



EV3 Default Ports (Input/Output)

We used to connect the motors & sensors to the default ports to reduce bugs occur in programs.

Output		Input	
A	Medium Motor	1	Touch Sensor
B	Large Motor	2	Gyro Sensor
C	(when control 2 large motor at the same time)	3	Colour Sensor
D	Large Motor	4	Ultrasonic Sensor

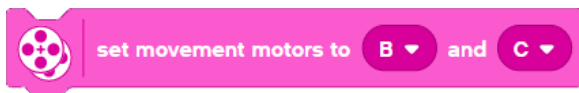
Start Program

MUST ADD at least ONE “Event Program” at the beginning (as head) to activate the programs

When Program Starts	OR	Touch Sensor (When Pressed)
		

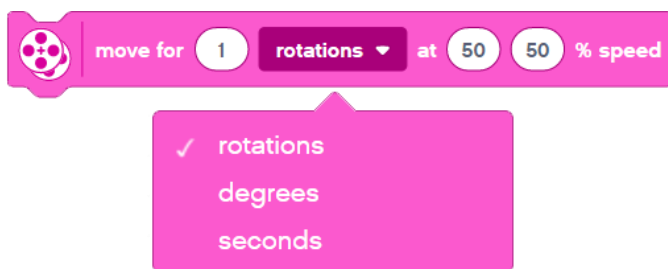
Set Movement to Output Port (Control 2 motors at the same time)

MUST ADD at least ONE set of the following program at the beginning when controls motors



Moving Directions (Measure Unit & Speed)

Better use this program to control 2 motors movement.



Measure Unit

You may choose to run the motor at Rotations/Degrees/Seconds.

We used to apply “Degrees” to Car movements, while apply “Seconds” to Robot Arm movements.

Speed

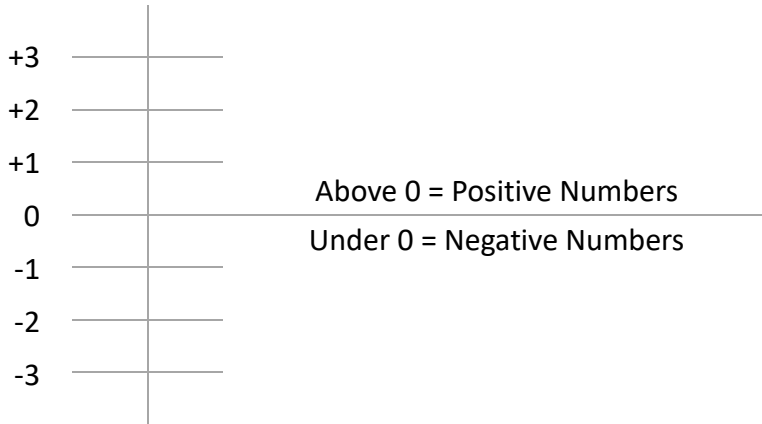
There 2 places for you to input speed

The left speed = output port set on left-side in the program (not the real robot)

The right speed = output port set on right-side in the program (not the real robot)

We used to put “Positive / Negative Numbers” to “Speed” to change the motors’ moving direction (Forwards / Backwards)

Positive / Negative Numbers



Positive Numbers x Positive Numbers = Positive Numbers (50 x 1 = 50)

Positive Numbers x Negative Numbers = Negative Numbers (50 x -1 = -50)

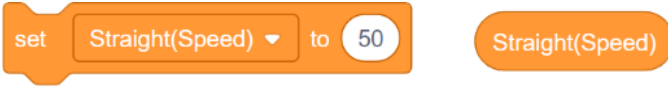
Negative Numbers x Negative Numbers = Positive Numbers (-50 x -1 = -50)

So, we should always use the following method to turn the positive numbers to negative numbers for better cross check: (50 x -1 = -50)

Moving Directions (More Movement)

Test the following programs ONE by ONE to examine the car movement (Pls put tick to record the result)		↑	↓	↶	↷
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

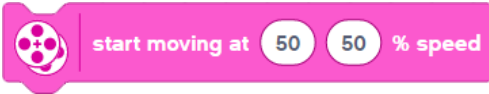
Variables



Sensors

When apply Sensors to robot movement, we should not set any “fixed distance” to the motor (e.g. cm/in/rotations/degrees/seconds).

Please let the motor keep turning, until the sensor’s data reaching the condition you set, then run the next command (e.g. stop the motor).

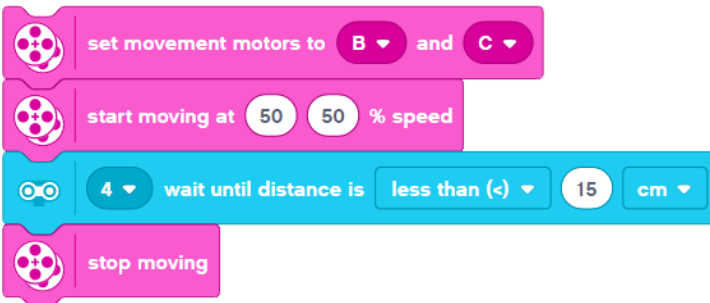


Ultrasonic Sensor

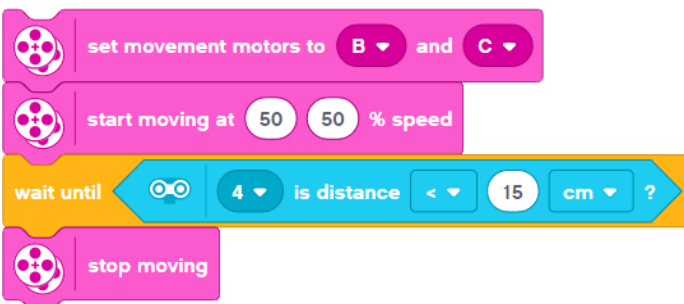
It can detect the distance from 5cm to 255cm.

It will be more effective if you set it right straight to the direction (Front, Side, Up down...) which needs to detect the distance/objects.

Example: Stop when getting Closer to Objects



OR



Colour Sensor

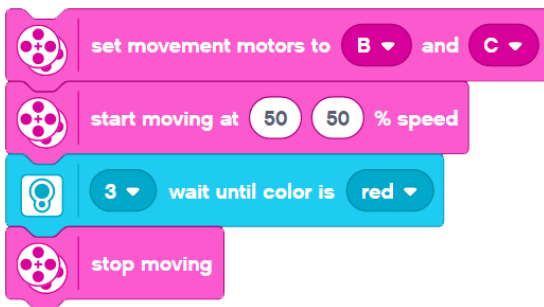
We used to detect colours in 2 modes:

1. Colour mode (LEGO Colours): No Color, Black, Blue, Green, Yellow, Red, White, Brown
2. Reflected Light: detect the reflected light intensity 0-100% (Difficult)

Pls make sure you set the sensor as following:

- a \ face straight down to the floor
- b \ Keep a distance of 1cm from the ground

Example: Stop when detected Red Color



or

