

# INTERMEDIATE PROGRAMMING LESSON



## DEBUGGING TECHNIQUES

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EV3 CLASSROOM LESSON  
BY EV3LESSONS.COM

# Lesson Objectives

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- 1) Learn the importance of debugging
- 2) Learn some techniques for debugging your code

# Why Debug?

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Debugging is a useful strategy to figure out where in your program something is going wrong or what went wrong

Once your code starts to become long or complicated (e.g. using sensors), it can become hard to figure out where in the program you are

The following slides show you some ways of knowing where you are in your program or knowing what values your sensors see

You will see that these techniques can be VERY USEFUL to any programmer.



# Different Techniques

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## Play Selected vs. Button Press

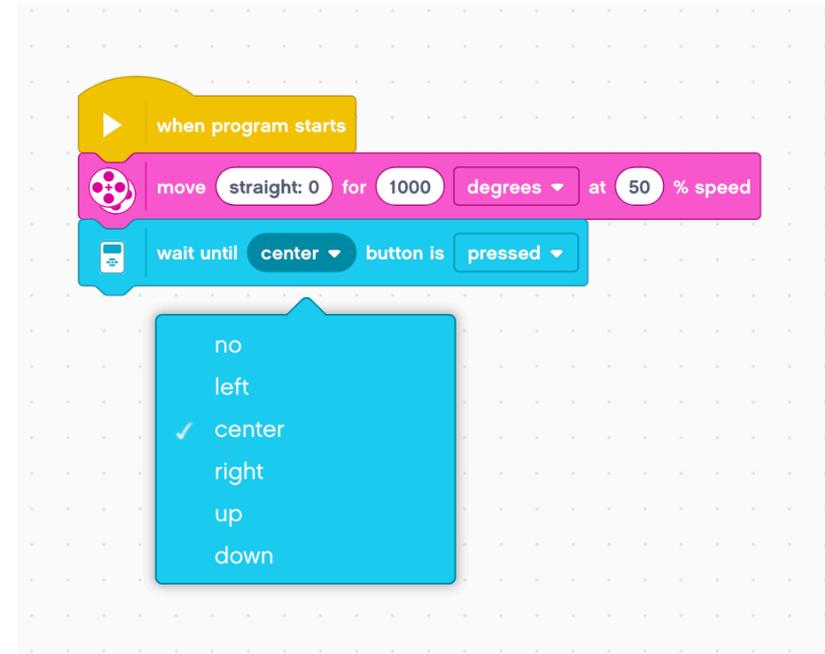
- Very similar techniques
- Lets you try out smaller portions of code
- Play Selected requires bluetooth
- Button Press requires some care so you don't jostle the robot when pressing the button
- ***EV3 Classroom does not have a Play Selected Mode.***

## Light, Sound and Display

- Very similar techniques
- Light and Sound are used in the same way
- Teams enjoy the sound more and it is easier to identify sometimes
- Display Block comes in handy for knowing what block is played if your robot gets stuck and if you want to see the sensor values

# Wait For Button Press

- To place a Wait for Button Press block in your program, place a wait block into your program
- Go to the Sensor Tab and select the Wait for Button block. Choose which button needs to be pressed to continue the program
- Place these wait for button presses every block or two close to where the robot is not working correctly
- This can help you pinpoint which block is causing the robot to fail
- The robot will stop and “wait for you to press the button”



# Visual Alerts: Brick Status Light

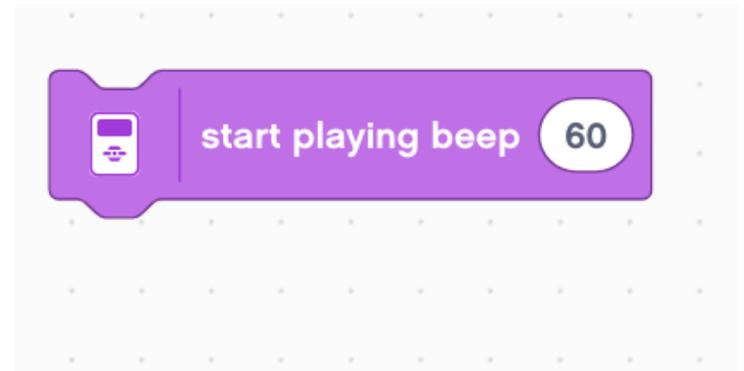


- Place these blocks at critical steps in your program
- You will then be able to visualize what block is playing and figure out where the error might be

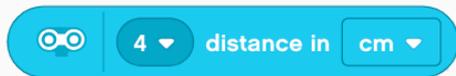
# Sound Alerts: Sound Block

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- You can insert different sounds at intervals (about every 5 blocks or so, and then run the program again while listening for beeps.
- These sounds can help you narrow down where in the program something is going wrong.



