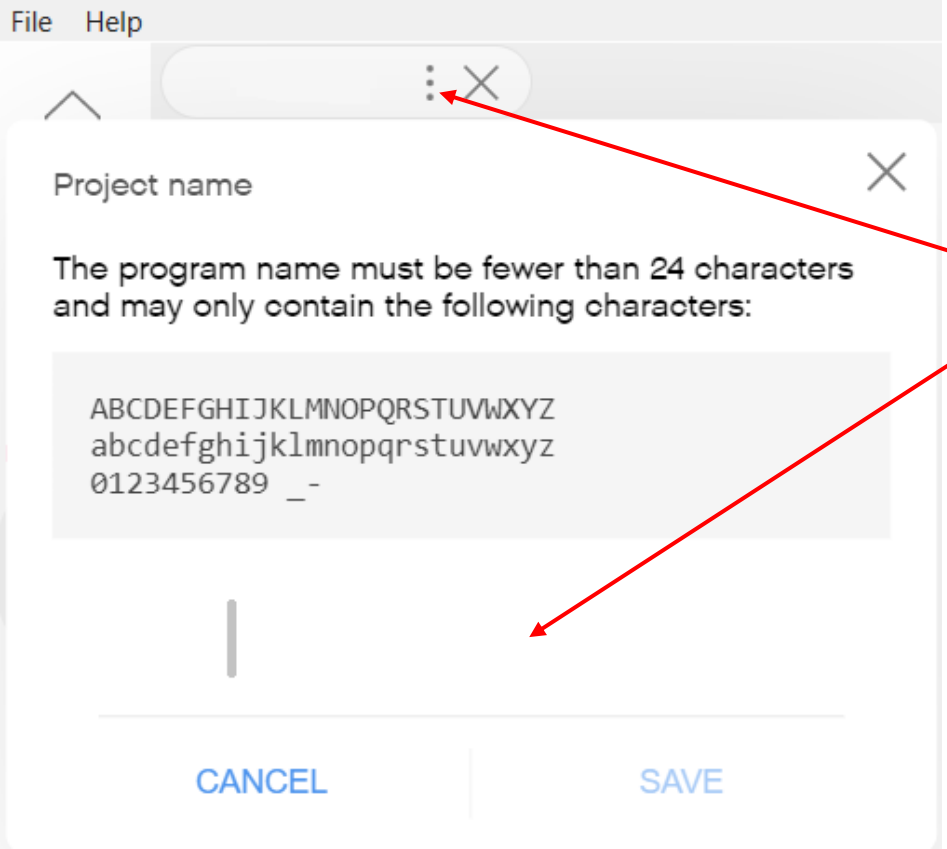
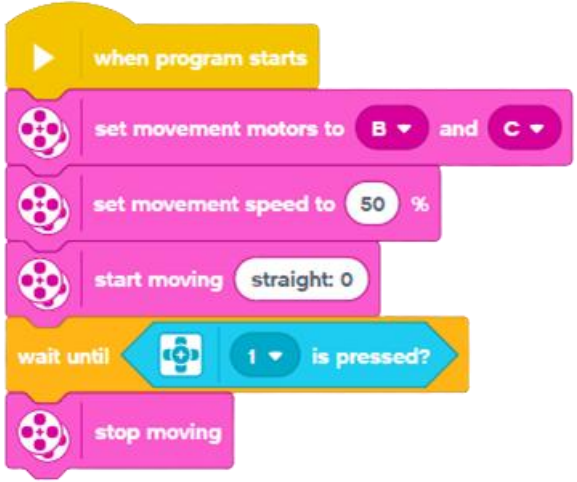
TOUCH SENSOR



Name your program.
Click the three dots.
In the project name window type:
Touch-_____
(your names).

TOUCH SENSOR – GO THERE

Create a code sequence to have the Robocar move toward a large wooden block and use the touch sensor to stop the Robocar when the front bumper is pushed.



Download the program to the EV3.

Run the program from the EV3.

Observe how the Robocar moves.

Ask for a wooden block to use as your target object.

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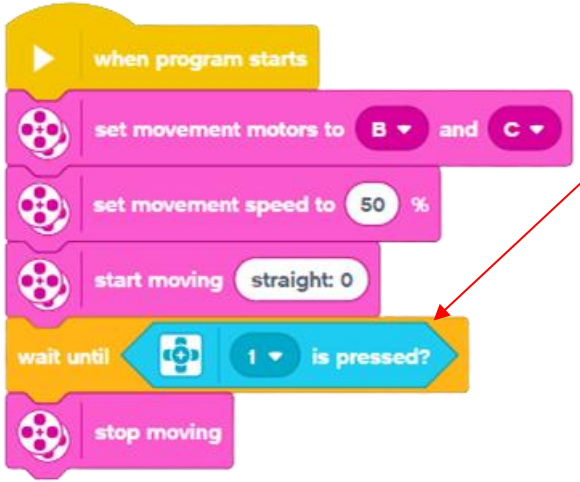
TOUCH SENSOR – CODE EXPLAINED

The “wait until” command is a conditional statement that basically monitors what the touch sensor is doing. The “wait until” code block allows the commands prior to it to perform until the touch sensor is pressed. Only then will the coding sequence continue.

