SPIKE PRIME LESSONS

By the Creators of EV3Lessons

MY BLOCKS

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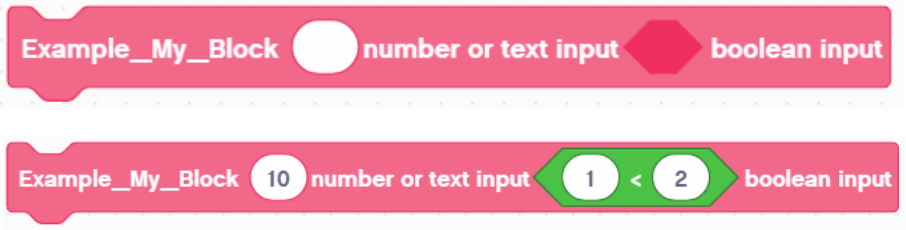
LESSON OBJECTIVES

- Learn how to make custom blocks (My Blocks)
- Learn why a My Block is useful
- Learn to construct a My Block with Inputs and Outputs (Parameters)

WHAT IS A MY BLOCK?

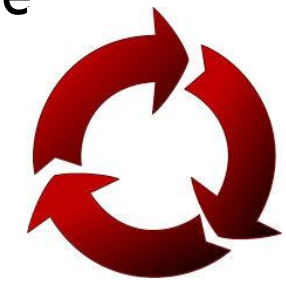
- A My Block is a combination of one or more blocks that you create that can be grouped into a single block
- My Blocks are basically your own custom blocks
- Once a My Block is created, you can use it in multiple programs
- Just like any other block in EV3, My Blocks can have both inputs and outputs (parameters)



The blocks above are an example of a My Block with different inputs

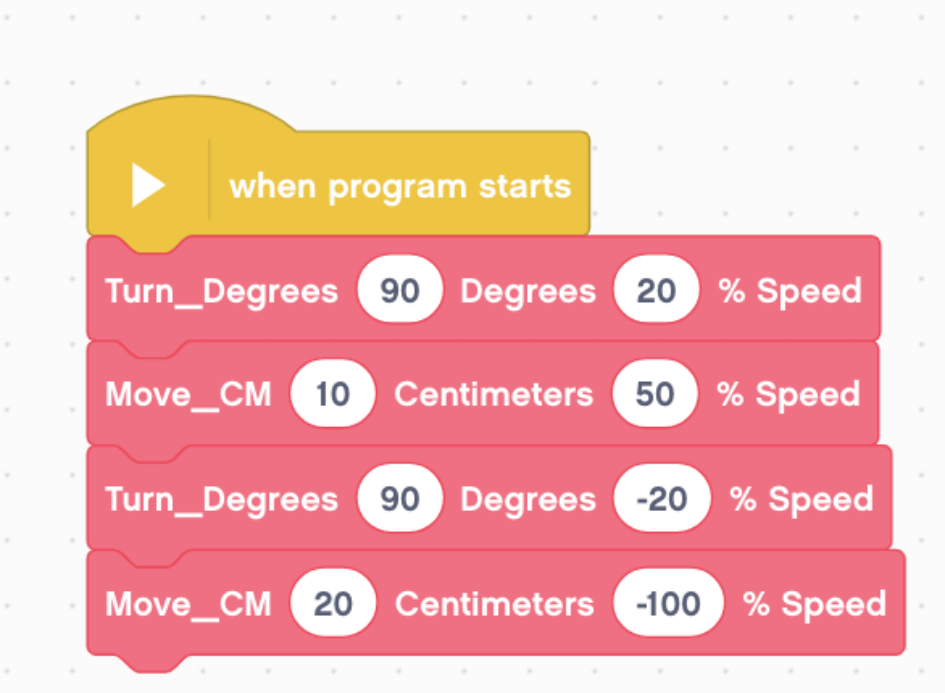
WHEN DO YOU USE A MY BLOCK?

- Whenever the robot is going to repeat an action inside your program
- When code is repeated in a different program
- Organize and simplify your code



WHY SHOULD YOU BOTHER?

Because of My Blocks, your missions will look like this…



This makes your code easier to read and easier to modify!

