



Learn to Program

Using

EV3 Classroom

A guide through the basics of creating your first
program.

by Acadia Robotics



robots.acadiau.ca

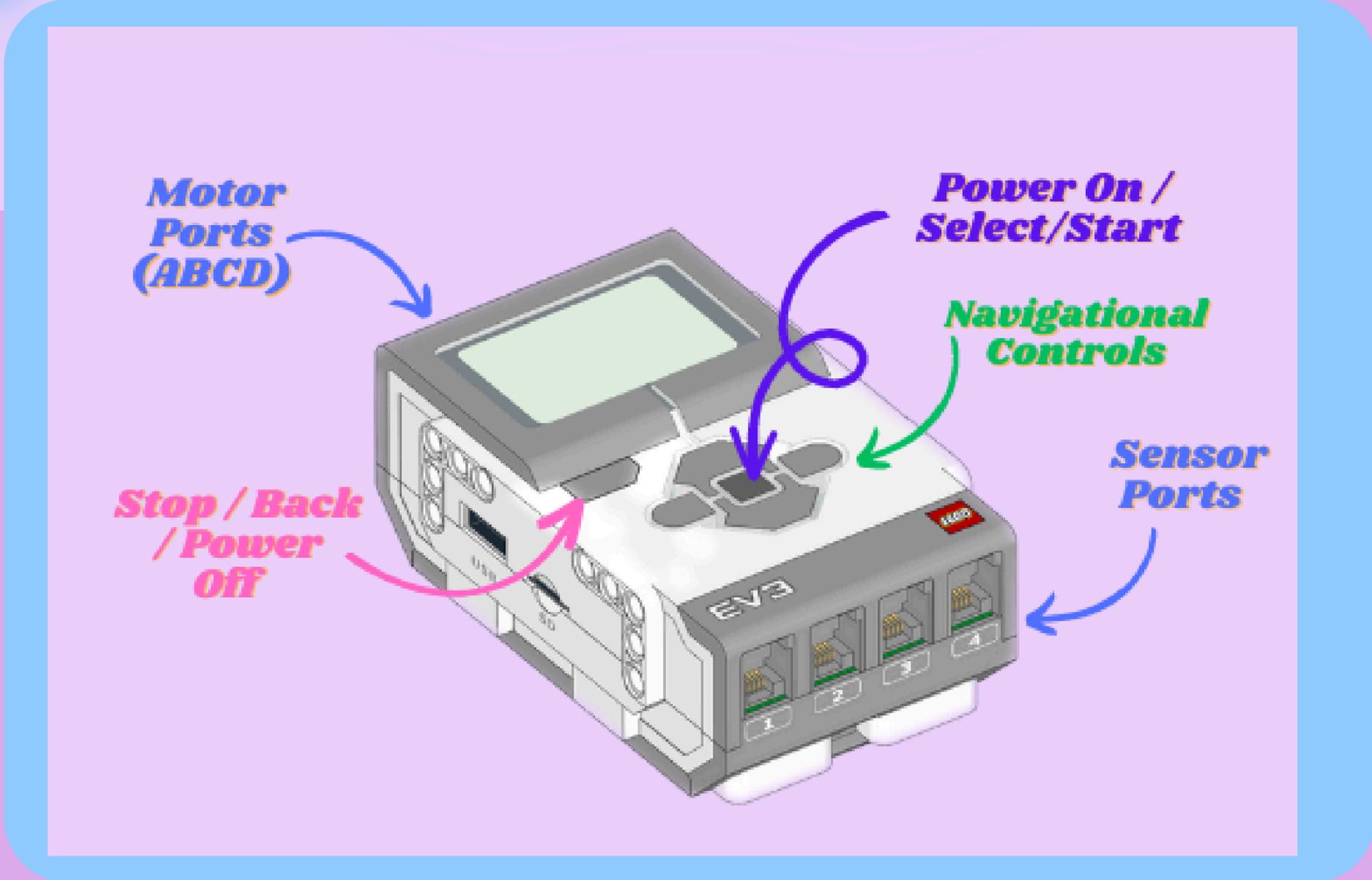


ROBOT BASICS

EV3

This is the Brick - the brain of the robot!

Downloaded programs will be stored on the Brick, and can be selected, started, and stopped using the controls on the Brick.



Motors power the wheels, arms, and any other attachment you design!

Motors are the muscles of the Robot!

