Mission 7 Assignment Log

Name:

Pre-Mission Preparation

The last mission needed a servo to power the fan. You learned about two kinds of servos: 360 and 180. What do you remember about servos?

Answers will vary. They can include: servos are more than DC motors. They include a controller circuit, an internal feedback mechanism, and a gearbox. They can rotate forward and backward. They use a duty cycle to determine direction. A 360 servo rotates continuously. A 180 servo is also known as positional.

Mission 7 Checks

Objective #1
Recreate the duty-cycle chart for the 180 servo

Percent	Angle	Direction
25	90	clockwise
50	45	clockwise
75	0	centered
100	45	counterclockwise
125	90	counterclockwise

Objective #2
How do you turn off the 180 servo?

Stop sending a signal – use 0 for duty-cycle.

Objective #3
What type of peripheral is a light sensor?

Analog input

More light = _____

Higher value

When running the code, you need to get a high reading (a lot of light), medium reading (normal light) and a low reading (dark).

High reading	< individual reading >
Normal reading	< individual reading >
Low reading	< individual reading >

Objective #4
Make a chart of each state and the constant to control the servo it will use:

State	Servo Constant
morning	< individual reading >
afternoon	< individual reading >
night	< individual reading >

<table>
<tr><td></td><td></td></tr>
<tr><td>Objective #5
What change in code did you make when the state is ‘morning’ but the light is less than the low threshold?</td><td>Change the state to night and the servo to backward</td></tr>
<tr><td>What change in code did you make when the state is ‘night’ but the light is higher than the low threshold?</td><td>Change the state to morning and the servo to forward</td></tr>
<tr><td>Objective #6
What is “bouncing”?</td><td>When an input peripheral registers multiple times instead of once, like a button press.</td></tr>
<tr><td>What is one way to avoid bouncing?</td><td>Add a delay before taking the next reading</td></tr>
<tr><td>Objective #7
When the LED is close to the light sensor, what are the bright light readings?</td><td>< individual reading ></td></tr>
<tr><td>Objective #8
Complete the chart for the states and transitions of your finite-state machine:</td><td>
<table>
<tr><th>Starting state</th><th>Transitioning to</th><th>< or ></th><th>Threshold</th></tr>
<tr><td>morning</td><td>afternoon</td><td>></td><td>HIGH_LIGHT</td></tr>
<tr><td>afternoon</td><td>night</td><td><</td><td>LOW_LIGHT</td></tr>
<tr><td>night</td><td>morning</td><td>></td><td>LOW_LIGHT</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Post-Mission Reflection</td></tr>
<tr><td>What is something that was challenging about this mission? Why?</td><td>Answers will vary</td></tr>
<tr><td>You learned about 180 degree servos during this mission. What are some uses for this servo?</td><td>Answers will vary</td></tr>
</table>