

INTERMEDIATE EV3 PROGRAMMING LESSON

Parallel Beams



By Droids Robotics

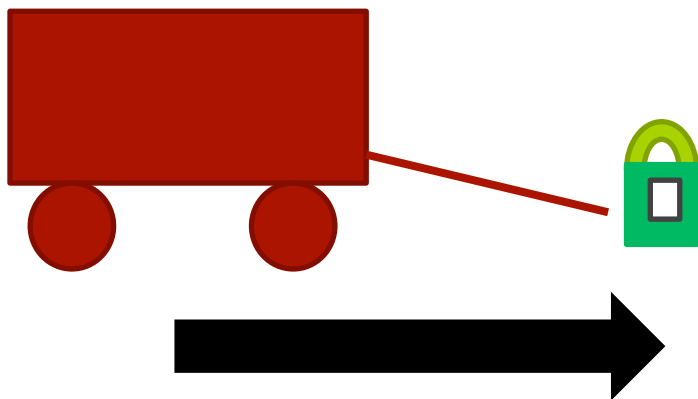


Lesson Objectives

- 1) Learn what a parallel beam is and how to use them
- 2) Learn when you might use parallel beams

What are Parallel Beams?

- Parallel beams allow you to run two or more blocks at the same time.
- In First Lego League, they are mostly often used when you have one of more attachment arms connected to motors and you want to turn these arms while the robot is moving to complete a mission

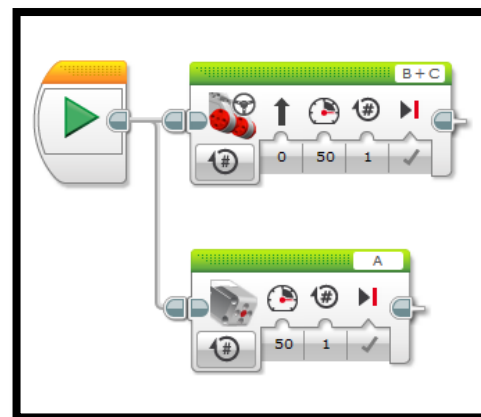
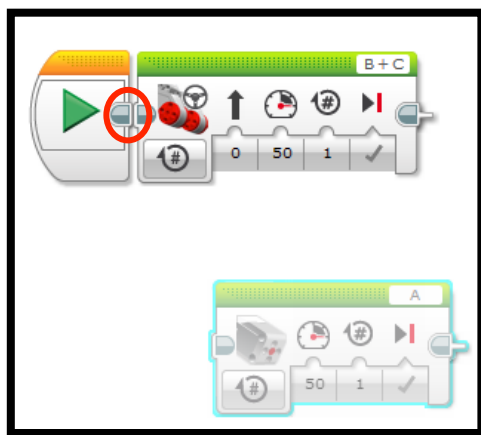


Robot lifting up
hoops and driving
forward.

How Do I Make a Parallel Beam?

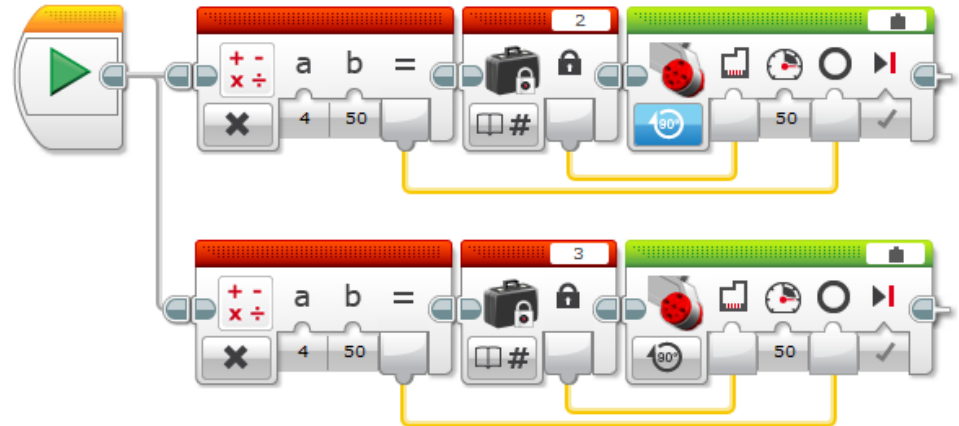
To create a parallel beam click and drag on the bump on the right center of any block and release once you hover over the inverted bump on the left center side on a block.