MOTORS



MEDIUM

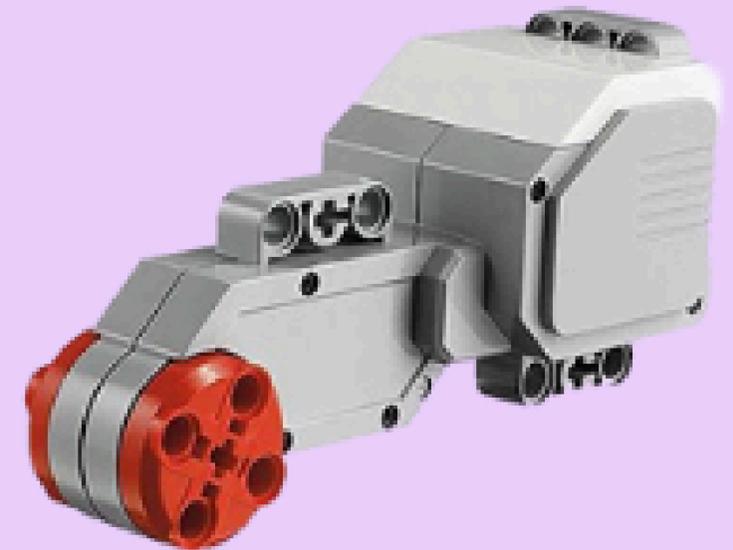


Use these to move robot attachments, e.g., arm

LARGE



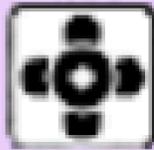
Have strong power and torque. Use to move the robot, or for moving attachments that need a little extra power!



Motors plug into the Brick's ABCD ports!

Sensors detect contact,
distance, colour, etc.

SENSORS



TOUCH

Detects physical contact with objects.



ULTRASONIC

Measures distance from objects using ultrasonic sound waves.



COLOUR

Detects colour by measuring intensity of reflected light. The lighter the colour, the higher the number.

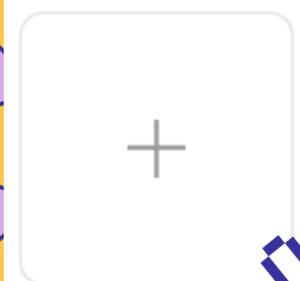
These symbols appear on EV3 Classroom to represent the sensors!

Sensors plug into the Brick's 1234 ports!

Robot actions can be programmed to occur when something is sensed.

1

START A NEW PROJECT



New Project

2

Rename your program so that it is easily identifiable when it is time to run it on the robot.

3

Connect your robot via Bluetooth or by using the USB download cable.

4

Programs often start with this block. You can always find it in the yellow 'Events' tab on the left-hand side.