WHAT MAKES A USEFUL MY BLOCK

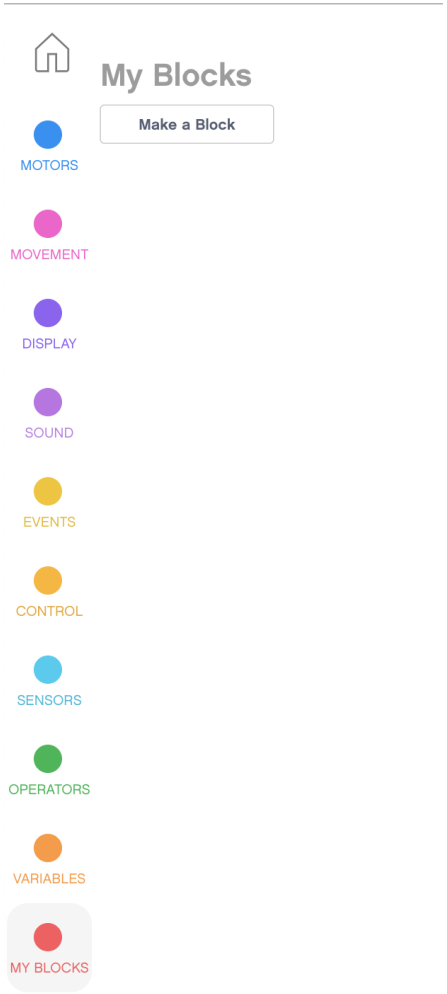
- Note: Making My Blocks with inputs and outputs can make them far more useful. However, you need to be careful not to make the My Block too complicated.

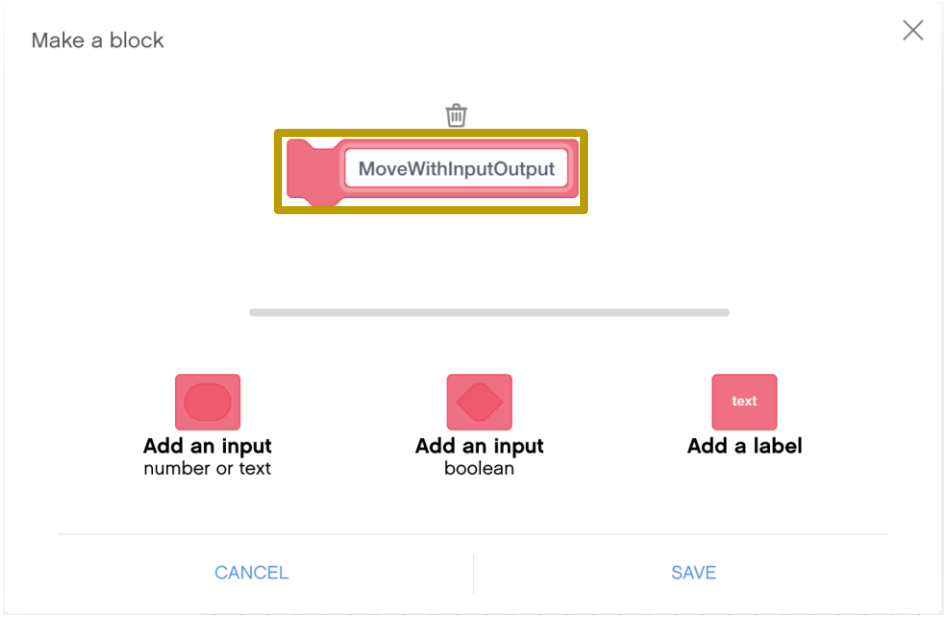
- Question: Look at the list of three My Blocks below. Which ones do you think are useful to use?
  - Turn90degrees (Turns the robot 90 degrees)
  - TurnDegrees with an angle and power input
  - TurnDegrees with angle, power, coast/brake, etc. inputs

- Answer:
  - Turn90degrees may be used often, but you will be forced to make other MyBlocks for other angles. This will not be fixable later.
  - TurnDegrees with angle and power as inputs is probably the best choice.
  - TurnDegrees with angle, power, coast/brake, etc. might be most customizable, but some of the inputs might never be used.

