



# BEGINNER PROGRAMMING LESSON

## **EV3 Classroom: Picking Up and Moving an Object**

By Sanjay and Arvind Seshan



EV3 CLASSROOM LESSON  
BY EV3LESSONS.COM

# OBJECTIVES

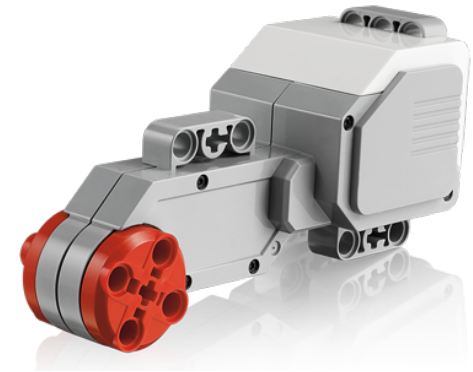
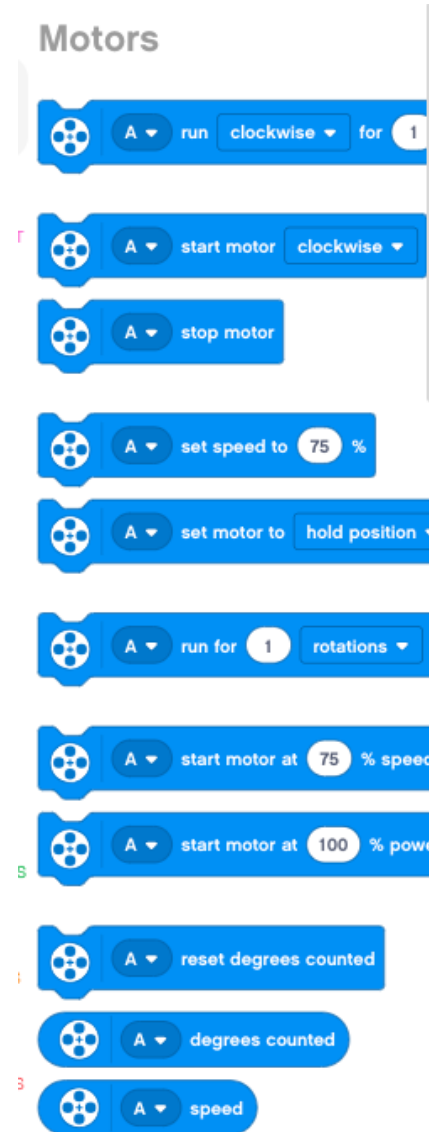
1. Learn how to program a robot to move an attachment arm – a powered attachment
2. Learn how to make useful attachments

# NEW TOOL: MOTOR BLOCKS

You can use the Large EV3 Motor or the Medium EV3 Motor for attachment arms

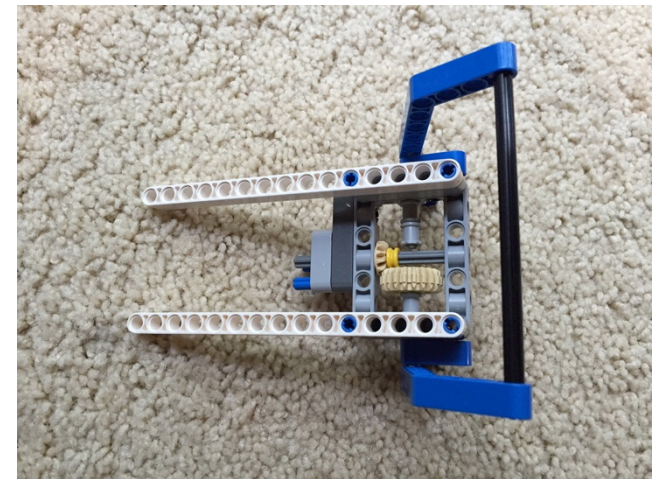
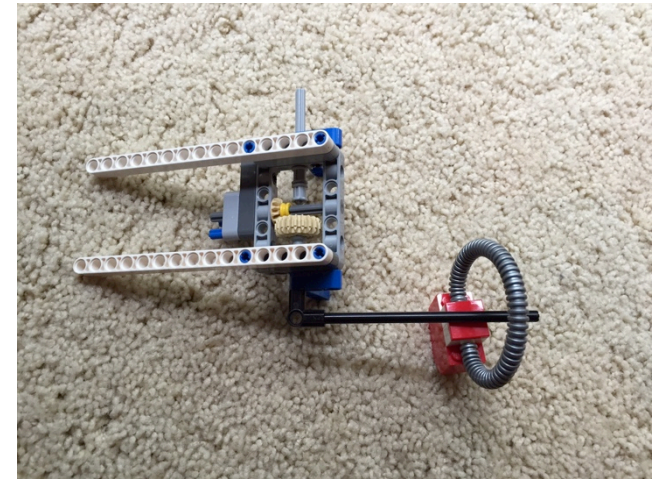
## Move Steering vs. Motor Block

