Simon

User Document

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Introduction

This is an implementation of the game Simon by using the RISC-V Assembly code. Simon is a memory game that was very popular during the 1970s and 1980s.

As the game starts, 4 LEDs light up in some random order, the player has to press the pad, each button on the pad is corresponding to a LED and the player needs to press in the same order as the LED lights up.

Prerequest

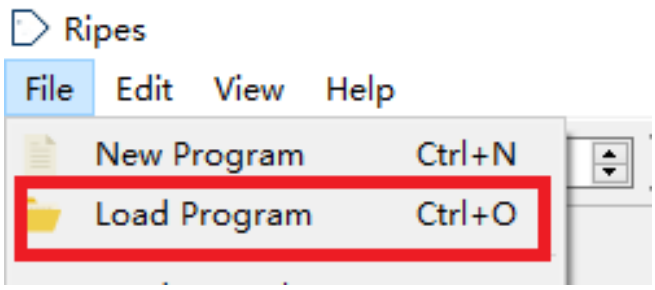
Download Ripes

Since it is a RISC-V project, the code has to be run on a RISC-V machine. If you do not have a RISC-V machine, or don't know how to run an assembly code on a RISC-V machine, Ripes is recommended for compiling and running the code. Click here to download Ripes or copy the link https://github.com/mortbopet/Ripes/releases/tag/v2.2.4 to your browser and select the version that satisfies your requirements.

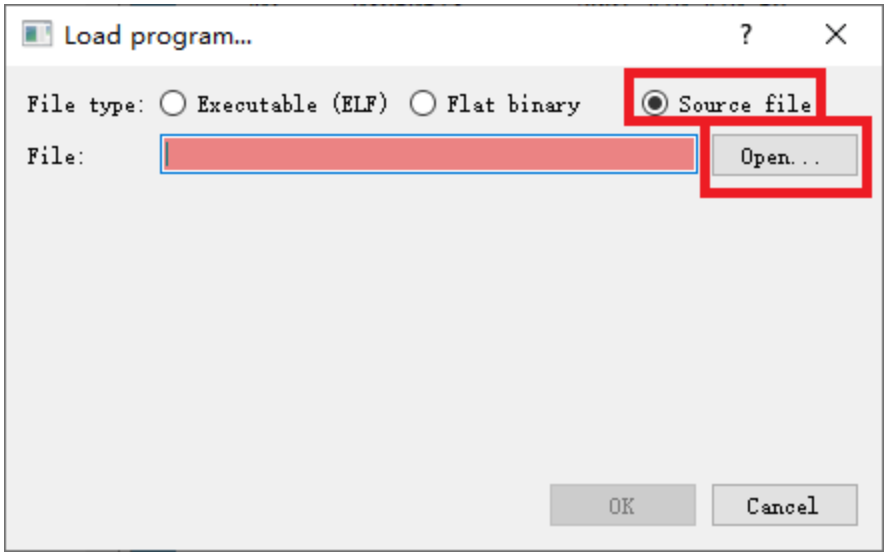
Run the Code on Ripes

As you launched Ripes, do the following setup:

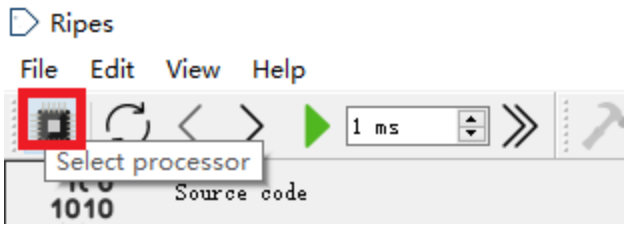
a. At the top right corner, select **file** -> **load program**



