

Chapter - 16 Drawing Based on Bar Colors

Objective:

- Learn to move the robot and change the color using Pen VEXcode VR.
- Program the robot to change the Pen color based on the colored bar it crosses.

Skills to be attained

- Enhance skills in block-based programming .
- Use of Pen tools for creative designs.

Tools / Websites / Resources:

1. [VEXcode VR Platform](#)
2. Computer or tablet with internet access.
3. Line Detector Playground in VEXcode VR.

Teacher-Led Instructions:

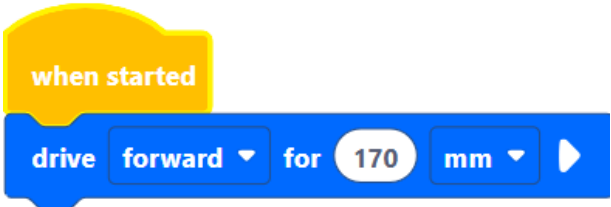


Activity Title: *Drawing Based on Bar Colors*

Description:

In this activity, the robot will move forward across a series of colored bars in the **Line Detector Playground**. Each time the robot crosses a colored bar, it will draw a line using the corresponding Pen color.

Instructions:

1. **Setup:**
 - Open [VEXcode VR](#).
 - Select the **Line Detector Playground**.
 - Place the robot at the starting point of the line path.
2. **Programming Steps:**

SNO	Action	Block with value
1	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 170 mm	
2	From Drivetrain category Add a Turn right for 90 degrees block.	
3	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 800 mm.	

4	Go to Looks Catagorey Select the Set Pen to color black block	
5	Select Move Pen down from Looks category so the robot will draw a line as it moves.	
6	From Drivetrain category Add a Turn right for 90 degrees block and change Right to Left by clicking on Right in the block.	
7	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 380 mm.	
8	Go to Looks Category Select the Set Pen to color black block and change the black colour to Red by clicking on black,	
9	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 380 mm.	
10	Go to Looks Category Select the Set Pen to color black block and change the black colour to Green by clicking on black	
11	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 380 mm.	
12	Go to Looks Category Select the Set Pen to color black block and change the black colour to Blue by clicking on black	
13	Add Drive forward for 200 mm block from Drivetrain category. Change the value 200 to 500 mm.	
15	Drag the stop project from Control block and add at the end of all block to stop the project	

1. Run the Program:

- The robot will draw a spiral pattern as it moves forward and turns, creating an expanding spiral on the canvas. Run by clicking 

Output

The image displays a Scratch script on the left and its corresponding stage output on the right.

Scratch Script:

- when started
- drive forward for 170 mm
- turn right for 90 degrees
- drive forward for 800 mm
- set pen to color black
- move pen down
- turn left for 90 degrees
- drive forward for 380 mm
- set pen to color red
- drive forward for 380 mm
- set pen to color green
- drive forward for 380 mm
- set pen to color blue
- drive forward for 500 mm
- stop project

Stage Output:

The stage shows a robot at the top center, positioned on a vertical line. The line is composed of several colored segments: black, blue, green, red, and black. The robot is currently on the top black segment. The stage is divided into five columns labeled A, B, C, D, and E. Column C contains the vertical line. Columns A, B, D, and E contain horizontal lines of various colors (black, blue, green, red) at different heights, corresponding to the segments on the vertical line in column C. The robot is positioned at the top of the vertical line, which is the topmost segment.