- For moving your wheels you should use a Move Steering Block that syncs both wheel motors (see *Intermediate lesson called Move Blocks to learn about sync*)
- **For moving your attachment your arm, use Motor Blocks** because you don't need to sync your motors.
- In EV3 Classroom, there is no difference between a Medium and Large Motor Block. Just pick the port the motor is connected to.



# USING A MEDIUM MOTOR

- **Attach a medium motor to Port A or a large motor to Port D as needed**
  - This is a generic set-up for the EV3
- **Construct an attachment that can pick up or grab a hoop (object)**
  - Look at the two examples on the right. They use the DroidBot's SNAP attachment
  - DroidBot's build instructions are available on the Robot Design page of [EV3Lessons.com](http://EV3Lessons.com)



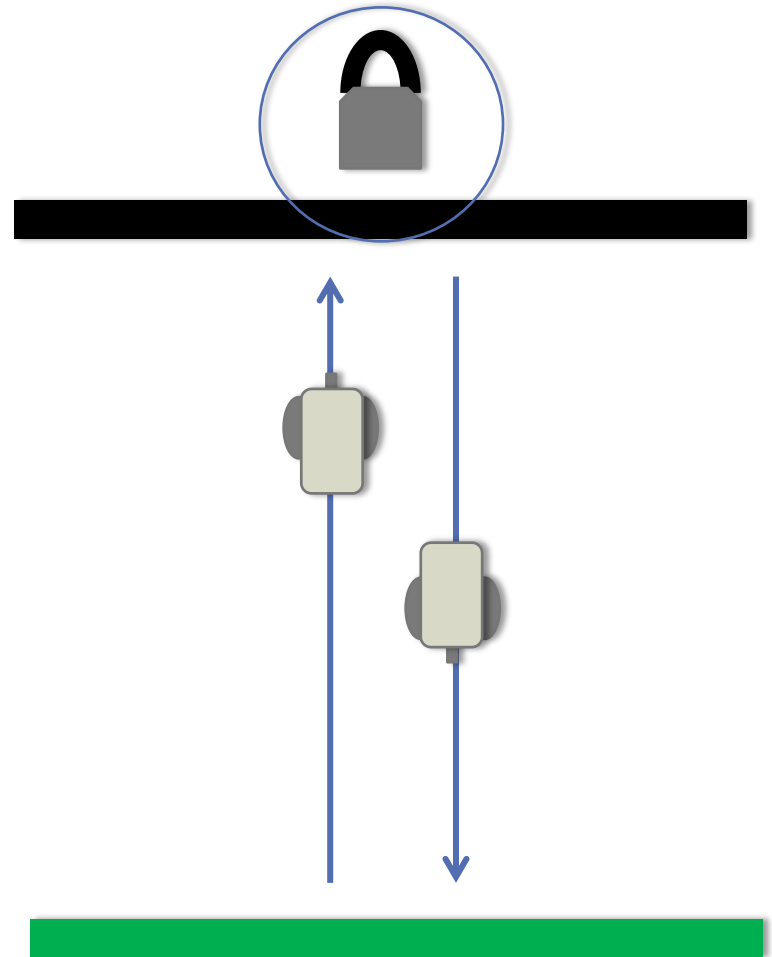
# PICK UP AND MOVE OBJECT CHALLENGE

**From the start line, move up to the black line**

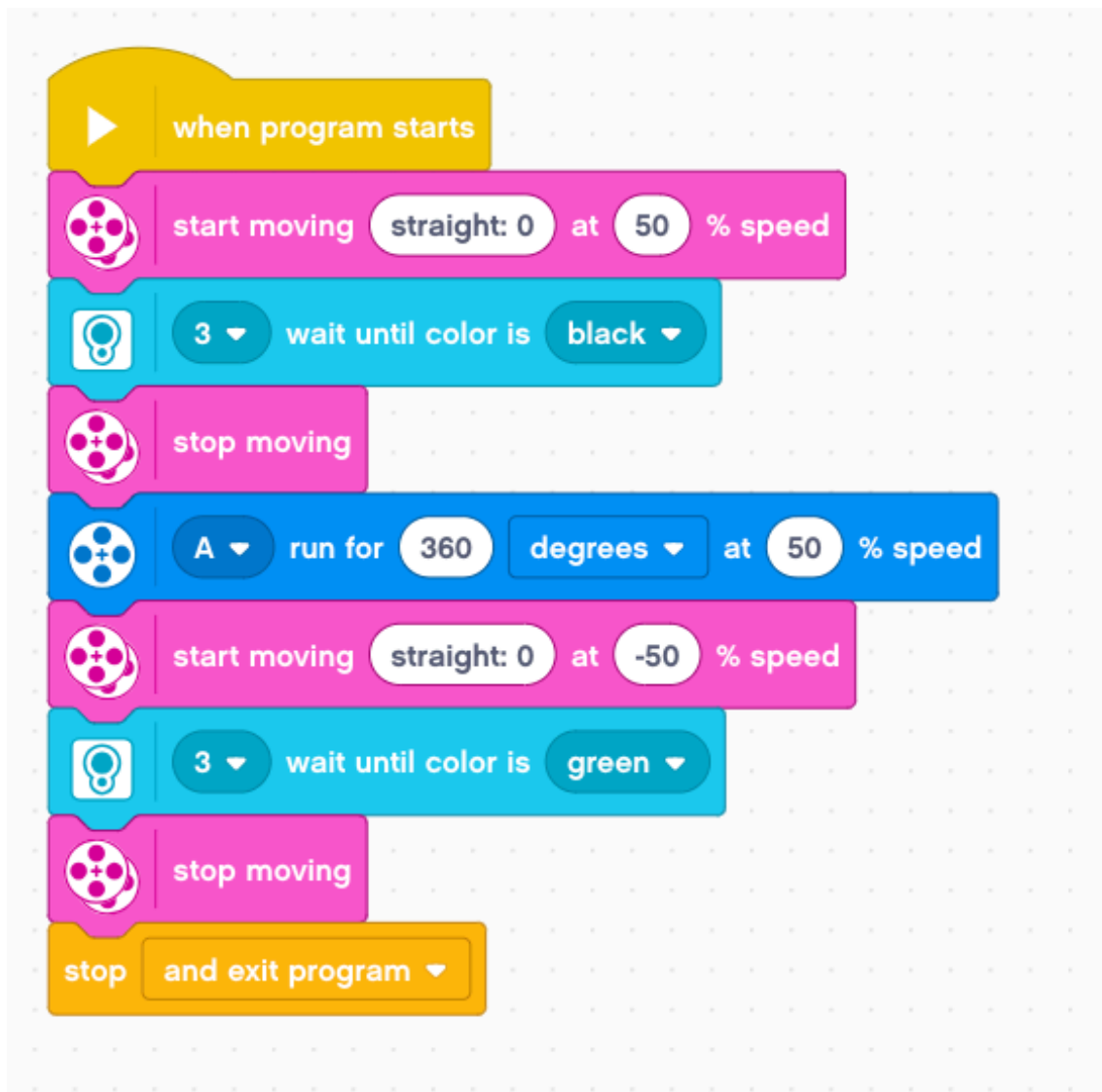
**Pick up the object and bring it back to the start line**

**You can have the robot turn to come back or simply move backwards**

**You can make the object a cube to grab (as in the Core EV3 kit) or an item with a loop on top depending upon the pieces you have available.**