STEP 1: CREATE A MY BLOCK

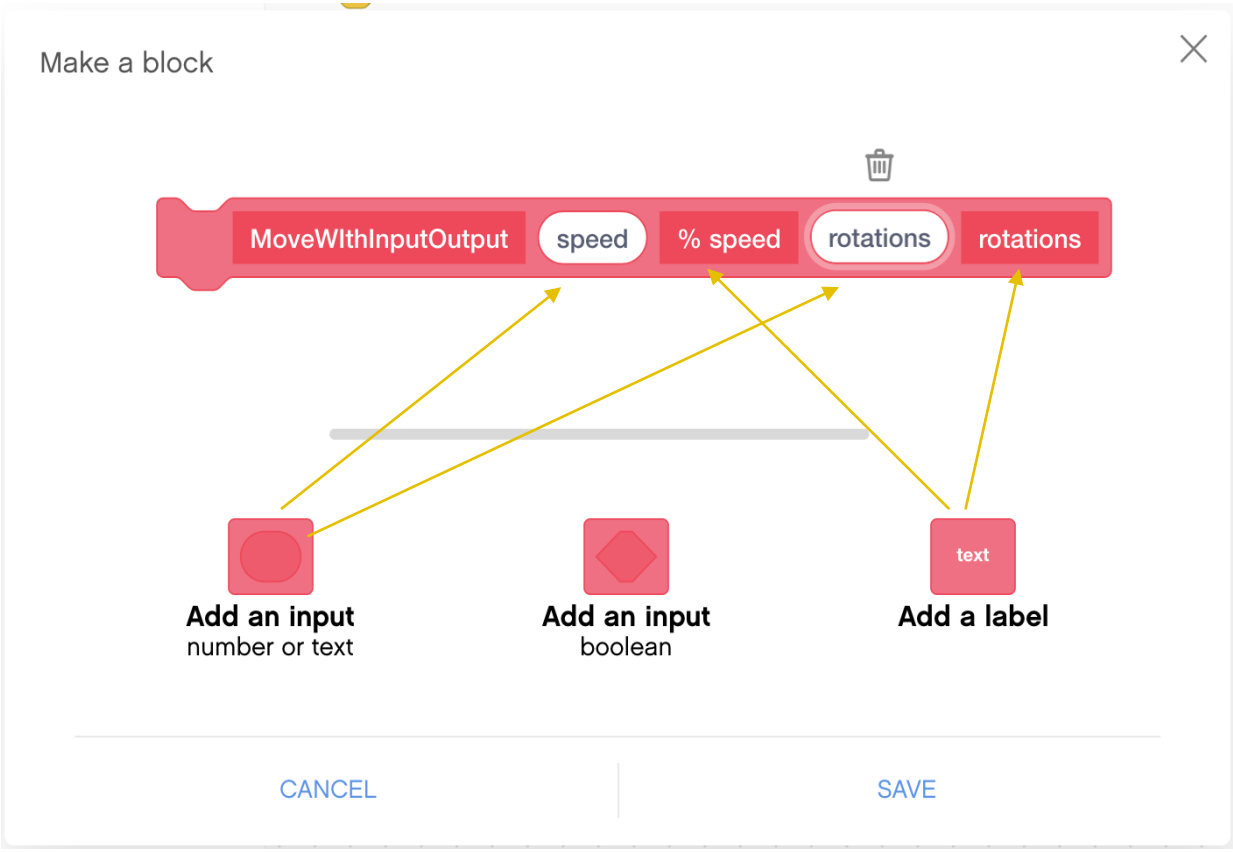
- Go to the My Blocks tab on the left side and select "Make a Block."
- You are then taken to the Block Making menu.
- Type in the name for the block





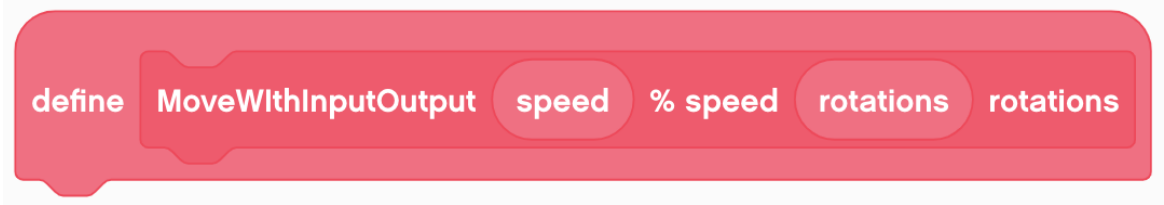
STEP 2: ADD INPUTS AND LABELS

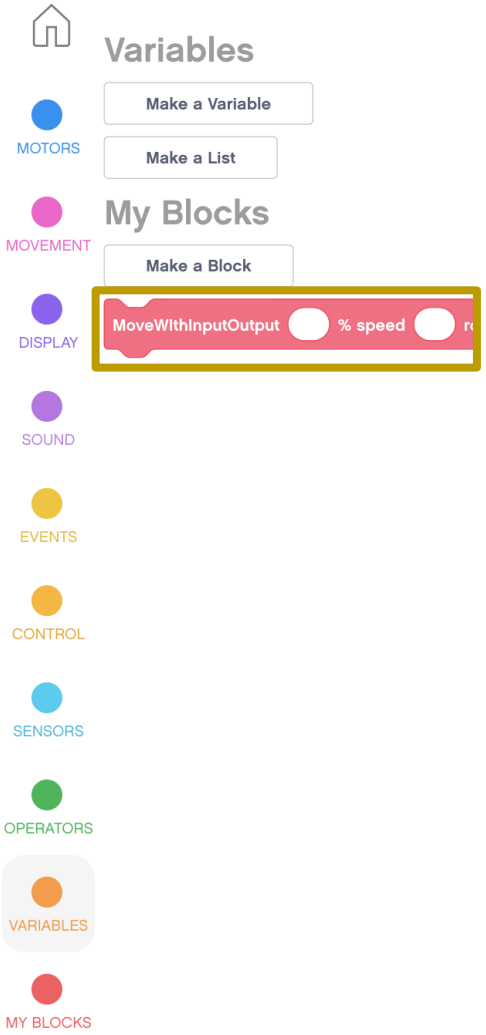
- Use the buttons below the block to add inputs. You can add number or text inputs, as well as Boolean (true/false).
- Labels can be used to indicate what each input is when you use the My Block in your programs.



