INTERMEDIATE EV3 PROGRAMMING LESSON

SIMPLE & OPTIMIZED ULTRASONIC WALL FOLLOW

By Droids Robotics
Objectives

Learn how to use the ultrasonic sensor to follow walls

Learn how to optimize code

Prerequisites: Loops, Switches, Ultrasonic Sensor
Challenge: Can you write a program to have a robot follow the wall (always staying 15cm away from the wall) using an ultrasonic sensor?

**STEP 1:** In a Switch Block, turn Left or Right based on whether the robot is too close to the wall or too far from the wall.

**STEP 2:** Repeat everything in a loop that runs forever (you can change the exit condition of the loop if you wish).

Play the video to see how the robot should move.
Challenge 1 Solution

The goal of this program is to make a simple wall follower

- The switch checks if the ultrasonic is reading less than or greater than 15 cm
- If the robot is too close to the wall it turns to the right
- If the robot is too far away from the wall it turns to the left
Challenge 2: Optimizing the Code

The code for the Simple Ultrasonic Wall Follow Challenge was slow and the robot wiggles back and forth a lot.

**Challenge:** For this next challenge, think about how you can improve the program so that the wall follower is smoother.

**Hint:** Change the angle of the turns

Play the video to see how the robot should move

Do you notice any differences?
The goal of this program is to make an optimized wall follower that wiggles less than the simple wall follow.

The steering values in the move steering blocks are set to 20 instead of 50 so that the robot makes less sharp turns.

The switch checks if the ultrasonic is reading less than or greater than 15 cm.

If the robot is too close to the wall it curves to the right.

If the robot is too far away from the wall it curves to the left.
Credits

This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics.

More lessons are available at www.ev3lessons.com

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