Logic for Line Following with Makecode Mindstorms for LEGO EV3

This is the fourth in a series of lessons that are designed to prepare students for Robotics competitions such as RoboCup and First Lego League. The target is students in year 5-8.

1 Lesson

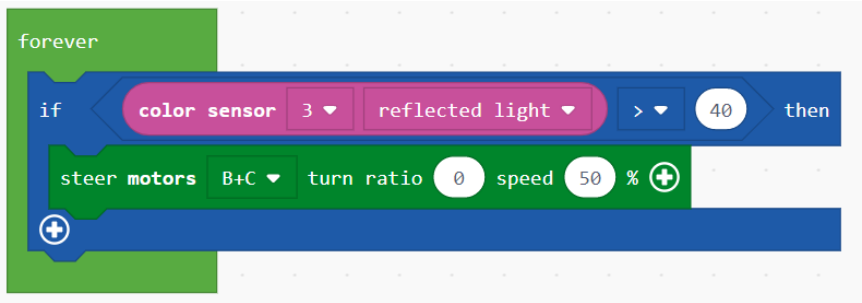
References: https://makecode.mindstorms.com/blocks/logic/if

	Design	***Digital***
	W.A.L.T We Are Learning To...	
EXPLORE	5-6 **explanation** of how the features of technologies impact on designed solutions for each of the prescribed technologies contexts 7-8 **explanation** of how the features of technologies impact on designed solutions and influence design decisions for each of the prescribed technologies contexts	5-6 **definition** of problems in terms of data and functional requirements 7-8 **definition** and **decomposition** of problems in terms of functional requirements and constraints
GENERATE	5-6 **production** of designed solutions by **selecting** and **using** appropriate technologies and techniques correctly and safely 7-8 **production** of effective designed solutions for the intended purpose independently and safely	5-6 **implementation** of digital solutions, including a visual program 7-8 **testing**, **modification** and **implementation** of digital solutions
DEVELOP	5-6 **communication** of design ideas to audiences using: • graphical representation techniques • technical terms 7-8 **communication** to different audiences using: • appropriate technical terms • a range of technologies and graphical representation techniques	5-6 **design** of solutions by: • developing algorithms to address defined problems • incorporating decision making, repetition (iteration) and user interface design 7-8 **design** of user experiences and algorithms incorporating branching and iterations
	W.I.L.F What I'm Looking For...	
EXPLORE	Explain how Conditionals works	Explain how Conditionals works
GENERATE	Stop when a line is detected	Stop when a line is detected
DEVELOP	Communicate solution	Write the Algorithm to Stop when a line is detected

EXPLORE

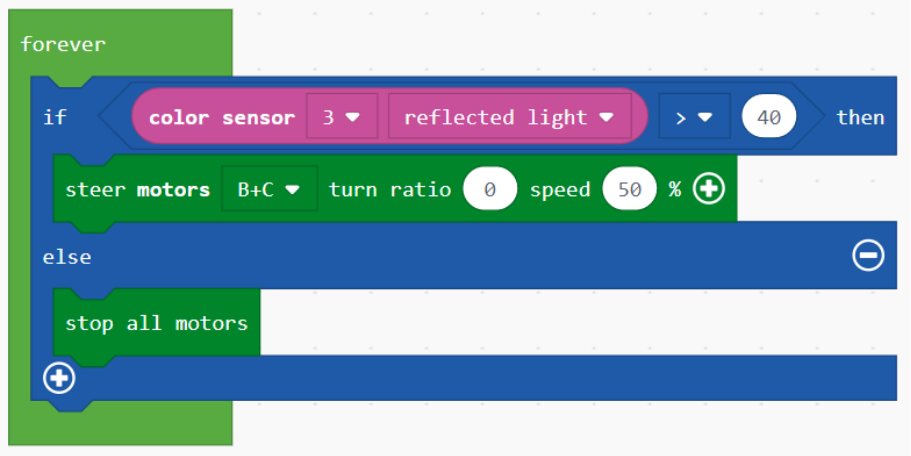
The if block runs code depending on whether a boolean condition is true or false.

The code inside the **if** block only runs when the condition block is **true**. For example, move forward if detecting white light reflected (40 or greater).