Note: Blocks before the split will run one at a time. After the split blocks on the two “beams” will run at the same time

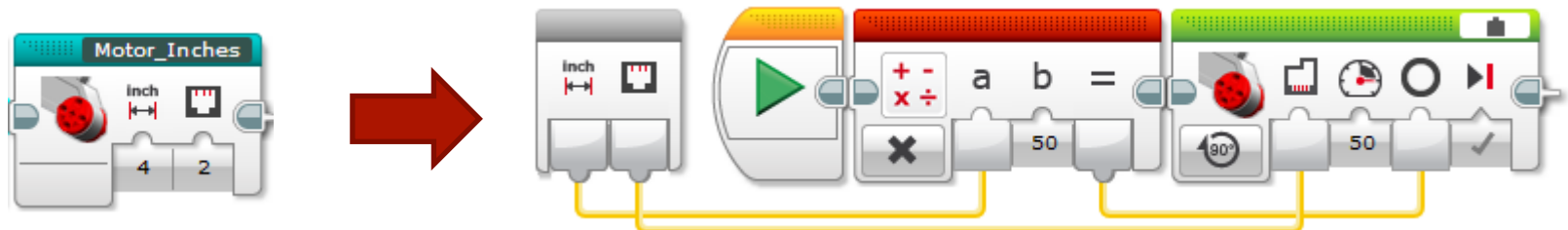


Parallel Beams and My Blocks

- Here is a simple program that moves both wheels of our robot forward
- If you run it, our robot moves forward by about 4 inches



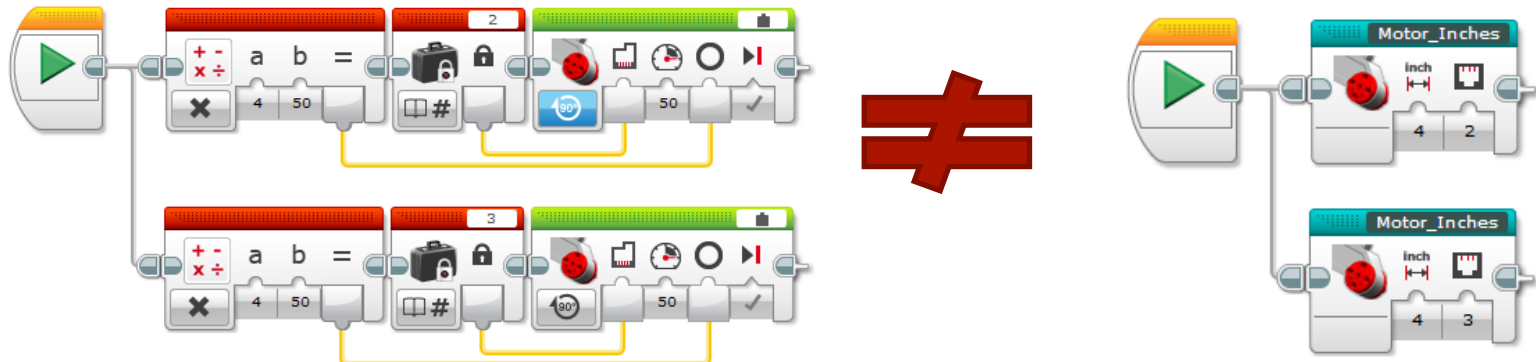
To simplify it, we can make the below My Block (Motor_Inches) that moves the selected motor forward



Parallel Beams and My Blocks

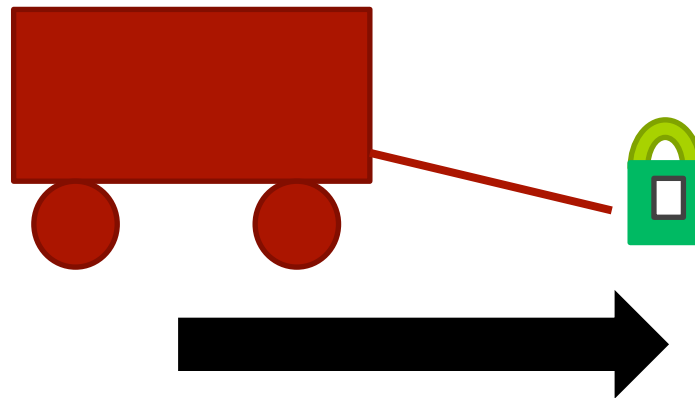
➤ BE CAREFUL WHEN YOU USE PARALLEL BEAMS AND MY BLOCKS

- Using the Motor_Inches My Block, we can convert the program on the bottom left to the one on the bottom right
- If you run the program, the robot does completely different things!!!!
 - The code on the right moves one wheel 4 inches and then moves the other wheel 4 inches. This causes the robot to spin around in one direction then the other
 - The code on the left moves both wheels 4 inches at the same time. This makes the robot move forward.
- **Lesson: EV3 does not let you run two copies of the same My Block at the same time**



Challenge

- ➔ Can you write a program that uses parallel beams that have to move and pick up an object at the same time?



Credits

- This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics.
- Author's Email: team@droidsrobotics.org
- More lessons at www.ev3lessons.com



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