



CODEBOT MISSION 6 LOG - Lesson 1

Pre-Mission Warm-Up

How do you read a line sensor?	<code>Val = ls.read(0)</code>
What surface colors have the highest readings?	Dark colors
What code assigns a Boolean value from a reading?	<code>is_detected = ls.read(n) > threshold</code>

Mission 6 Lesson 1 – Line Follower

Mission 6 Introduction

What are some uses for a robot following a line?	Answers included in the introduction are: <ul style="list-style-type: none"> During competitions for races or a maze Warehouse robots that follow a line to select items
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Mission 6 Objective 1

Use this list to answer the questions in the chart: <code>a_list = [4, 2, 5, 3, 6, 9, 1, 0]</code>	<table border="1"> <tr> <td>Name of list</td><td><code>a_list</code></td></tr> <tr> <td>Length of list</td><td>8</td></tr> <tr> <td><code>a_list[0]</code></td><td>4</td></tr> <tr> <td><code>a_list[4]</code></td><td>6</td></tr> <tr> <td><code>a_list[7]</code></td><td>0</td></tr> </table>	Name of list	<code>a_list</code>	Length of list	8	<code>a_list[0]</code>	4	<code>a_list[4]</code>	6	<code>a_list[7]</code>	0
Name of list	<code>a_list</code>										
Length of list	8										
<code>a_list[0]</code>	4										
<code>a_list[4]</code>	6										
<code>a_list[7]</code>	0										

Lists can hold any type of data. Use this list to answer the questions in the chart: <code>b_list = [True, False, False, True, True]</code>	<table border="1"> <tr> <td>Name of list</td><td><code>b_list</code></td></tr> <tr> <td><code>len(b_list)</code></td><td>5</td></tr> <tr> <td><code>b_list[0]</code></td><td>True</td></tr> <tr> <td><code>b_list[1]</code></td><td>False</td></tr> <tr> <td><code>b_list[3]</code></td><td>True</td></tr> </table>	Name of list	<code>b_list</code>	<code>len(b_list)</code>	5	<code>b_list[0]</code>	True	<code>b_list[1]</code>	False	<code>b_list[3]</code>	True
Name of list	<code>b_list</code>										
<code>len(b_list)</code>	5										
<code>b_list[0]</code>	True										
<code>b_list[1]</code>	False										
<code>b_list[3]</code>	True										

Define a list and fill out the chart using this data: 4, 3, 2, 1	<table border="1"> <tr> <td>Define a list with the items</td><td><code>c_list = [4, 3, 2, 1]</code></td></tr> <tr> <td>Write the code for the length</td><td><code>len(c_list)</code></td></tr> <tr> <td>Write the code for the first item</td><td><code>c_list[0]</code></td></tr> <tr> <td>Write the code for the last item</td><td><code>c_list[3]</code></td></tr> </table>	Define a list with the items	<code>c_list = [4, 3, 2, 1]</code>	Write the code for the length	<code>len(c_list)</code>	Write the code for the first item	<code>c_list[0]</code>	Write the code for the last item	<code>c_list[3]</code>
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Write the code for the length	<code>len(c_list)</code>								
Write the code for the first item	<code>c_list[0]</code>								
Write the code for the last item	<code>c_list[3]</code>								
The example answer given is an example. Students should use any list name they want.									

Mission 6 Objective 2

What is REPL used for?	You can type Python commands directly in REPL and see what happens.
What happens when you type <code>check_lines()</code> in REPL?	The Python command is executed and the Boolean values of the line sensors are displayed in the console panel.

Mission 6 Objective 3

Fill out the chart for the lists of Boolean items.

List of Boolean values	Binary equivalent	Which LEDs are on?
<code>leds.ls([False, False, False, False, True])</code>	<code>leds.ls(0b10000)</code>	LED 4
<code>leds.ls([True, False, False, False, False])</code>	<code>leds.ls(0b00001)</code>	LED 0
<code>leds.ls([False, True, True, True, False])</code>	<code>leds.ls(0b01110)</code>	LEDs 1, 2, 3
<code>leds.ls([False, False, True, True, False])</code>	<code>leds.ls(0b01100)</code>	LEDs 2, 3
Your own list: <code>leds.ls([a list of bools here])</code>	Answers vary	Answers vary

Post-Mission Reflection

What is a list?	A sequence of items you can access with an index.
What is an index?	The position of an item in a list; used to access the item.
How can a list be used in a program?	Answers will vary. A possible answer is to store the Boolean values of <code>is_detected</code> , which are True/False if the line is detected. And then use the list to turn on/off LEDs.