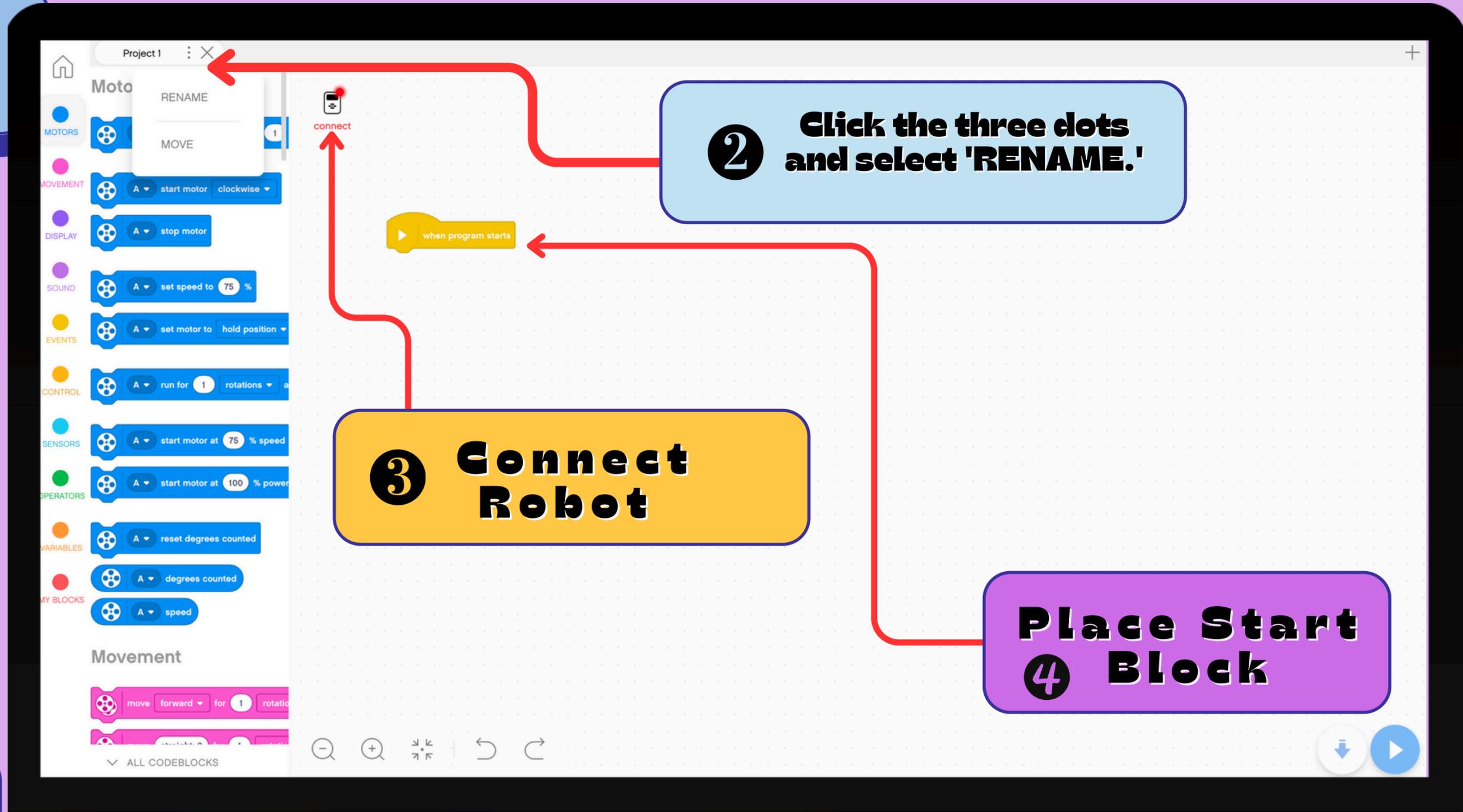
2

Click the three dots and select 'RENAME.'

3

Connect Robot

Place Start Block



**EV3 CLASSROOM
AUTOMATICALLY
SAVES YOUR
WORK**



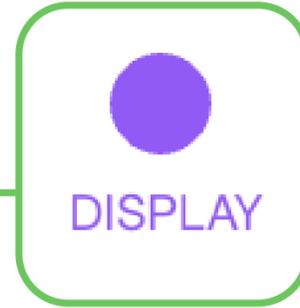
Block Tabs



MOTORS
Blue: Motors (contains single motor actions)



MOVEMENT
Pink: Movement (contains blocks using two motors at a time)



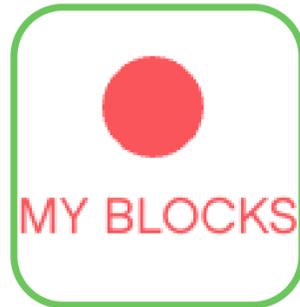
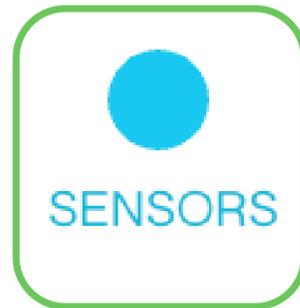
DISPLAY
Dark Purple: Display (contains display blocks for your robot screen)



EVENTS
Yellow: Events (starting blocks)



CONTROL
Orange: Control (contains loops, wait, and switches)



Let's Try!

**'STOP ON
TOUCH'**



PROGRAM EXAMPLE 1

Drag and Drop

The image shows the Scratch 'Movement' block palette. A red dot on the 'set movement motors to B' block is connected by a dotted line to a red circle labeled '1'. A hand cursor is positioned over this red circle. A red dot on the 'set movement motors to A and B' block is connected by a solid blue line to a red circle labeled '2'. The palette includes categories: MOTORS, MOVEMENT, DISPLAY, SOUND, EVENTS, CONTROL, SENSORS, OPERATORS, VARIABLES, and MY BLOCKS. The 'Movement' category is selected, showing various blocks like 'move forward', 'start moving', 'set movement speed', and 'set movement motors'.

2 Select the letters that match the ports your wheels are connected to.

To delete a block, simply click it and press the delete key!

To separate blocks, pull the bottom block away.

