**Outline**

Play the original Simon game to establish a mind-set around basic game systems. Research the history of game systems. Analyze the Simon game from an input-process-output perspective.

**Objectives**

* Use the input-process-output model to solve programming problems.
* Use industry-standard programming tools (e.g., UML [Unified Modeling Language], diagrams, structure charts, flow charts, pseudocode) to develop a software project.

**Materials**

* Simon game obtained from teacher

**Level 1: Start of Game - Input / Output Analysis**

Explore the Simon Game and Instruction Booklet to understand how the game works with respect to starting a new game.

1. You turn on the game by pressing one of the four buttons. Pressing the red button will start a single player mode, pressing the green button will start co-op mode. If you press the yellow button the game will display the highest score. After selecting either single or co-op the game will start playing a pattern from there you just repeat it .
2. If (a button is pressed and the game is not on) then turn it on , if (the red button is pressed) then start the game in single player. If (the green button is pressed) then start the game in co-op mode. If (the yellow button is pressed) then display the high score.
3. List all of the user input objects and actions using a table similar to the one below.

|  |  |  |
| --- | --- | --- |
| **Object** | **Action** | **Result** |
| The red button | . Push | If the game didn’t start , start in single player else record and check if that was the right color in pattern |
| The green button | Push | If the game didn’t start start in co-op mode, else record and check if that was the right color in the pattern |
| The yellow button | Push | If the game isn’t on or didn’t start show the high score. If the game is in progress record and check if that was the color in pattern |

**Level 2: Game Play - Input / Output Analysis**

Explore the Simon Game and Instruction Booklet to understand how the game works with respect to playing the game.

1. After selecting a game mode (single player or co op) the game will start level one and start showing a pattern. In our case its red , green, blue. You would then have to repeat the pattern in the correct order, firstly starting with red, then green then finally blue,if you mess up any color throughout the pattern you will fail and the game will restart.
2. Re-format your answer to question #1 above to identify and list all the steps required to start a new pattern.

If ( the player selected a game mode) then start playing the first pattern. If (the game is on a 3 tone stage) then end the game. If (the color is correct) then continiue the game. If ( the pattern is completed correctly) start the new pattern

1. Re-format your answer to question #1 above to identify and list all the steps involved in successfully completing the pattern (e.g. Red, Green, Blue).
2. Re-format your answer to question #1 above to identify and list all the steps related to making a mistake in the pattern (e.g. Red, Green, Red).
   * Use an IF … THEN… statement format.
   * e.g. IF the user presses a green button THEN the game flashes a green light
3. List all of the user input objects and actions using a table similar to the one below.

|  |  |  |
| --- | --- | --- |
| **Object** | **Action** | **Result** |
| e.g. Red Button | e.g. Push | e.g. Record a step in the pattern |
|  |  |  |
|  |  |  |

1. List all of the user output objects and actions using a table similar to the one below.

|  |  |  |
| --- | --- | --- |
| **Object** | **Action** | **Meaning** |
| e.g. Red Light | e.g. Play tone | e.g. Indicates a step in the pattern |
|  |  |  |
|  |  |  |

**Level 3: Flowchart Conventions**

Research and explore how flowchart symbols can be used to represent pseudo code for computer programs.

1. Read the background information at: <https://www.smartdraw.com/flowchart/>
2. Hand draw and explain each of the basic flow chart symbols.
3. Find an example flow chart that uses each basic symbol at least twice. Hand draw the flow chart and explain the logic flow using words in point form.

**Level 4: Flowchart the Simon Game**

1. Create a flow chart showing the pseudo code for a three-tone pattern game you described in your Level 2 answers.