**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. Describe how to start a new game in your own words using point form.  
   Click red or green button depending on whether you wanted to play solo or squad.
2. Re-format your answer to question #1 above to identify and list all the steps required to start a new game.
   * Use an IF … THEN… statement format.
   * e.g. IF the user presses a green button THEN the game flashes a green light  
     If the user clicks the green button then a solo match begins.

If the user clicks the red button then a squad match begins.

1. 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 |
| Green button | Push | Solo Match begins |
| Red button | Push | Squad match begins |

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 |
| Blue Light | Flashes | Indicates a step in the pattern |
| Green light | Flashes | Indicates a step in the 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. Describe how to play the game in your own words using point form. Assume that the pattern is at the 3 tone stage (e.g. Red, Green, Blue).

You would choose whether you want to play solo or as a party and then you would hit the colors in order to continue the game. You remember the pattern and continue to click it how the game was shown to continue to keep advancing to the next level.

1. Re-format your answer to question #1 above to identify and list all the steps required to start a new pattern.
   * Use an IF … THEN… statement format.
   * e.g. IF the user presses a green button THEN the game flashes a green light
   * If the Red light then green light then blue light lights up then you would hit the buttons in that order to continue the game and to keep making it to the next level.
   * If the game shows the lights in a certain pattern then the player would correspond in the same way by pressing the pattern.
2. 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).
   * Use an IF … THEN… statement format.
   * e.g. IF the user presses a green button THEN the game flashes a green light.
   * If the game sets a specific pattern then the player has to hit the specific patterns to continue advancing.
   * If the player hits the wrong button then the player loses and has to restart the game over again.
3. 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.
   * If the player hits the wrong button then the player loses.
   * If the player hit the wrong player then the player would have to restart.
4. 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 |
| Correct button | Push | Records a step in the pattern |
| Incorrect button | Push | Display losing jingle |

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 | |
| Green, blue, yellow, red | Jingle plays | 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.