Stop on T... X

Movement

connect

when program starts

set movement motors to A and B

start moving right: 30 at 25 % speed

1

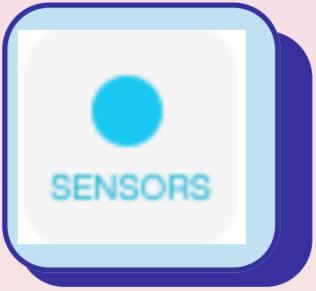
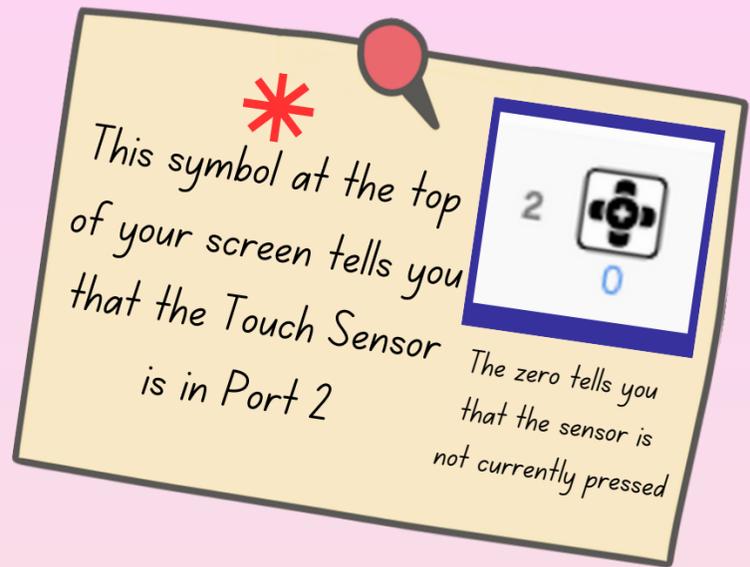
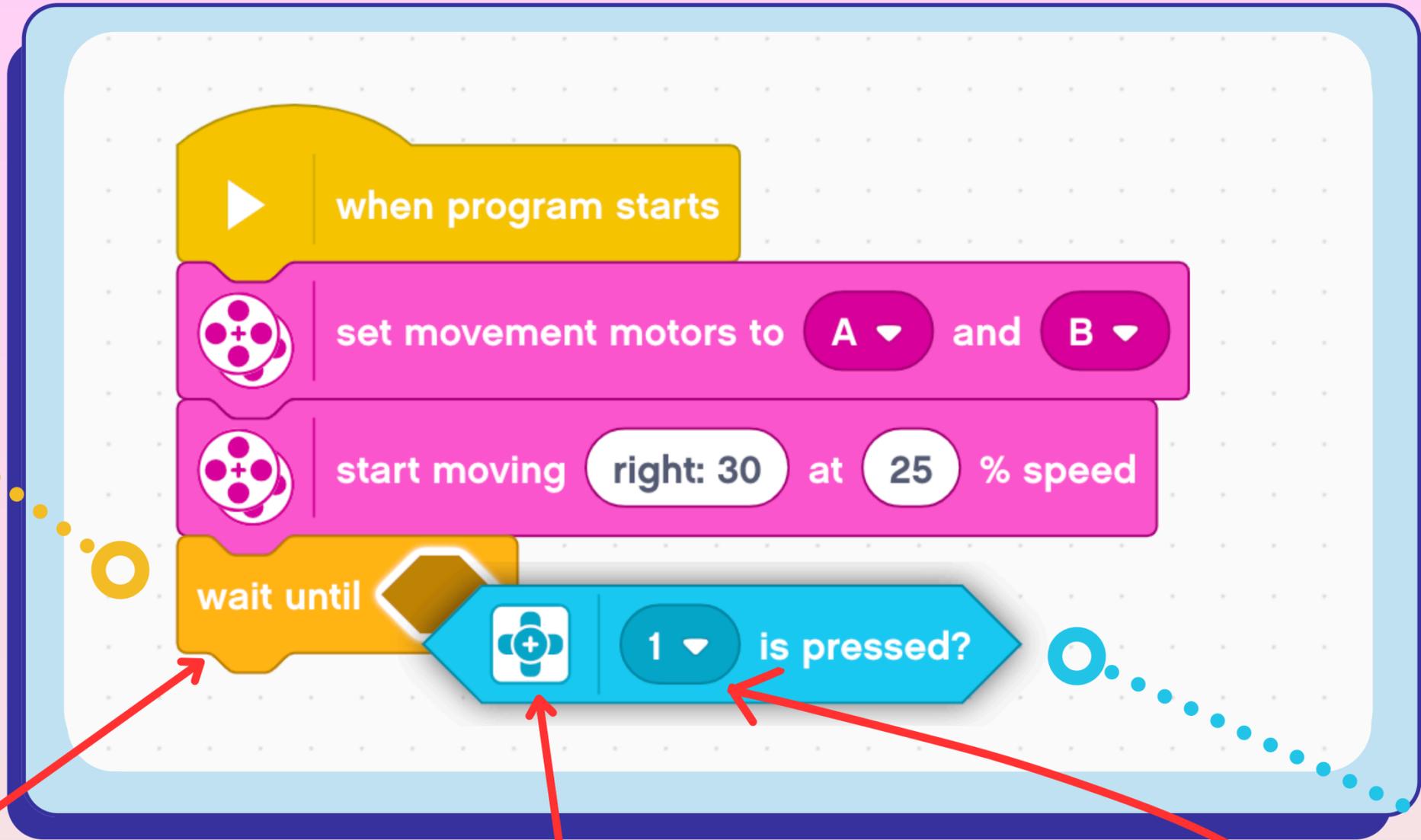
This movement block controls both of your robot's motors at the same time.

when program starts

start moving right: 30 at 50 % speed

2 Change direction by clicking the number and then spinning the dial.

3 50% is quite fast; try changing the speed to 25% by clicking the number and typing it in.



