



CODEBOT MISSION 6 LOG - Lesson 1

ANSWER KEY

Pre-Mission Warm-Up

How do you read a line sensor?

`Val = ls.read(0)`

What surface colors have the highest readings?

Dark colors

What code assigns a Boolean value from a reading?

`is_detected = ls.read(n) > threshold`

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:

- During competitions for races or a maze
- Warehouse robots that follow a line to select items

Mission 6 Objective 1

Use this list to answer the questions in the chart:

`a_list = [4, 2, 5, 3, 6, 9, 1, 0]`

Name of list	<code>a_list</code>
Length of list	<code>8</code>
<code>a_list[0]</code>	<code>4</code>
<code>a_list[4]</code>	<code>6</code>
<code>a_list[7]</code>	<code>0</code>

Lists can hold any type of data. Use this list to answer the questions in the chart:

`b_list = [True, False, False, True, True]`

Name of list	<code>b_list</code>
<code>len(b_list)</code>	<code>5</code>
<code>b_list[0]</code>	<code>True</code>
<code>b_list[1]</code>	<code>False</code>
<code>b_list[3]</code>	<code>True</code>

Define a list and fill out the chart using this data:

`4, 3, 2, 1`

The example answer given is an example. Students should use any list name they want.

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>

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 check_lines() 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?
leds.ls([False, False, False, False, True])	leds.ls(0b10000)	LED 4
leds.ls([True, False, False, False, False])	leds.ls(0b00001)	LED 0
leds.ls([False, True, True, True, False])	leds.ls(0b01110)	LEDs 1, 2, 3
leds.ls([False, False, True, True, False])	leds.ls(0b01100)	LEDs 2, 3
Your own list: leds.ls([a list of bools here])	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.