Grades 9-12
Distance Learning Module 10: Week of: June 8 - June 12
Lists and Problem Solving

Introduction to Computer Science Level 2 - *Modified from Unit 7 (Lists, Arrays and Problem Solving)*

Targeted Goals from Stage 1: Desired Results

Content Knowledge: Polya's four steps for problem solving, how to pass lists to functions, how to return lists from functions, when to use a list, how to iterate over lists, how to index into a list.

Vocabulary: array, list, shuffle, reduce, "big O notation", lambda expression, filter

Skills: declaring, assigning values to, and iterating over lists of integers, floating point numbers, and strings, comparing elements in lists, sorting a list using built in methods, merging lists, performing a sequential search on a list

Expectation:

Description of Task (s):	Resources and Materials:	Daily Checks (Return to Google Classroom or snapshots from a cell phone)
Monday: ● manually filtering a list ● filtering a list using lambda expressions and the filter command ● sorting with built-in and lambda expressions ● introduction to the word challenge assignment ● Discussion of binary vs. sequential search	Live lesson and whole group coding Examples: ● small words ● q without u ● "dog" words ● longest words containing "th" ● begins and ends with the same letter (n > 1) (longest, shortest) ● vowel words (more vowels than consonants) ● words counting 2 or more q's (or any char)	WordChallengesAssignment.pdf WordChallengesAnswers.pdf words.txt

Description of Task (s):	Resources and Materials:	Daily Checks (Return to Google Classroom or snapshots from a cell phone)
Tuesday: Continuation of Monday's discussion of: ● manually filtering a list ● filtering a list using lambda expressions and the filter command ● sorting with built-in and lambda expressions ● introduction to the word challenge assignment ● Discussion of binary vs. sequential search	Live instruction Additional examples as needed based on Monday's observations and progress	WordChallengesAssignment.pdf WordChallengesAnswers.pdf words.txt
Wednesday: Students continue to work independently on their multi-day Word Challenges programming assignment.	Professional Development: Live help sessions	WordChallengesAssignment.pdf WordChallengesAnswers.pdf words.txt
Thursday: Students continue to work independently on their multi-day Word Challenges programming assignment.	Live help sessions	WordChallengesAssignment.pdf WordChallengesAnswers.pdf words.txt
Friday: Students will complete and turn in their multi-day Word Challenges programming assignment.	Live instruction	Students turn in their Word Challenges assignment. WordChallengesAssignment.pdf WordChallengesAnswers.pdf

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		words.txt

Week criteria for success (attach student checklists or rubrics):

By the end of this module, students should be able to:

- create a list
- iterate over a list by index or value
- modify the number of and values of elements in a list
- write algorithms involving lists
- create single line lambda expressions to filter and sort lists
- write functions that accept and return a list
- use Python to solve challenges involving word lists

Supportive resources and tutorials for the week (plans for re-teaching):

Think Python, 3rd Edition (free online Python book)

Coding Bat

Office hours

Python Programming Third Education by John Zelle. This textbook provides additional examples and content, and is available for purchase from Amazon and other retailers.