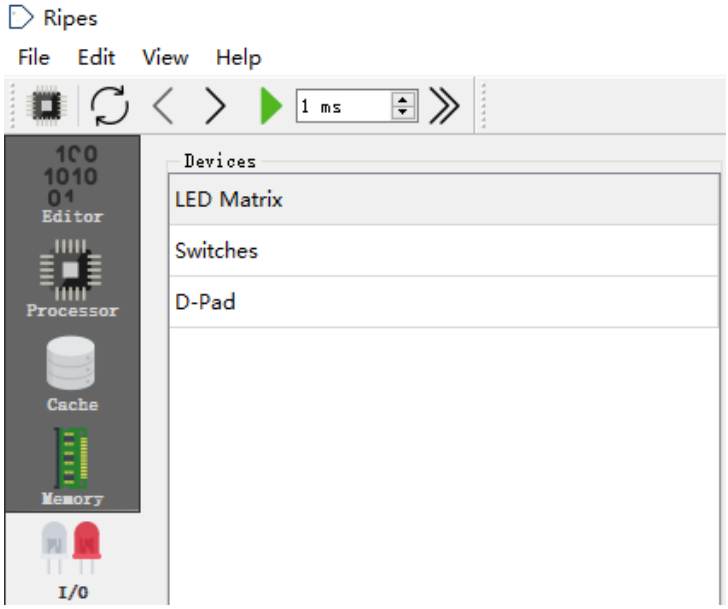
b. Select **source file**, and click **open** to select the correct starter.s file in the popup and then click **ok**



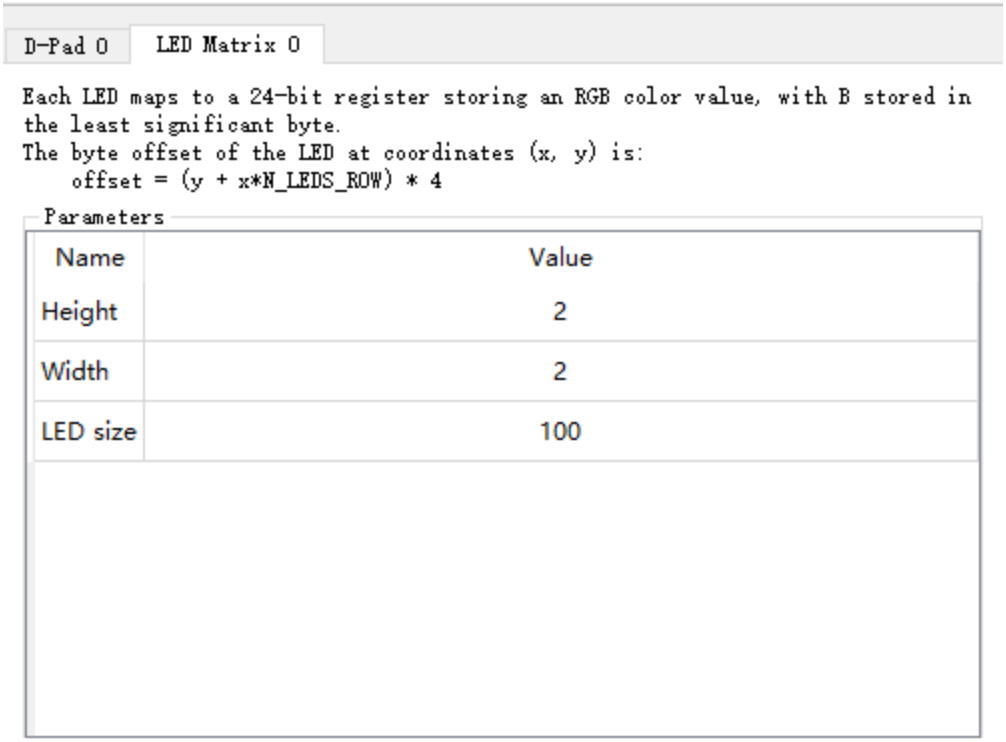
c. After that, click **select processor** icon at the top right corner, make sure you are using **32-bit Single -cycle processor**



