**AP CSP CodeBot**

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| **LESSON: Lists with CodeBot** | | **Time: 45 minutes** |
| **Project Goal:** Students will use a list of beep frequencies in a program.  **Learning Targets**   * I can define a list in a Python program. * I can access an element of a list. * I can select a random element in a list. * I can iterate code using a For loop. | **Key Concepts**   * A list can be used in a program to hold multiple values, like frequencies for a beep. * The elements in a list can be accessed by index, or chosen randomly. * A For loop is a specialized form of iteration that can be used when you know how many times the loop will iterate. | |
| **Assessment Opportunities**   * Lists with CodeBot Assignment * PythonLists1 program * SweepLEDs\_lists program | **Success Criteria**   * Define list vocabulary * Access and manipulate elements in a list * Evaluate list code segments | |
| **AP CSP Framework**  **AAP-1.C** Represent a list or string using a variable.  **AAP-2.N** Write expressions that use list indexing and list procedures.  **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**   * Lists with CoeBot slides * Lists with CodeBot Assignment / Answers * Unit 4 Review and Test Questions * Code solution for PythonLists1 * Code solution for SweepLEDs\_lists | |
| **Teacher Notes**   * This lesson will be completed on the computer, using CodeSpace for programming. The CodeBot will still need to be connected in order to run code. * 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 a previous program. 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 the program can be found in the earlier assignments. If you are giving code to students, use the solution code found here:   + SweepLEDs: Mission 4 Obj 8-12 * Students continue to program with lists in the next lesson. * Follow the slides for instructions and guidance. * Solution code for PythonLists1 and SweepLEDs\_lists are provided. | | |