STEP 3: MY BLOCK LOCATION

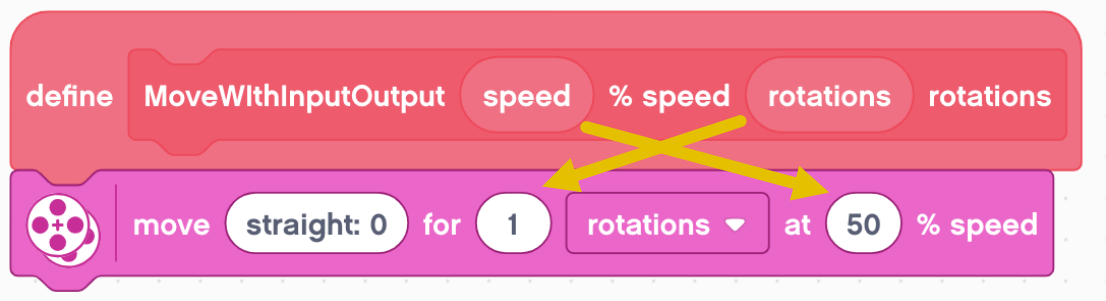
- Once you click "Save," a Define Block appears in the canvas.
- The code for the My Block goes under the Define Block.
- In addition, the My Block can now be found in the My Blocks tab. To use the My Block in your code, simply drag in the block.
- Note: the My Block can only be used inside one project. To use in multiple projects, copy and paste the code into the other project.

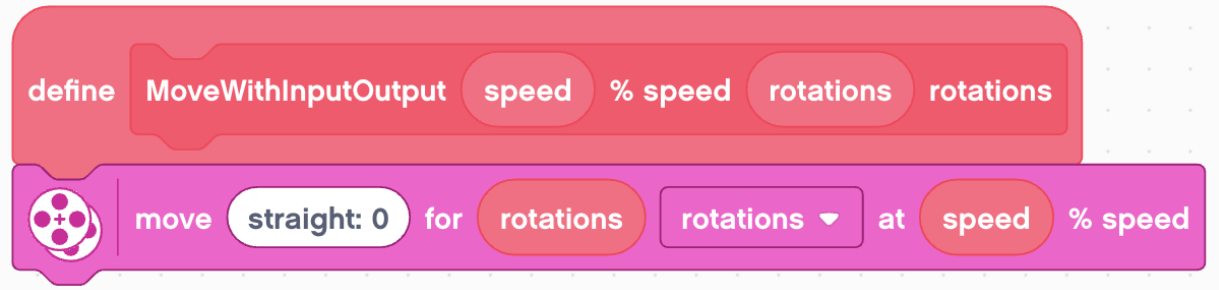




STEP 4: DEFINING THE MY BLOCK

- Add the programming blocks that you want in your My Block under the Define Block.
- To use the inputs from the My Block, drag the oval inputs from the Define Block to the places where you need them as demonstrated in the images to the right.
- The code on the right sets up a My Block that takes in speed and rotations and moves straight with the speed and rotations inputted.