# CHALLENGE SOLUTION



Move forward until a black line

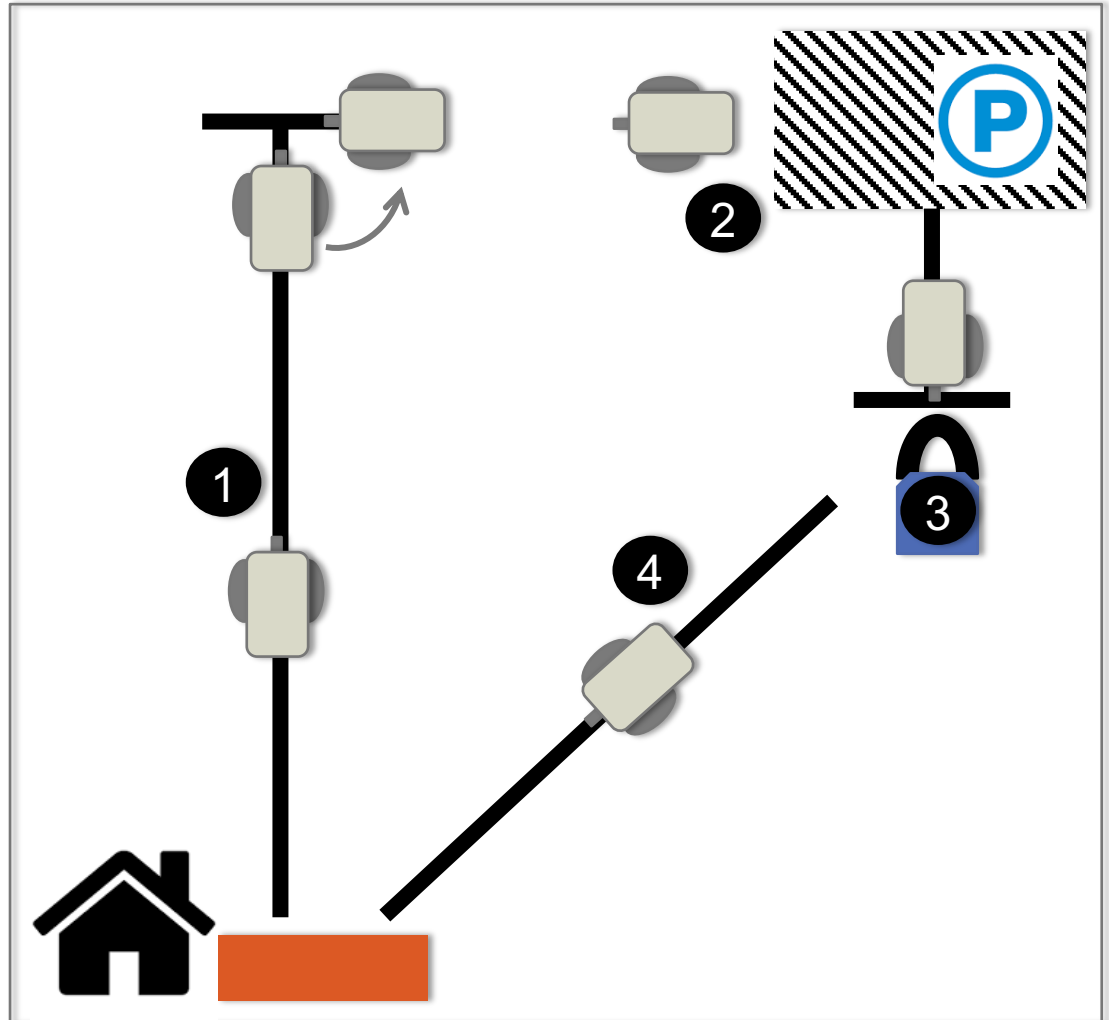
Stop at the line and pick up an object

Move backwards until the green line

Stop and end program

# TRIP TO THE GROCERY STORE

1. Start at Home and drive to the grocery store
2. Have your robot turn and backup/reverse into the parking space
3. Stop to pick up groceries
4. Return home using the short cut



# NEXT STEPS

**Now that you know how to move an arm on a robot, can you move the arm while moving?**

- Check out the Parallel Beams lesson in Intermediate and Advanced

**Refer to the Move Blocks Lesson in Intermediate to learn more about the differences between Move Steering and Motor Blocks**



# CREDITS

- This tutorial was created by Sanjay Seshan and Arvind Seshan
- More lessons at [www.ev3lessons.com](http://www.ev3lessons.com)



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