**AP CSP CodeBot**

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| **LESSON: For Loop Practice** | | **Time: 45 minutes** |
| **Project Goal:** Students use a for loop in programs to repeat a block of code.  **Learning Targets**   * I can use a for loop in a program to repeat a block of code a known number of times. * I can traverse a list of tuples using a for loop. | **Key Concepts**   * A for loop can be used anytime you are repeating a block of code and you know the range. That is, you know how many times it will repeat. * You can traverse a list of tuples using a for loop. * A single element in a tuple is accessed by its index in square brackets, just like an element in a list. | |
| **Assessment Opportunities**   * For Loop Practice Assignment * LineSense\_loops program * WhatIf\_loops program * SweepLEDs\_loops program * Challenge: remix program with a for loop | **Success Criteria**   * Use a for loop in LineSense * Use two for loops in WhatIf * Use a for loop in SweepLEDs * Add a list of tuples to SweepLEDs * Use a for loop to traverse a list of tuples | |
| **AP CSP Framework**  **AAP-1.D** Develop data abstraction using lists to store multiple elements.  **AAP-2.K** Write iteration statements.  **AAP-2.O** Write iteration statements to traverse a list.  **Computational Thinking Practice 3.A** Generalize data sources through variables.  **Computational Thinking Practice 4.C** Identify and correct errors in algorithms and programs, including error discovery through testing. | **Materials**   * For Loop Practice slides * For Loop Practice Assignment / Answers * Solution code for: LineSense\_loops, WhatIf\_loops, SweepLEDs\_loops | |
| **Teacher Notes**   * This lesson will be completed on the computer, using CodeSpace for programming. * Use the Sandbox in CodeSpace for programming. This lesson is not part of a mission. * The assignment can be distributed digitally. Space is provided for students to take notes during the programming. * Students will modify three previous programs. The best experience will come from them modifying their own code. However, we want all students to be engaged, so you can give them the original code to modify if needed. * The most recent version of each program can be found in the earlier assignments. If you are giving code to students, use the solution code found here:   + LineSense: Traversing a List Lesson   + WhatIf: Mission 3 Obj 10-11   + SweepLEDs: Lists with CodeBot Lesson * Follow the slides for instructions and guidance. * Solution code for all three programs with for loops are provided. | | |