**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.
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
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 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).
2. 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
3. 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
4. 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
5. 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.