**AP CSP CodeX**

| **LESSON: Traversing a List #2** | | | | **Time: 45 minutes** | |
| --- | --- | --- | --- | --- | --- |
| **Project Goal:** Students will traverse a single list and multiple lists using a for loop in a program.  **Learning Targets**   * I can use a for loop to reduce repeated code. * I can traverse multiple lists using a for loop. * I can traverse a 2D list, or matrix, using a for loop. | | | **Key Concepts**   * Traversing a list means accessing each element in a list, in order. * The easiest way to traverse a list is to use a for loop. * You can traverse a list multiple times using a for loop. * You can create a 2D (or 3D) list instead of having multiple lists. | | |
| **Assessment Opportunities**   * Traversing a List #2 Activity Guide * Answer\_Bot\_traversals program * Pixels1\_traversals program * Pixels1\_matrix program | | | **Success Criteria**   * Use a for loop to turn on pixels * Traverse multiple lists in a for loop * Create a 2D list * Traverse the 2D list in a for loop | | |
| **AP CSP Framework**  **AAP-1.D** Develop data abstraction using lists to store multiple elements.  **AAP-2.N** Write expressions that use list indexing and list procedures.  **AAP-2.O** Write iteration statements to traverse a list.  **Computational Thinking Practice 3.B** Use abstraction to manage complexity in a program  **Computational Thinking Practice 3.C** Explain how abstraction manages complexity.  **Computational Thinking Practice 4.C** Identify and correct errors in algorithms and programs, including error discovery through testing. | | | **Materials**   * Traversing a List #2 slides * Traversing a List #2 Activity Guide / Answers * Unit 3 Review and Test Questions * Code solutions for program modifications   + Answer\_Bot\_traversals   + Pixels1\_traversals   + Pixels1\_matrix   + Pixels1\_challenge | | |
| **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 activity guide can be distributed digitally. Space is provided for students to take notes during the programming. * The lesson includes two challenges at the end. These are optional!!! This lesson is a little shorter than the first, so if there is time, have students try a challenge. But don’t extend the lesson just to try the challenges. * Students will modify the Answer\_Bot\_traversals and Pixels\_parameters 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:   + Answer\_Bot\_traversals: Traversing a List #1 Lesson   + Pixels1\_parameters: Functions with Parameters Lesson * Follow the slides for instructions and guidance. * Solution code for all three program modifications, plus the first challenge, are provided. | | | | | |