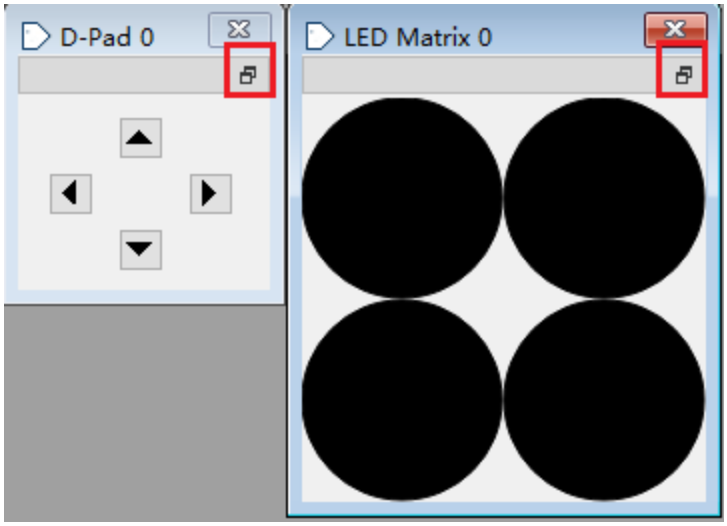
d. At the left bar, select **I/O** -> double click **D-Pad** and **LED Matrix**



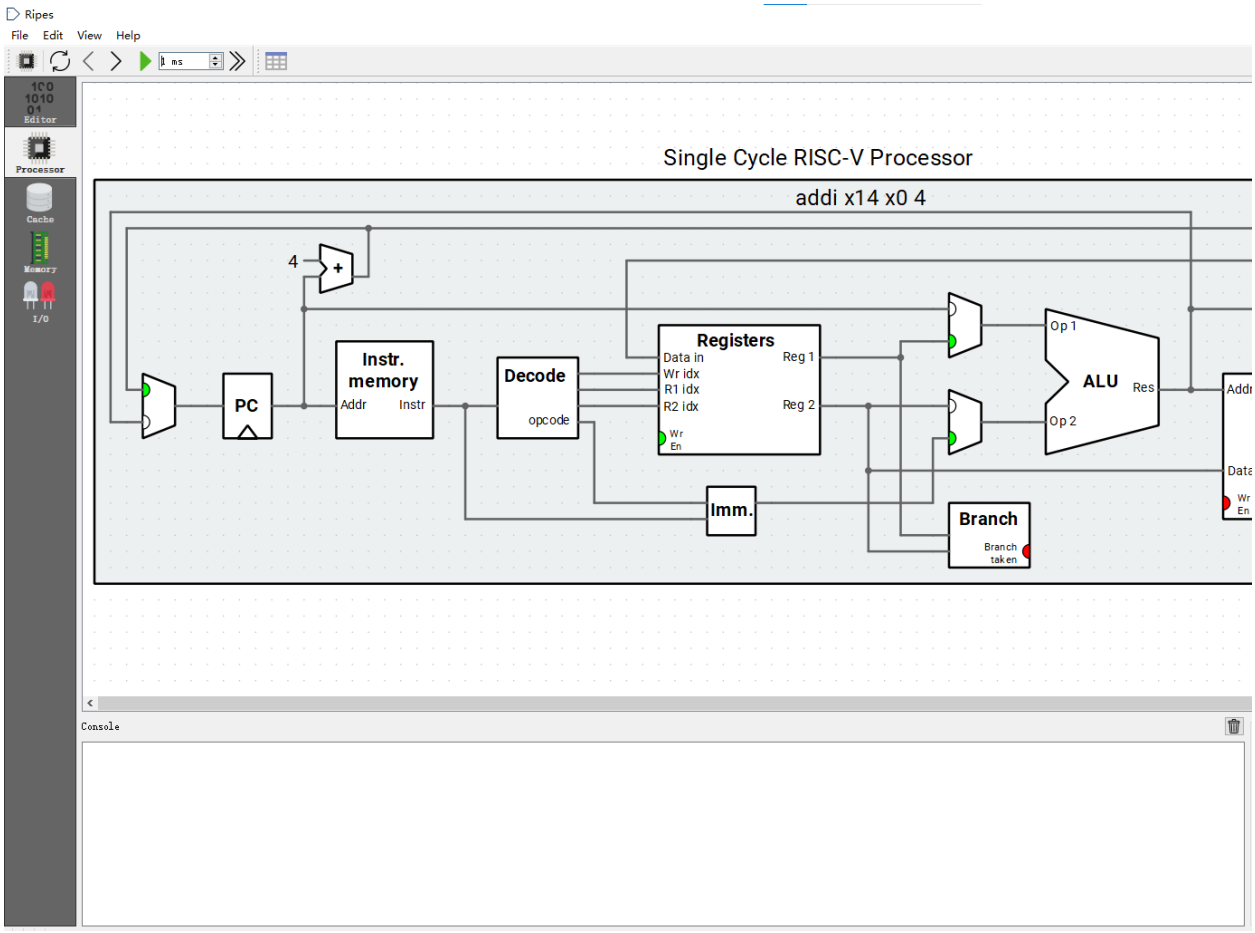
e. At the right, there is a panel **LED Matrix 0**. Set the parameter **height** and **width** to 2 and 2. Set the **size** to a value that you feel is good enough (from range 1 - 100).



