LESSON: Create Performance Task - practice #6

Time: 45 minutes

Overview:

Students have completed all the missions and several supplemental lessons. They are ready to prepare for the Create Performance Task. This program will play a memory game using the CodeX buttons and pixel lights. When completed, it will NOT meet the requirements, but it is a good start for an actual Create PT. Suggestions for meeting all the requirements will be given. However, students should NOT add to their code if they want to use this as the beginning of their Create PT.

Objectives:

- I can combine programs into one program
- I can create a function with a parameter
- I can use the parameter in an if statement
- I can create a function with iteration and selection
- I can use global variables in a program and in functions

Standards:

2-AP-12   Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

3A-AP-14   Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.

CSP Framework:

Computational Thinking Practices:

4.C Identify and correct errors in algorithms and programs, including error discovery through testing.

6.A Collaborate in the development of solutions.

Create PT Requirements:

- Create a list
- Use the list in a meaningful way
- Create a function with at least one parameter
- The function must have sequence, selection and iteration
- Values of the parameter must affect the section of code that is executed (used in an if statement)
- Call the function with argument

Preparation:

Make a copy of the assignment or put it in the LMS.
Prepare any formative assessments you want to use in the wrap-up

Links:

- Assignment
- Instructions slide deck
- Program code solution
- Daily reflection form

Agenda:

- Warm-up (5 minutes)
- Coding (35 minutes)
- Wrap-up (5 minutes)

Vocabulary:

- No new vocabulary during this lesson
- You can review Create PT vocabulary: **parameter, argument, function, sequential, selection, iteration**

Assessment:

- Daily reflection journal or Google form
- Rubric (check-list) / program completion
- Assignment completion
- Gallery Walk

Teaching Guide

This lesson is the beginning of a Create PT project. It shows the students how to build a memory game using the CodeX buttons and pixels, similar to the Simon Electronic Memory Game. The instructions intentionally leave out part of the requirements so that students can use this game for their Create PT by adding more components to the game to meet the requirements.

Warm-up (5 minutes)

🧑‍🤝‍🧑 **Discuss** – Use a discussion strategy, like journaling, working at boards, selecting random students, or a form of think-pair-share.

- Slides 2-3: Review the requirements for the Create Performance Task
- Slides 4-5: A description and video of the Simon memory game, followed by an outline or pseudocode of the game

Coding (35 minutes)

💻 Students can work individually or with a random partner.

IMPORTANT!: Students will create a new file for the program – no need to access previous code. However, the Practice Extra lesson is mentioned near the end. Students can refer to any of the programs completed for the lesson as a guide.

💡 **Teaching tip – Step 1: Slides 6-7**

Students go to CodeSpace, mission 9, objective 8 (or any that use the actual CodeX). They start a new file and do all the basics – comment block at the top, import modules, set up global variables, and create short intro and ending functions.

💡 **Teaching tip – Step 2: Slides 8-9**

Students create a function for Simon's turn, and test the code from the main program.

💡 **Teaching tip – Step 3 and 4: Slides 10-14**

Students create a function for the player's turn. This actually requires two functions – the main function will call another function that changes the button press to a number that will be compared to the pixel.

💡 **Teaching tip – Step 5: Slides 15-17**

Students test their code and see that it doesn't end when a player misses. Simon's turn keeps going. Students use a Boolean variable to end the while loop. This is the same code from the Practice Extra lesson.

💡 **Teaching tip – Step 6: Slides 18-20**

Students use the concept from the Practice Extra lesson to play the game again without restarting the code. If you didn't do the Practice Extra lesson, you can skip this part. Or they can learn about it anyway.

💡 **Teaching tip – Step 7: Slides 21-27**

These slides give recommendations for meeting all the requirements for the Create PT. Examples are given from Practice #3 and Practice #4, with code snippets for visual learning. It doesn't show how to actually do the code for this program, but students should be able to make the adaptations from one program to this one.

🗝️ Students SHOULD NOT add the recommendations to their code if they plan on using it for their Create PT. The are presented here so students can see the possibilities and build from it in the future.

✅ **IMPORTANT!!**

Students should clear their CodeX by running their “Clear” program.

Wrap-Up (5 minutes)

The wrap-up for this assignment is minimal. You can choose to add to the assignment with your own review. The review has the students identify where the list is created and where it is used in a meaningful way. Then they think about how they can modify the code to meet all the Create PT requirements.

✅ Review the success criteria for completeness. Assignment is ready to turn in. If working in pairs, both students should include their names on the document. Students can download their program file and submit through LMS, or any way you prefer for submission.

Formative Assessment:

- Daily reflection journal or Google form
- Completed program
- Completed assignment (wrap-up)
- Exit ticket

SUCCESS CRITERIA:

❏ Create a list and store data in the list
❏ Use (access information from) the the list
❏ Correctly use global variables in a main program and in functions
❏ Test and debug the program so that it runs as expected
❏ Identify ways to improve the program to meet all requirements for the Create PT