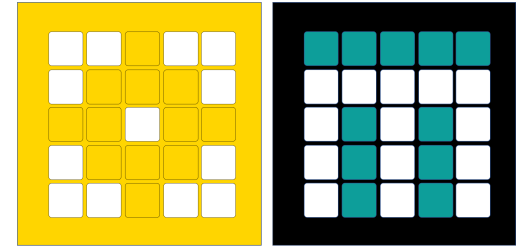


PRIME LESSONS

By the Makers of EV3Lessons



DEBUGGING TECHNIQUES

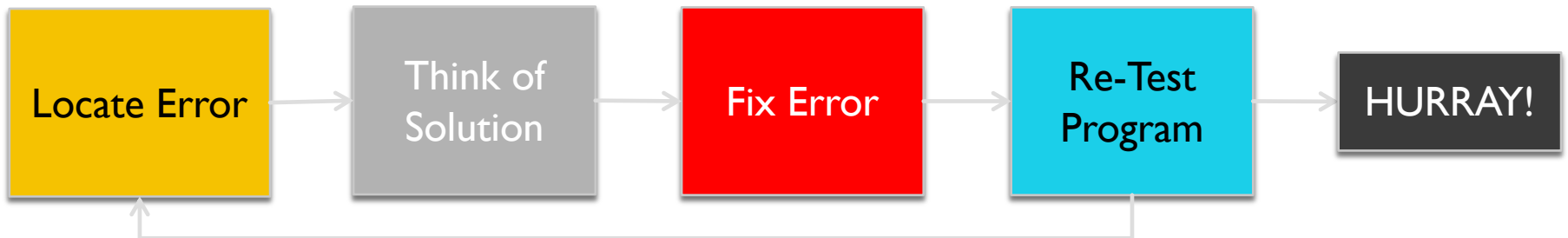
BY SANJAY AND ARVIND SESHAN

LESSON OBJECTIVES

- Learn the importance of debugging
- Learn some techniques for debugging your code

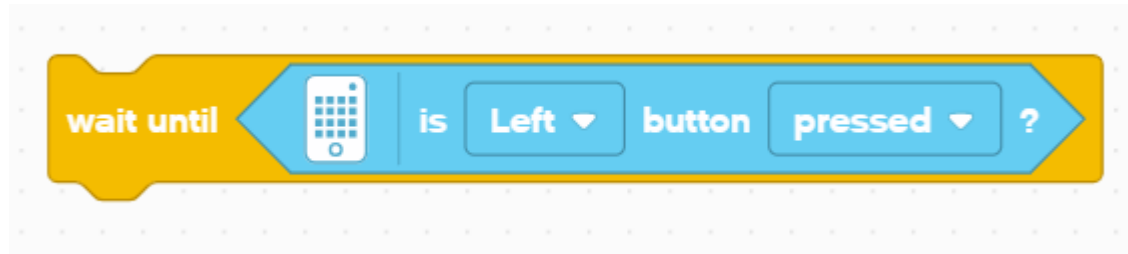
WHY DEBUG?

- 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.

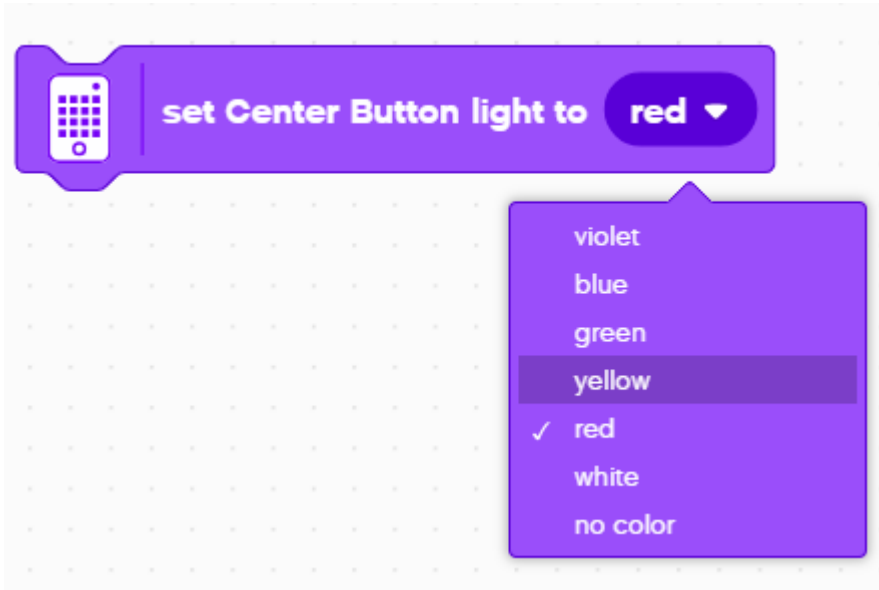


WAIT FOR BUTTON PRESS

- Place a Wait Until Button Press block in your 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”



