User documentation of Game Simon

Simon Introduction:

Simon is a memory game. The device creates a series of different lights and requires a user to repeat the sequence. If the user succeeds, the series becomes longer. Once the user fails, the game is over. The game is created to improve short-term memory and make users be more focused.

Set up:

The user should download application called Ripes, and then open Ripes. Click the file button, there will be a small window pops out, select the Simon.s then click OK to load the file into the editor.

System configuration:

After loading the file select the I/O tab.

Double-click on the "LED Matrix" device to get an LED matrix if there is not already one. To the right, you should see a panel "LED Matrix 0" with parameters "Height", "Width", and "Size". Set the height and width to 3 and 3. Set the size of the LEDs from 50 to 100.

Next, double-click on the "D-Pad" device to get a d-pad if there is not already one. To the right, you should see a panel "D-Pad 0". Select it and read the instructions.

Finally, to make sure the program runs quickly enough, use the single-cycle processor (click the square button on the top-left corner and select 32-bits single-cycle processor), and use fast execution (the ">>" symbol).

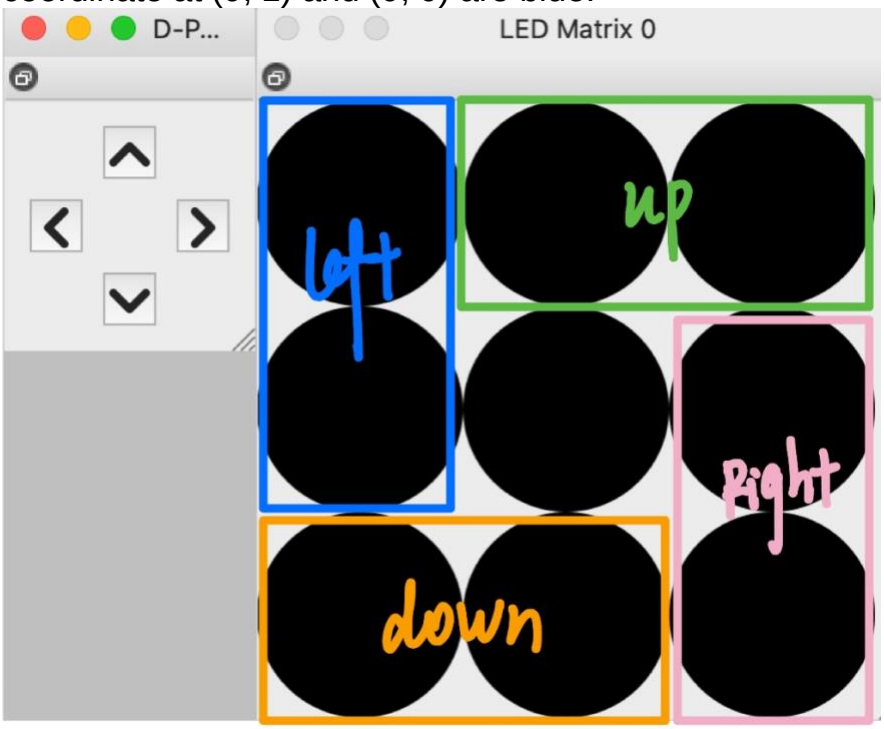
Instruction:

How to Start the game:

After the system configuration. The user needs to switch to the I/O window by selecting the I/O tab. Then, press the fast execution button (">>") and pay attention to the flashing orders of the lights.

Gameplay:

There are nine LEDs that light up in different colors. The initial color for the LEDs is black since all LEDs are off at the start of the game. The up LEDs coordinate at (1, 0) and (2, 0) are green, the right LEDs coordinate at (2, 1) and (2, 2) are pink, the down LEDs coordinate at (1, 2) and (0, 2) are orange, and the left LEDs coordinate at (0, 1) and (0, 0) are blue.



When the user starts to play the game, the two of nine LEDs flashes in a random order at one time. The LEDS will flash four times in the first round. Then the user should click the d-pad (direction pads) keys after all the possible lights flash out.

When the user clicks one direction d-pad key, the LED corresponding with the d-pad key will be lighted up and then lighted down. If the user does accurately (all the pads are clicked in the right order), then all the LEDs flashes in yellow to indicate the user win (the user's input successfully matches the random sequence) in this round.

After current round the user should switch to the processor window and will be asked if he/she wants to continue or not in the console (Press 1 to continue,

press 0 to end the game). The user should enter 0 or 1 in the console to tell the game if he/she wants to continue or not.

If the user enters 0, the game will exit. However, if the user enters 1, the game will enter the next round, the flashing sequence will be longer (one more), while the current level sequence should also be displayed for the next round.

Ending the Game:

Eventually, the sequences will get too long for the user to memorize, so he/she will be unable to match the sequence. At this point, the user may click the wrong d-pad key, then the game will be ended.

Once the user clicks the wrong d-pad key, then all the LEDs will flash in red to indicate the user lose the game and the game exits. If the user wants to play the game again, he/she should click the ">>" button to quick start again. However, if the user wants to quit the game, press the cross button on the top-left corner of the windows and make sure there is no change to the original codes.

The two enhancements:

1. Increasing difficulty by increasing pattern size is implemented. The sequence length is increased by one after each successful round. The current level is also displayed after each round.

2. Improving the LED interface is implemented. LED matrix size is increase from 2x2 to 3x3 to better resembles the original Simon game device. Two LEDs will be lit up at once when the game starts to resemble the "pads" in the original device.

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