Name: _____

Date: _____

ACTIVITY 5

Open-Ended Activity

This open-ended activity requires you to develop a program on a topic that interests you. As a class, spend a few minutes reviewing the requirements of the open-ended activity.

Requirements:

- Create a program with a `main` method.
- Create at least one new method that is called from `main` (can be part of another class, such as `Steganography`) that takes at least one parameter.
- Traverse elements in a 2D array or do parallel traversals of multiple data structures.
- Modify some elements in a data structure based on the identified purpose.

In addition, review the provided scoring guidelines so that you understand what you'll be expected to explain once you're done completing your program.

It's strongly recommended that the implementation of the program involve collaboration with another student. Your selected program can be anything that you choose that meets the requirement and allows you to demonstrate your understanding.

Before beginning, make sure that you understand the expectations for the activity.

- Who will you be working with? Are you allowed to work with a partner? In a group of three or four?
- Among the members of your group (or with your partner), how will the implementation be completed?
- If you'll be using pair programming, will your teacher be instructing you when to switch driver and navigator, or is this something that you need to keep track of?
- What should you do if your group/pair is stuck? Does your teacher want you to come straight to them? Are you allowed to ask another group?

Tip

For groups that choose to traverse a 2D array in something other than row-major order:

There is a specific nested iterative structure to traverse elements in a 2D array in row-major order. This structure can be modified to traverse in column-major order by switching the nested iterative statements, making sure to adjust the bounds appropriately. Additional modifications can be made to traverse rows or columns in different ways, such as back and forth or up and down. The execution of the outer loop can impact the values and ranges of the inner loop.

Check Your Understanding

Once your program has been implemented and tested, answer the following questions on your own:

1. Describe the development process used in the completion of the project.

2. Provide the method header for one method that you implemented that takes at least one parameter. Explain why you chose the given parameters, including type, and why you made the method static or non-static. How would your code have been affected if you had made a different decision?

3. Provide a code segment where the elements in a data structure are traversed. Other than specific syntax, explain how using a different data structure would change the complexity of your code. Provide an equivalent code segment to the one included above that uses a different data structure.