

Assembly Project - Simon Game
Thanh Liem Tu - 1008047178
March 1st, 2023

1. Introduction

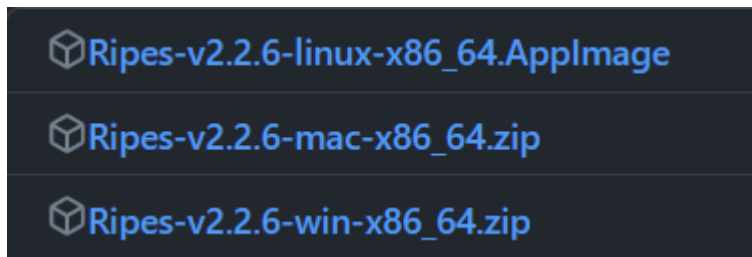
Simon is a short-term memory game developed in the 1970s.

2. Prerequisites

The user must have Ripes downloaded from this link:

<https://github.com/mortbopet/Ripes/releases>

The user must download the version that is compatible with their system.

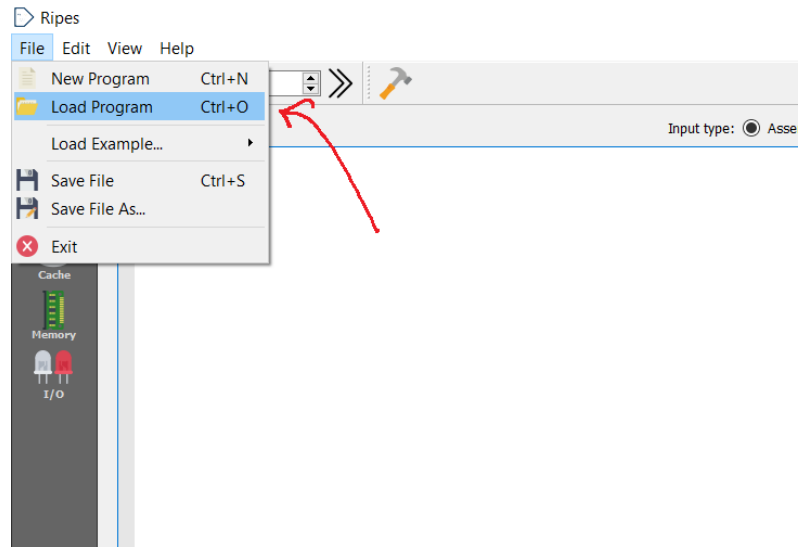


A linux user will download the first file, a mac user will download the second file, and a windows user will download the third file.

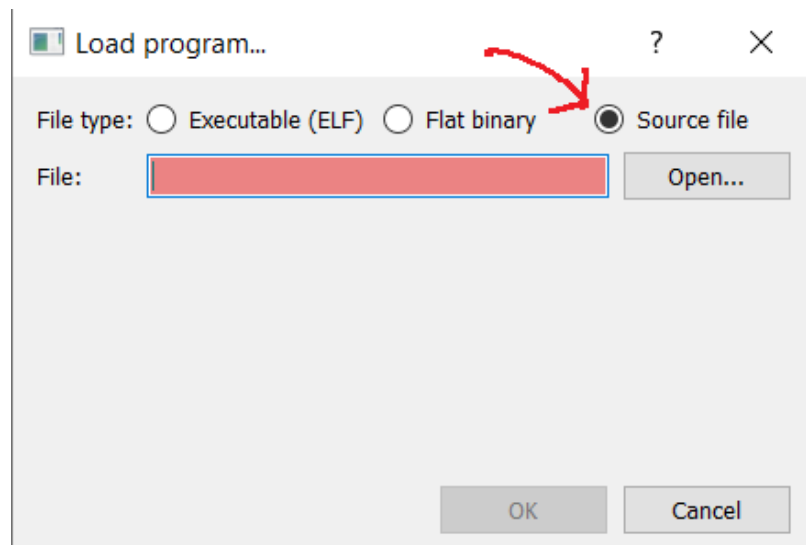
The user must also have starter.s downloaded.