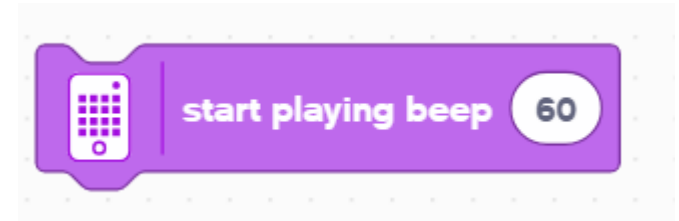
VISUAL ALERTS: CENTER BUTTON LIGHT



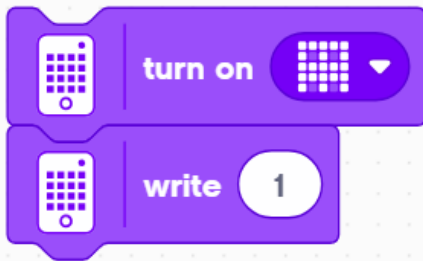
- Place these blocks at critical steps in your program
- You will then be able to visualize what block is playing and figure out where the error might be

SOUND ALERTS: SOUND BLOCK

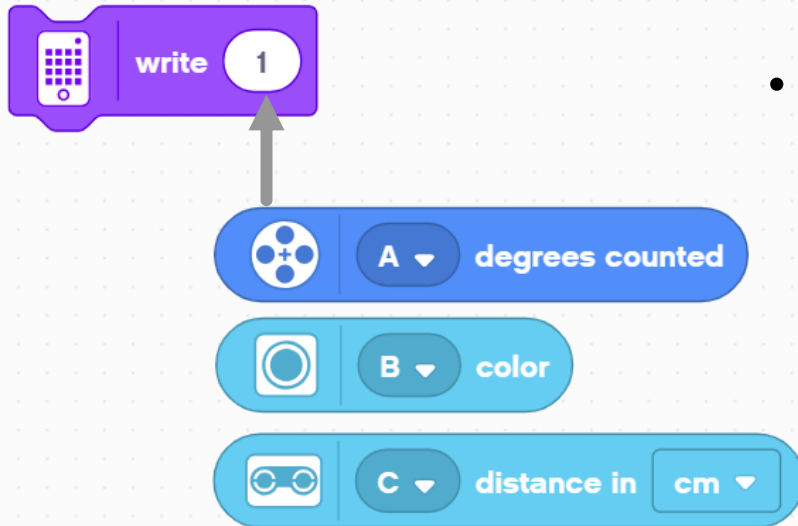
- You can insert different sounds at intervals (about every 5 blocks or so, and then run the program again while listening for beeps.
- These sounds can help you narrow down where in the program something is going wrong.



PRINT TO SCREEN: LIGHT BLOCK



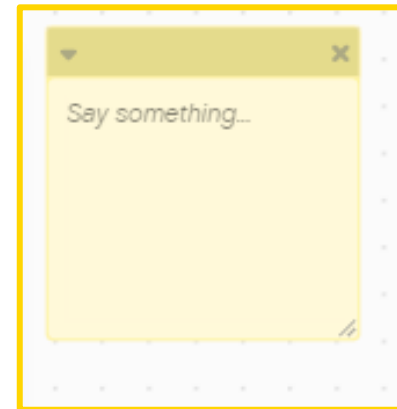
- Use a Light Block, to display information on the LED Light Matrix
- You can display a custom shape or write something to the screen



- Replacing the “1” can also be helpful for displaying data
 - Motor Degrees block lets you see how many degrees the motor has moved
 - A Color Sensor block lets you see what color the sensor is reading
 - A Distance Sensor block lets you see how far away the object it.

VIDEO AND COMMENTS

- Recording your robot and replaying can be very helpful in debugging. Some cellphones have a slow motion mode that can help you diagnose problems.
- Comments are also a useful way to debug. Use them to remember older values you may have entered in the block.



CREDITS

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



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