1

Drag and drop this block

This is a **Wait Block**.
The blocks you place beneath it will not run until whatever event you place in the hexagon has occurred

2

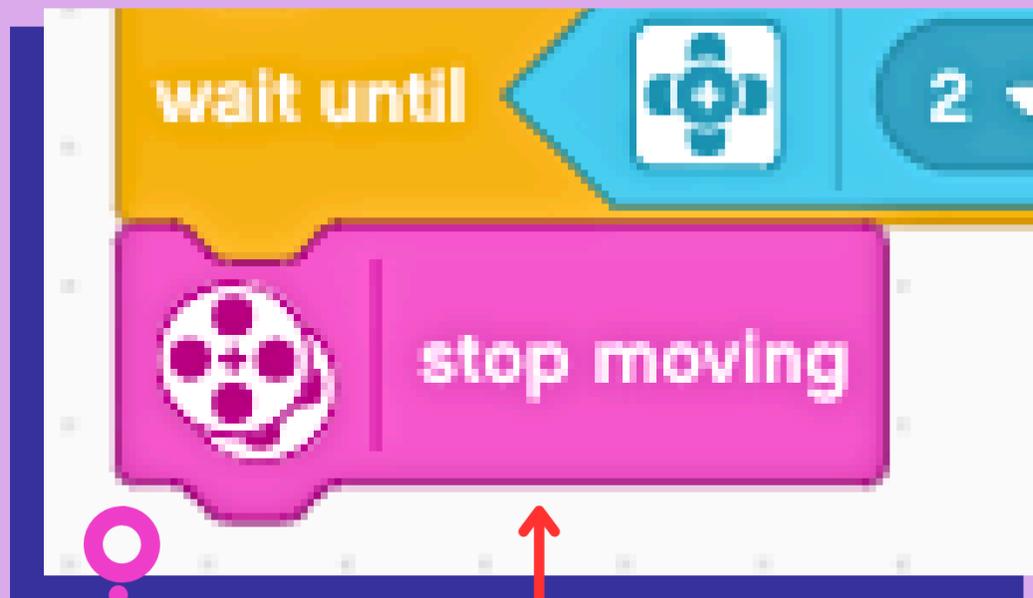
Drag and drop this block into the hexagon

This is a **Sensor Block**.
This is what the robot is waiting for before continuing the program. This particular block is waiting until the touch sensor is pressed.

3

Click the down arrow to select the port that the touch sensor is connected to. *

1



Add this block to tell the robot to stop moving.

2



Add this stop block and select 'and exit program' to tell the robot to stop running the program after all the previous actions have occurred.



Here's what should happen:

When the program is run...

(motors A & B will be used for movement)