f. At the middle, click the button to extract both **D-Pad 0** and **LED Matrix 0**

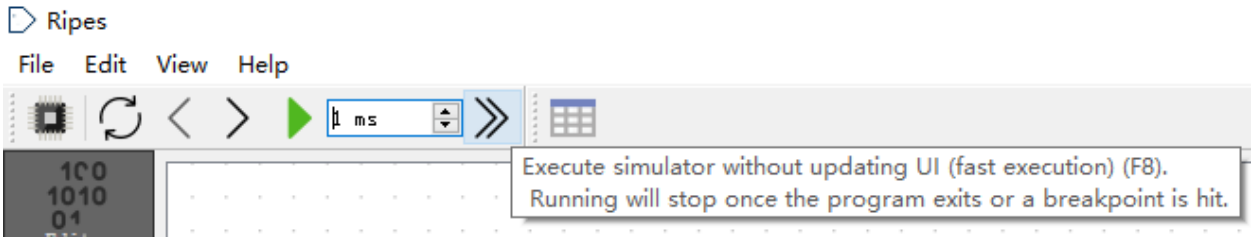


g. Select **Processor** at the right bar. The **Console** at the bottom will output useful information during the game.



Start the Game

Click **Fast Execution** at the top, the game will start.



As the game starts, the console will output the level of difficulty - which is the number of LEDs that will light up at this round. LEDs will light up in a random order. After all LEDs become black, click on the **D-Pad**'s buttons in the same order. Each button on the D-Pad corresponds to a LED:

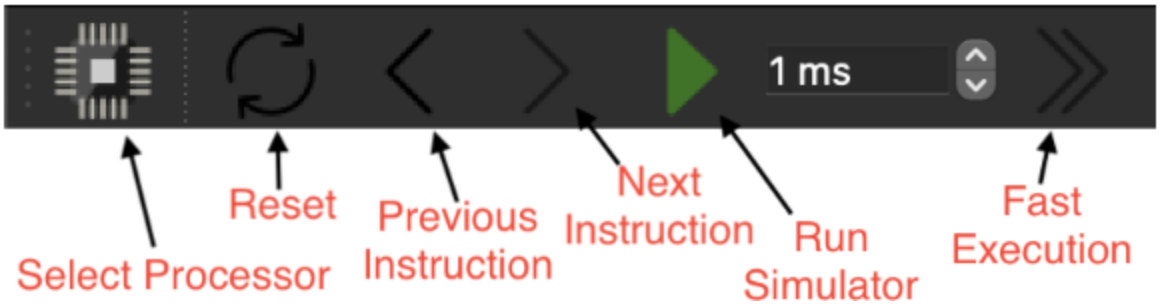
- UP - Top Left LED
- Down - Top Right LED
- LEFT - Bottom Left LED
- RIGHT - Bottom Right LED

After each click, the corresponding LED will light up if your solution is correct. After you select the LEDs in the correct order, all LEDs will become green to indicate you pass this level, otherwise all LEDs will become red immediately after 1 incorrect click.

If you win this round, difficulty will increase for the next round: the number of LEDs that will light up will increase by 1, and the time of each LEDs lighting up will decrease by 0.5 second. Press **UP** to enter the next round, press other buttons to exit the game.

If you fail the game, the game will exit.

To restart the game, click the **Reset** button at the top and repeat the steps above.



Errors/Problem Solving

If you meet any errors/bugs during the game, please rest the game, or restart Ripes.