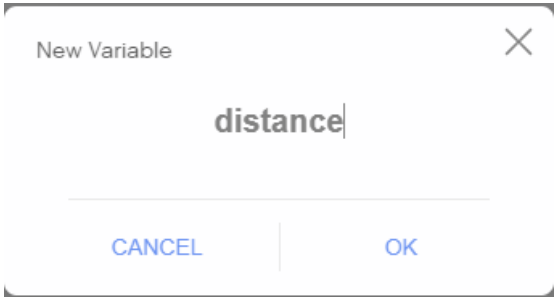


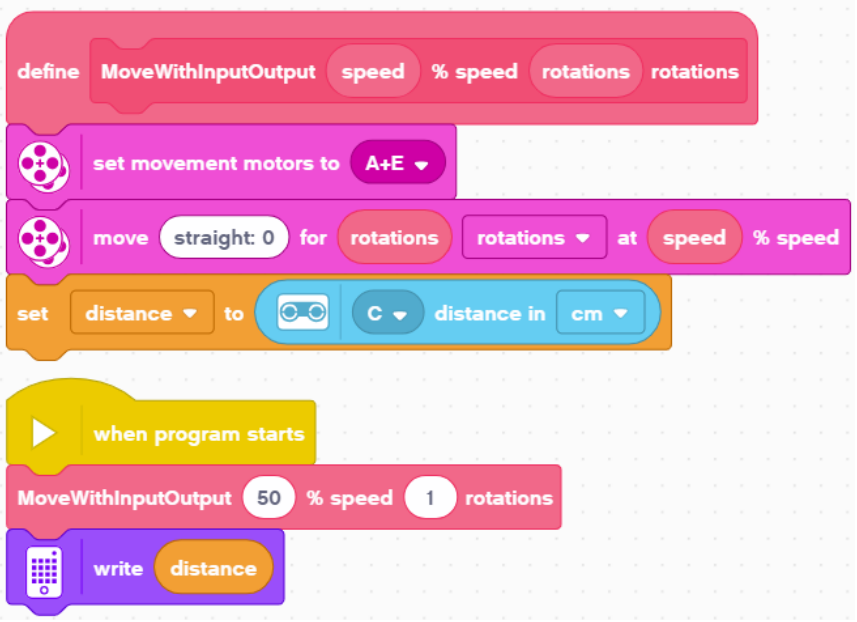
STEP 5: ADDING OUTPUTS

1. Define a variable to store the value of your output.
2. Write the data you want to input to the variable inside the My Block.
3. Use the variable in your main code

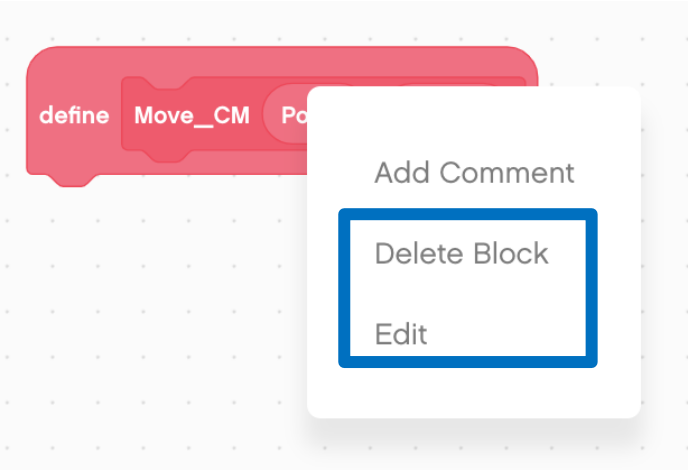
In the code on the right, the My Block reads the distance sensor, sets it to a variable.

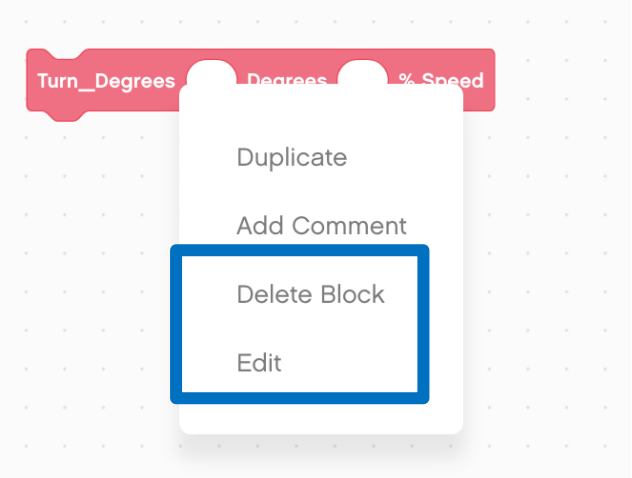
The value can be used later in the program such as print to the screen.





HOW TO EDIT OR DELETE A MY BLOCK





- Right Click on a My Block in the Programming Canvas and select "Edit" to edit the My Block.
- This will take you back to the My Block creation screen where you can edit the name, add inputs, or delete inputs.
- To delete, you must first right click and press delete on all uses of the My Block in your program. Then, you can press delete on the definition of the My Block.

CREDITS

- This lesson was created by Sanjay Seshan and Arvind Seshan for SPIKE Prime Lessons
- More lessons are available at www.primelessons.org