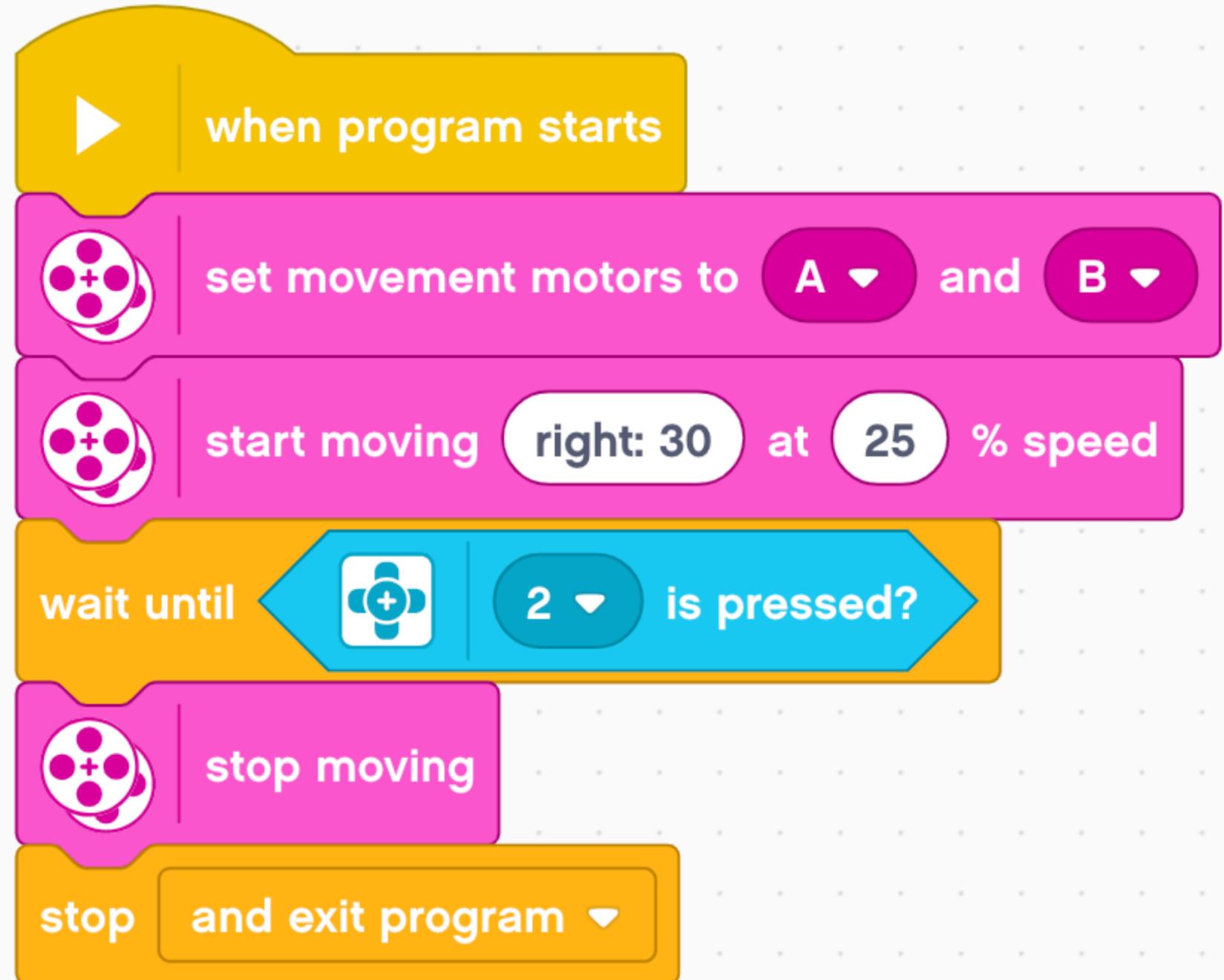
the robot will move in the direction 30°
right...

until the touch sensor is pressed.

