LESSON: List Practice #2	Time: 50 minutes

Overview:	**Objectives:**
This lesson will continue to help students with their shared mental model of lists. Students work in groups to manipulate data in lists. They can use containers (baggies, white boards) during the lesson, or just work at vertical white boards. Take your time with this lesson and help students understand the basics of lists.	- I can identify parts of a list – element and index - I can access elements and manipulate values in a list - I can define list, element and index

Standards:	**CSP Framework:**	**Key Concepts:**
2-AP-11 Create clearly named variables that represent different data types and perform operations on their values. **3A-AP-14** Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.	Computational Thinking Practices: 3.A Generalize data sources through variables. 3.B Use abstraction to manage complexity in a program. 4.B Determine the result of code segments.	- A **lis**t can be used when you have, or could have, many similar variables. - A list has **elements**, or items, organized in order by number. - The number used to organize the elements is called an **index**. - Data in a **list** can be changed, removed, inserted, and used in calculations.

Preparation:	**Links:**	**Agenda:**
Make a copy of the assignment or put it in the LMS (can be printed) **Make printouts** of examples B, C & D for students to use as group work	- Assignment (for review) - Lists Vocab slide deck - Examples C, D, E for printing	- Warm-up/review (10-15 minutes) - Group practice (20 minutes) - Wrap-up/review (15-20 minutes)

Vocabulary:
- Review from Lists Practice #1: **List, index, element, list length**
- Review list functions: **len()**
- Review list methods: **append**, **pop**, **insert**, **remove**

Assessment:
- Daily reflection form
- Demonstrate in a group to create a list and manipulate its data
- Assignment completion (review)
- Exit ticket or group review

Teaching Guide

Warm-up / Design Process (10-15 minutes)

The purpose of the warm-up is to review the first lists practice lesson and the shared mental model. It could last between 10 and 15 minutes, depending on the type of warm-up / review you do with the students.

💡 **Teaching tip – warm-up**
  - You, as a teacher, need to determine the warm-up / review that is needed for your students. It could be:
    - Practicing the mental model with another example, like student names
    - Going over Example A or Example B (or both)
    - Displaying the Lists Vocab slides

Group Practice (20-30 minutes)

💻 Students will NOT work at computers for this lesson. I recommend groups of three standing at vertical white boards. Print the three examples in advance and have them ready for students to work through.

💡 **Teaching tip:**
  Students will have three examples to work through in their groups. They can do them in any order. They should compare their answers with other groups and discuss or re-work examples they do not agree on. The teacher can monitor and support as needed.

  Answers to Examples:
  - Example C – by groups   Final clist = [4, 5, 2, 37, 20, 5, 6, 24]
  - Example D – by groups   Final dlist = [1, 1, 3, 3, 3, 5, 2]
  - Example E – by groups   Final elist = [2, 5, 6, 4, 3] count = 5, total = 20

Assignment Review and wrap-up (15-20 minutes)

💻 Students can work individually, with a partner, or even at the white boards (if you print the assignment).
  This assignment is a review of the concepts worked on today. It is the wrap-up. If time permits, you can go over the answers to the assignment, or have students check with each other on their answers to the assignment.

✅ Review assignment is complete and ready to turn in

  Formative Assessment:
  - Daily reflection journal or form
  - Class discussion on what they learned about lists
  - Assignment completion
  - Programming journal (add notes, vocab, etc.)
  - Exit ticket

SUCCESS CRITERIA:
  - ❏ Work in a group to complete example C, D and E
  - ❏ Define list, index and element
  - ❏ Access a single element in a list
  - ❏ Manipulate values in a list by changing an element, adding elements, and removing elements