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|  | **2.3.7 Practice: Programming Challenge** | | Practice |
| Computer Science Essentials Sem 1 | Name: |  |
| Date: |  |

*In this activity, you will apply what you have learned in the lesson. Please answer the questions below. Submit this worksheet to your teacher when you are done. This project is worth 40 points.*

## Part 1: Understand the Problem (7 points)

Use the link on the second page of this activity to access the program you explored on the introduction page. Then click the "Show Code" button at the top of the MakeCode Arcade interface to view the program. Review the code with a partner and answer these questions. If you do not have a partner, review the code and answer the questions by yourself.

1. What happens in the program when the "A" button is pressed? (2 points)

2. Explain what happens in the program when the "B" button is pressed. (2 points)

3. Explain at least one drawback in the way the program has been written and how it might be addressed. (3 points)

## Part 2: Plan the Solution (6 points)

Now that you have explored the program, discuss with your partner ways to simplify the code and answer these questions. If you do not have a partner, answer the questions by yourself.

1. What is one way the program is unnecessarily repetitive? (3 points)

2. How could you reduce or eliminate the repeating code? (3 points)

## Rubric: Part 1 and Part 2

## Rubric

Each question in this part of the activity is worth a specific number of points. The possible point value is stated at the end of each question. The length of your response will depend on the type of question.

You can use this general rubric for guidance on how your responses will be scored by your teacher. Once scoring is complete, your teacher will provide you with feedback on your performance.

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| **Points awarded** | **Description** |
| Full points | The response addresses all parts of the question completely and correctly. |
| Partial points | The response is incomplete or partially incorrect. |
| No points | The response is incorrect, it does not match the question, or no response is given. |

## Part 3: Carry Out the Plan (20 points)

Now it's time to edit and improve the program by using an array. An array will reduce the number of variables to simplify the code and reduce blocks. Collaborate with your partner to assign roles. For instance, you may divide up the tasks of determining solutions between the two of you, or you may have one of you apply the solutions and the other test them. If you do not have a partner, you will be responsible for completing the entire task yourself. Click the "Edit Code" button at the top of the MakeCode Arcade interface to modify the program.

Once you have finished editing the program, rename the project file "Simplified version" and then add your name and your partner's name. If you don't have a partner, rename the file "Simplified version" and then your name. Then click the "Share" button at the top and click "Publish project." Copy the link that is generated and send the link to your teacher when you submit this completed worksheet.

## Rubric: Part 3

You can use this rubric for guidance on how this part of the activity will be scored by your teacher. Once scoring is complete, your teacher will provide you with feedback on your performance.

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| **Carry out the plan (20 points)** | **Points possible** | **Points awarded** |
| Did you implement an array to simplify the code related to the sprite's images? | 5 |  |
| Did you implement an array to simplify the code related to the sprite's messages? | 5 |  |
| Did you call values from the array related to the sprite's images? | 5 |  |
| Did you call values from the array related to the sprite's messages? | 5 |  |
| **Total:** | **20** |  |
| Comments: |  |  |

## Part 4: Review and Discuss (7 points)

At this point, you have improved the program. Now you will review and discuss the changes you made to the program with your partner. If you do not have a partner, answer the questions by yourself.

1. Did your proposed improvements simplify the program as you had planned? Explain your answer. (3 points)

2. Did simplifying the game introduce any bugs into it? If so, how did you fix or remove them? (2 points)

3. What advice or strategy would you recommend to someone who is trying to reduce unnecessary repetition in a program? (2 points)

## Rubric: Part 4

## Rubric

Each question in this part of the activity is worth a specific number of points. The possible point value is stated at the end of each question. The length of your response will depend on the type of question.

You can use this general rubric for guidance on how your responses will be scored by your teacher. Once scoring is complete, your teacher will provide you with feedback on your performance.

|  |  |
| --- | --- |
| **Points awarded** | **Description** |
| Full points | The response addresses all parts of the question completely and correctly. |
| Partial points | The response is incomplete or partially incorrect. |
| No points | The response is incorrect, it does not match the question, or no response is given. |

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