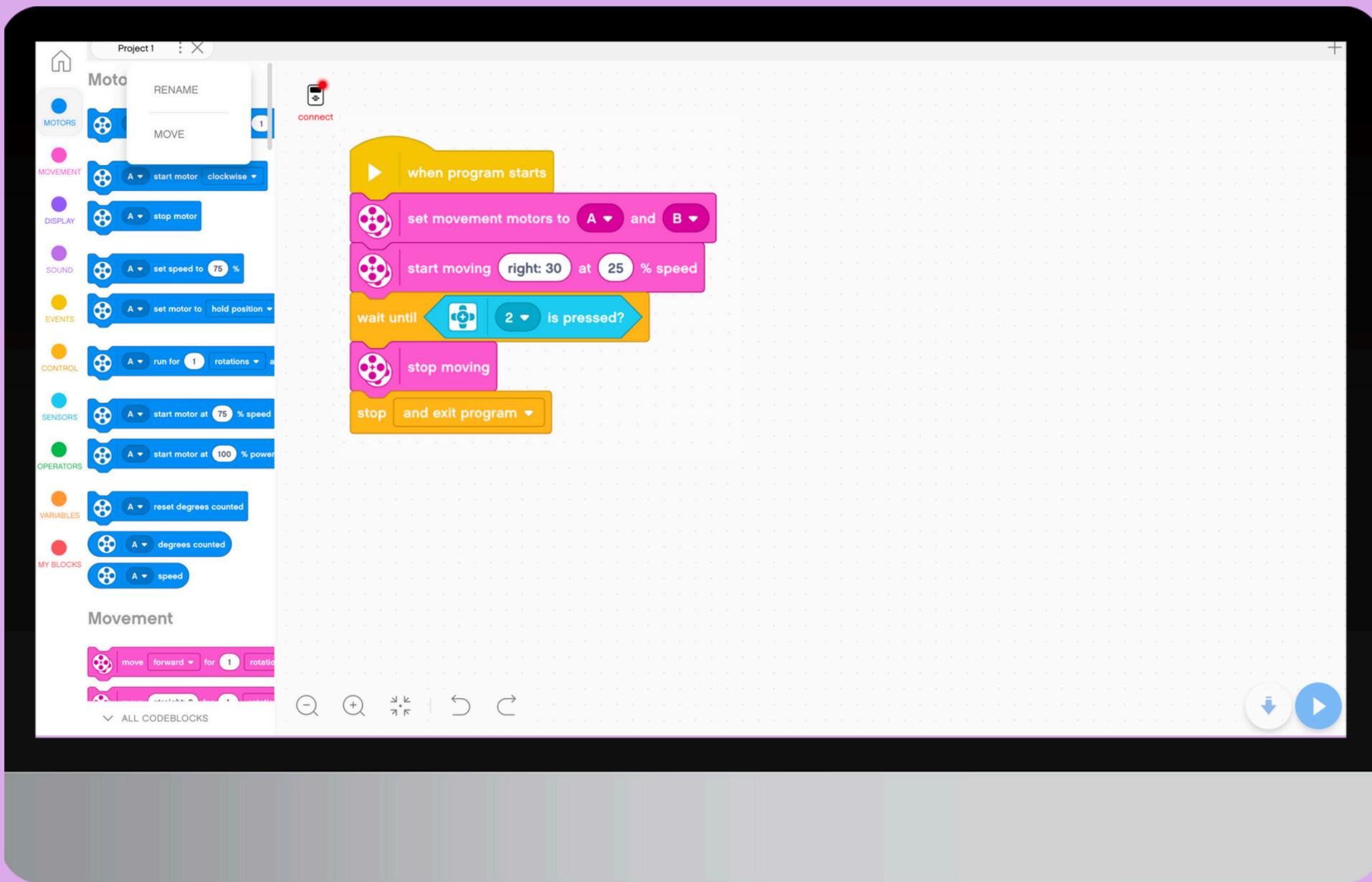
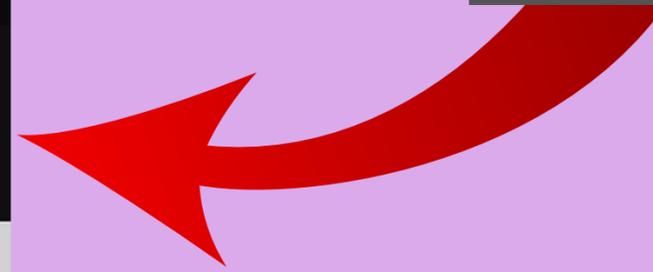
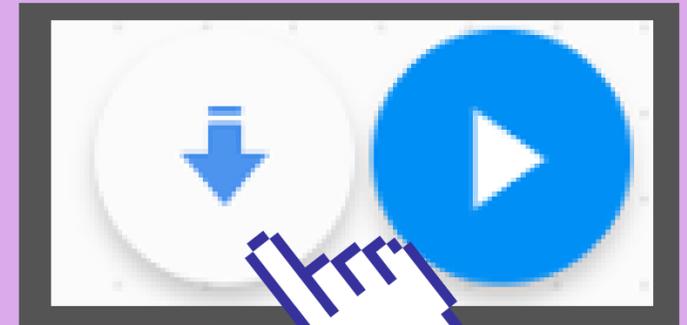
When the touch sensor is pressed, the
robot will stop moving.

Then the program will stop running and exit!

PROGRAM COMPLETE!

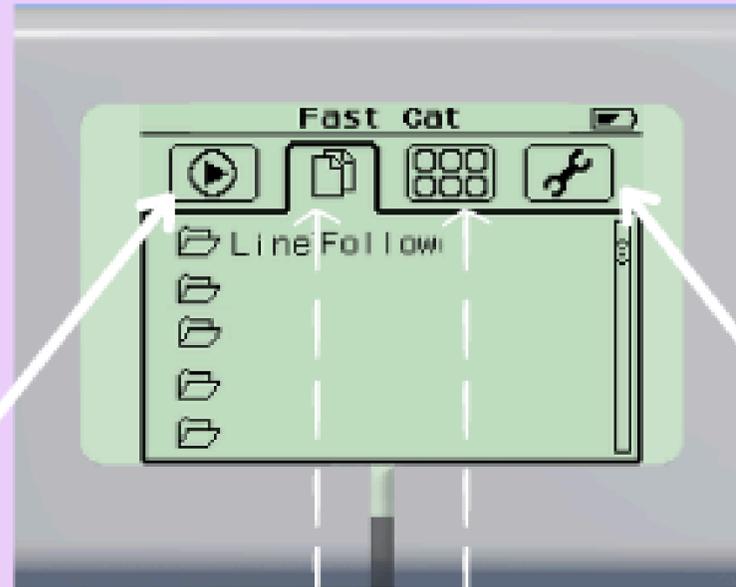


**Download your
program to the robot!**

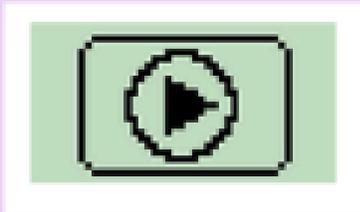


SCREEN

How do I run my program?