This means move – the duration is not defined. The duration is unlimited: it could be any value above zero to infinity.



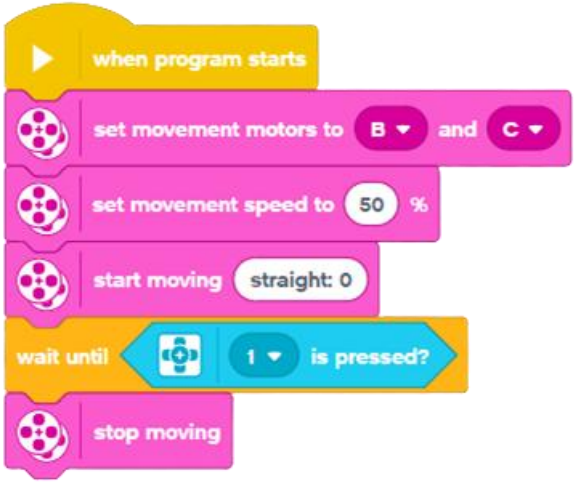
The “wait until” condition is equivalent to saying “always check to see if the touch sensor has been pressed, if true then run the next command”.

TOUCH SENSOR – CODE EXPLAINED

"Wait until" is a conditional statement. Without thinking about it you use it all the time.

I want to play my game. I must wait until it is loaded. Then I can play.

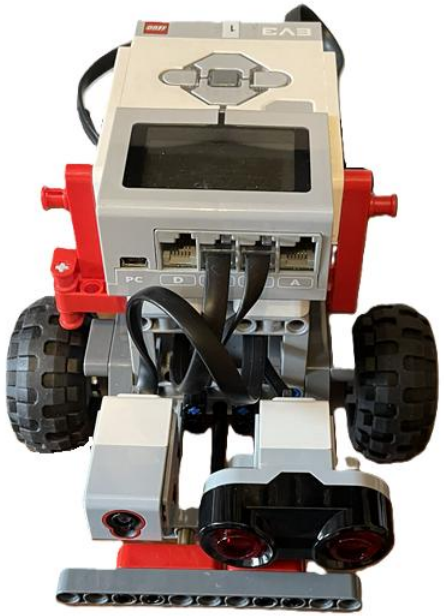
I want a slice of toast. I must wait until it is cooked. Then I can eat it.



In this code sequence the Robocar will move and wait until the touch sensor is pressed. Only when the touch sensor is pressed will the motors will stop moving.

TOUCH SENSOR – TOUCH AND TURN

Create a code sequence to have the Robocar move toward a large wooden block. Use the touch sensor to stop upon contact with the block (when the front bumper is pushed), move backward, and then complete a 180º turn.



Download the program to the EV3.

Run the program from the EV3.

TOUCH SENSOR – TOUCH AND TURN

Think about it, discuss your ideas as a group, and then write down your answers on a sheet of paper.

1) Explain what the conditional statement “wait until” means and what it does.

2) What is the purpose of backing up prior to turning?

Show Mr. Desmond your Touch and Turn coding and the Robocar in action.

Be prepared to explain what is happening with the Robocar and the touch sensor and why.

TOUCH SENSOR – PING-PONG CHALLENGE

Create a code sequence to have the Robocar go back and forth between two wooden blocks repeatedly using input from the touch sensor to determine when each block has been touched and when to begin the turn around sequence.

Have the Robocar touch each block four times.
Keep the wood blocks about 50 cm apart.

Precision of movement is required to keep the Robocar as straight as possible and not veer in different directions after each turn.

Show Mr. Desmond your Ping-Pong coding and the Robocar in action. Be prepared to explain what is happening and why.

TOUCH SENSOR – PING-PONG COUNT CHALLENGE

Modify your code from the Ping-Pong Challenge.

Create a variable called count.

Have the Robocar count each time the touch sensor is pressed.

Include the count as part of the conditional coding as the Robocar “ping-pongs” back and forth between the two wooden blocks.

Have the Robocar continue to move between the two wooden blocks until the count has reached nine.

Show Mr. Desmond your Ping-Pong coding and the Robocar in action. Be prepared to explain what is happening and why.

TOUCH SENSOR – FOUR WALL CHALLENGE

Create the code that will allow the Robocar to navigate around a walled area using the touch sensor bumper to determine when to stop moving and turn.

The Robocar bumper must contact all four walls.

Create a walled area using blocks or other solid objects.

You are expected to demonstrate your success to Mr. Desmond. You will be asked to show both the Robocar in action and your code.

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