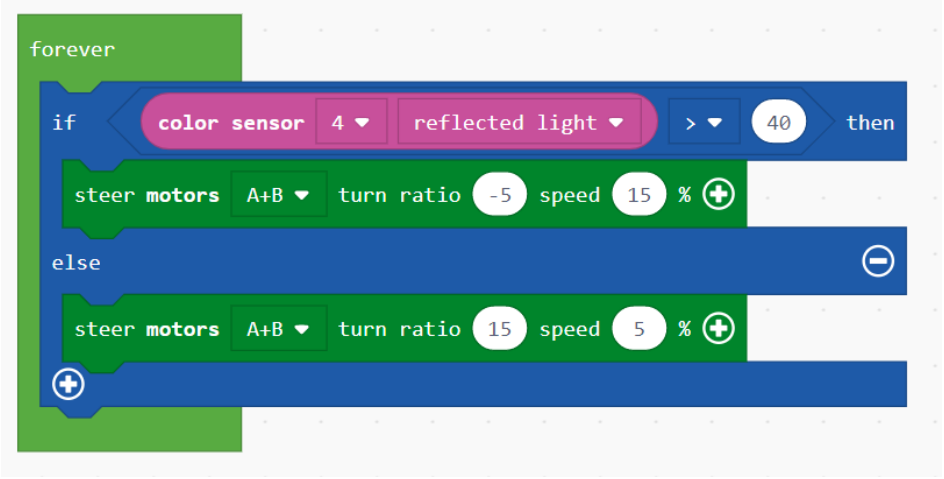
Opposite condition: else

If you want some other code to run when the opposite condition is **true**, you put it in an additional block area called **else**.

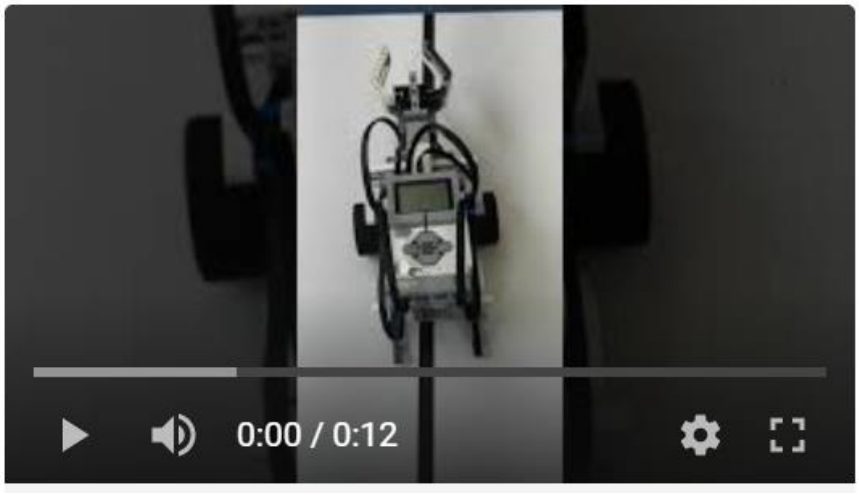


Instructions

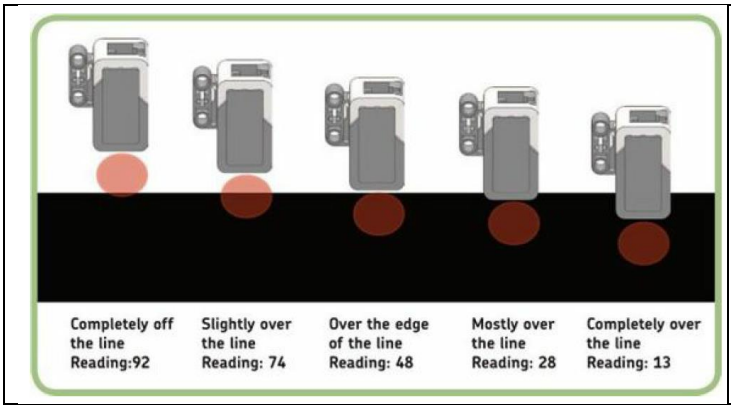
Predict and explain what these blocks do and how it works **[Add this to your Report]**

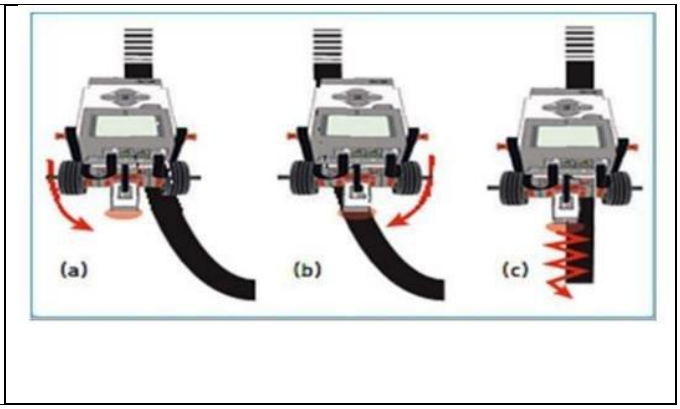


Reference:
https://makecode.mindstorms.com/tutorials/line-following



Video link
https://youtu.be/EEZiw1dMJtE





Algorithm

If light sensor > 40
    Turn left
Else turn right

Recreate the program shown, then download and run to test.

Challenge 1

Test if your Driving Base works when following a lighter-coloured line such as the one on the sumobot ring

Test your code. If it doesn't work as expected, alter the parameters and try again until it does.