Once you have selected your program, hit the centre 'select' button to run it!



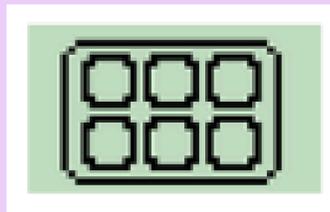
RUN RECENT

Access recently run programs here, with most recently run programs appearing nearest the top.



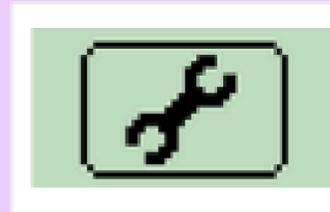
FILE NAVIGATION

Access all files Brick, incl. those onSD card, organized in project folders.



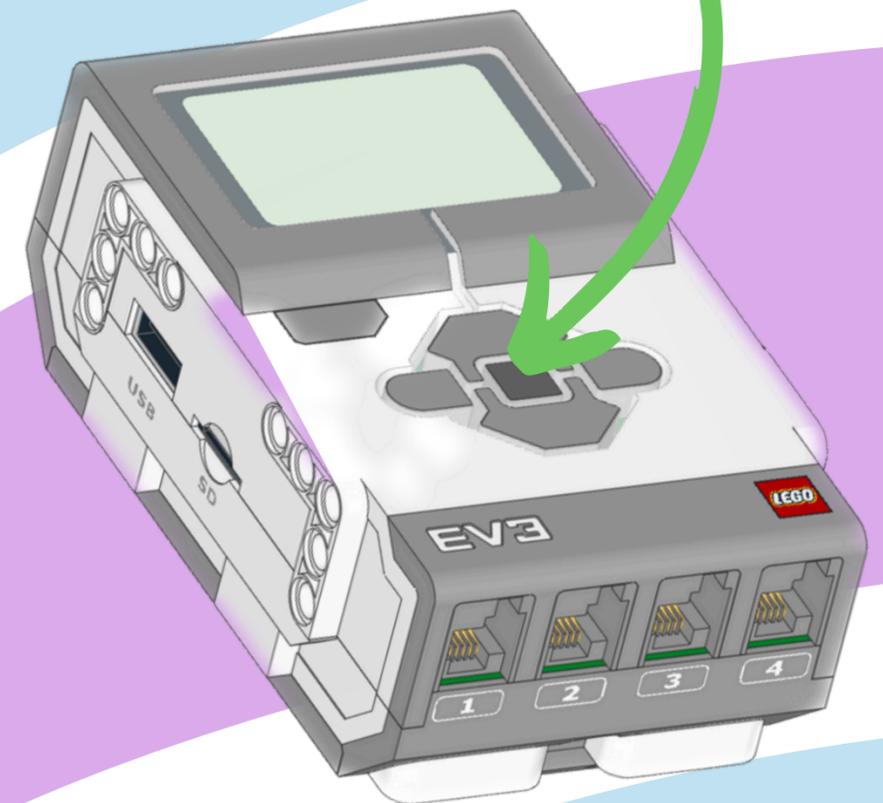
BRICK APPS

Access preinstalled apps: *Port View* (shows sensor readings), *Motor Control*, *IR Control*, and *Brick Program*.



SETTINGS

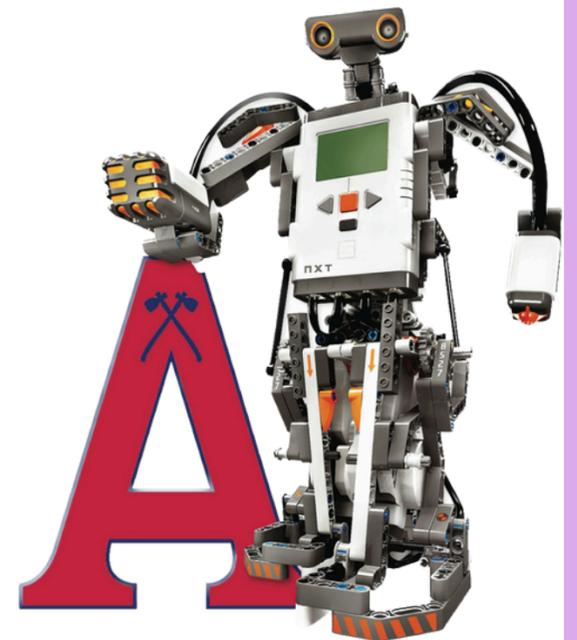
Control Volume, Sleep, Bluetooth, Wi-Fi, and Brick Name.



Try it Now!

Run Program

**'STOP ON
TOUCH'**



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