# Print to Screen: Display Block



- Use a display block to write values to the screen
- Replacing the “EV3” with a motor degrees block lets you see how many degrees the motor has moved
- Replacing it with a color sensor block lets you see what color the sensor is reading
- Replacing it with an ultrasonic block lets you see how far away the object it.

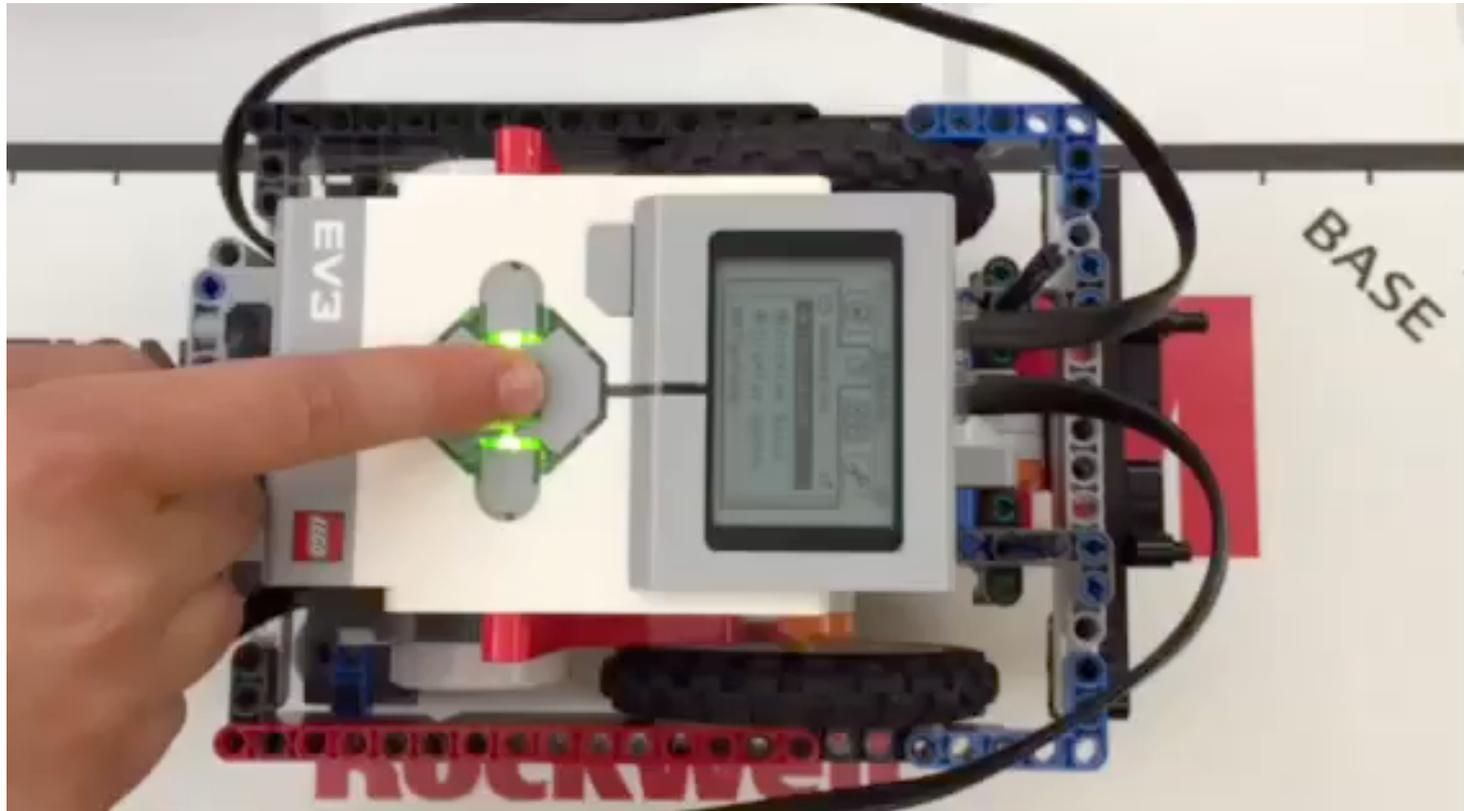
# Sample Video on Next Slide

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- The video on the next slide shows some of the debugging techniques
  - Wait for button press
  - Sounds alerts
  - Brick lights
  - Sensor readings displayed on brick

# Sample Video – Click to Play

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# Other Methods

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- Recordings:
  - You can record your robot with a camera. Then watch the video and observe what went wrong
- Comments:
  - You can also use “comments” to help debug – we add comments to remember what older values were entered into a block. We watch the robot and then adjust these values



# CREDITS

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This tutorial was created by Sanjay Seshan and Arvind

More lessons are available at [www.ev3lessons.com](http://www.ev3lessons.com)



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