**AP CSP CodeBot**

|  |  |  |
| --- | --- | --- |
| **MISSION 4 Obj 1-7 Animatronics** | | **Time: 45 minutes** |
| **Project Goal:** Students will create an Animatronic robot exhibit based on customer requirements.  **Learning Targets**   * I can plan a project using a flowchart or pseudocode. * I can use a while True: loop. * I can increment a counter variable. * I can use buttons.was\_pressed to control a variable. * I can write a function. | **Key Concepts**   * A function is a named chunk of code you can run anytime by calling its name. * While loops are used to execute an algorithm constantly. * Increments (and decrements) are used for updating variables like counters. * Button presses (inputs), LEDs (outputs) and speaker sounds (outputs) are part of the user interface. They allow the user to interact with the CodeBot. | |
| **Assessment Opportunities**   * Mission 4 Obj 1-7 Assignment * Submit the “SweepLEDs\_obj7” program (part 1) * [Mission 4 Obj. 1-5 Kahoot Review](https://create.kahoot.it/share/firia-labs-codebot-mission-4-obj-1-5/274224e8-9c7f-42bb-a648-c9b334bb7cfe) * Create a flowchart for program (optional) * Code Review: students evaluate code snippets that include selection and incrementing variables | **Success Criteria**   * Define functions for sweeping LEDs and counting guests * Use a loop to blink LEDs until a break * Use an increment to light LEDs in sequence * Use an increment to count button presses | |
| **AP CSP Framework**  **AAP-1.B** Determine the value of a variable as a result of an assignment.  **AAP-2.H** Write conditional statements and determine their results.  **AAP-2.K** Write iteration statements.  **Computational Practice 2.B** Implement and apply an algorithm.  **Computational Practice 4.C** Identify and correct errors in algorithms and programs, including error discovery through testing. | **Materials**   * Mission 4 Obj 1-7 Assignment / Answers * [Mission 4 Obj. 1-5 Kahoot Review](https://create.kahoot.it/share/firia-labs-codebot-mission-4-obj-1-5/274224e8-9c7f-42bb-a648-c9b334bb7cfe) * Source code for SweepLEDs\_obj7 | |
| **Teacher Notes**   * Students will follow the instructions and CodeTrek, but then make modifications to the code using these instructions. Students should use functions in their code and become familiar with creating them and using parameters. * Objective 4: Students will delete the last **sleep()** in their function. Also, they change the value of **delay** near the top of the code so the flashing lights are much quicker. * Objective 5: Remind students to initialize **n\_guests** near the top of the code with the other variables. * Code snippets for all the objectives, when changed, are included in the answer document. * A file of the complete code, with changes for functions, is included. See link above. * Refer to the CodeBot Curriculum Guide for specific information about this mission. * Another suggestion for assessment is for students to keep a daily journal, or use a reflection form for students to process information they learned and reflect on questions they may still have. | | |