

Mission 7 Assignment	Name:
Pre-Mission Preparation	
This mission will use sensors to detect a line, and then use the data to control the CodeBot. Other than self-driving cars, what real-world applications use some kind of object detection sensors? How does the data control a device?	<p>Answers will vary. Possible answers:</p> <ul style="list-style-type: none"> • Automatic devices in bathrooms, like soap dispensers and flushing toilets. • Lights that come on when a person walks in the room, or aisles in a grocery store • Televisions that check to see if you are still there before turning themselves off • Smart picture frames that come on when a person is moving around and then shut themselves off.
Mission 7 Checks	
Objective #1 Explain how the line sensor works:	The emitter sends a short signal. It is reflected by a surface and the detector determines how bright the reflection is.
What value is returned by the line sensor?	A line sensor returns an integer between 0 and 4095.
Objective #2 What is the code to read a line sensor?	<pre>left = ls.read(0)</pre> <p>The number in parenthesis is the number of the line sensor (0-4)</p>
Objective #3 Given an example of a chaining comparison:	if 3469 < left < 3669:
What is the purpose of break ?	Break command exits the nearest loop.
Objective #4 Where in the program do you define constants?	Near the top, just after the import statements
What does abs() do?	It is a math function that returns the absolute value of the number or expression in parenthesis.
Objective #5 What are two things you can do to improve the program?	<ol style="list-style-type: none"> 1. Improve accuracy by reading the middle two sensors 2. Improve readability by using a variable for the target value and absolute value for the difference.
Objective #6 What is a matrix?	<p>A 2-Dimensional list, or a list of lists.</p> <p>Example:</p> <pre>Sensor_data = [['W', 2517], ['NW', 3043], ['N', 3569]]</pre>
What does a return statement do?	Returns a value to the function call

Post-Mission Reflection

What is something you enjoyed about this mission? Explain why:

Answers will vary.

This mission uses a matrix to organize data. What real-life application can you think of that might use a matrix?

Answers will vary. Possible answers:

- A tv guide – with channels and show
- Radio station schedule with times and shows
- Student grades, with assignments and scores
- Sports team statistics