3. Setting up the game

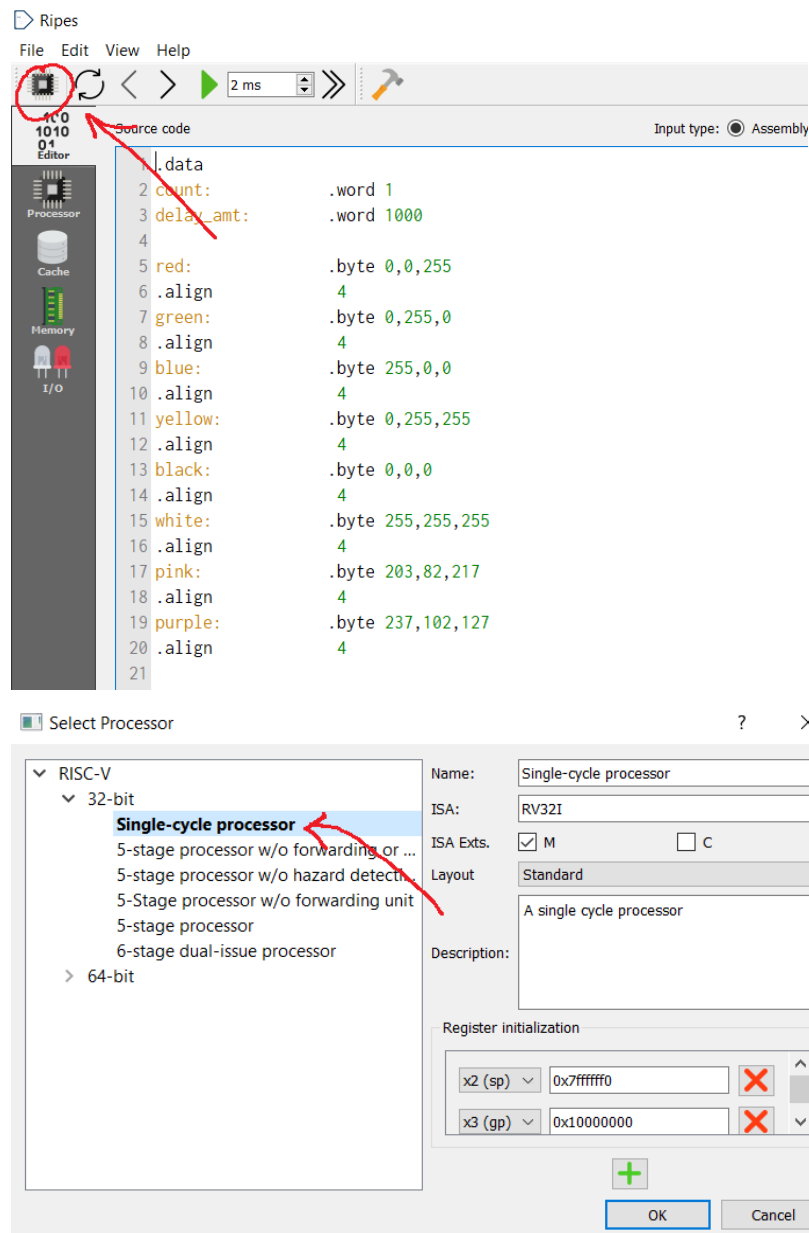
Start up Ripes. Navigate to the top left corner of the application and select File -> Load Program.



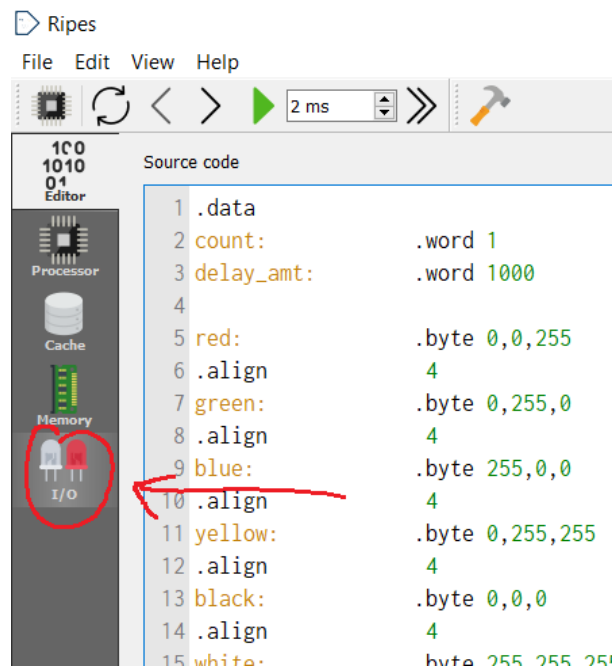
Select the "Source File" option and open starter.s



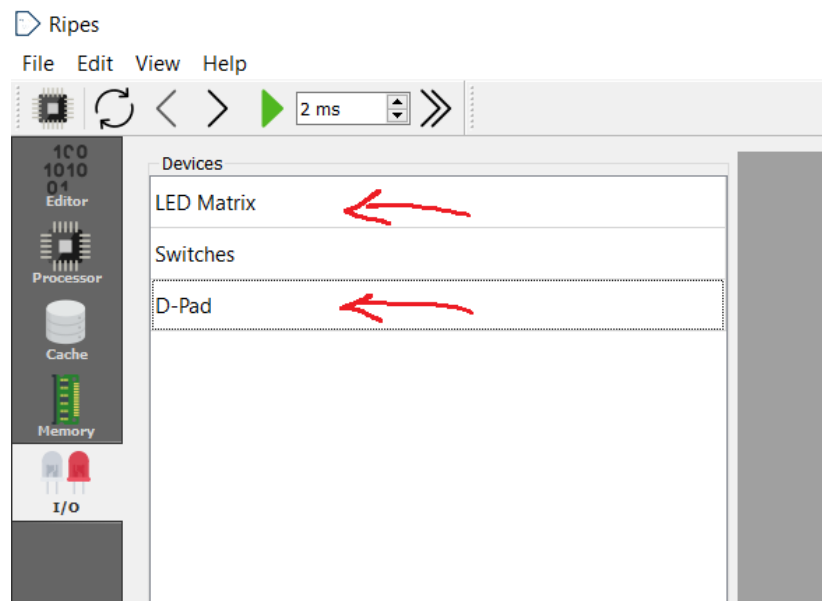
Navigate to the top left corner of the application and select “Select processor”. The single cycle processor is required to play the game.



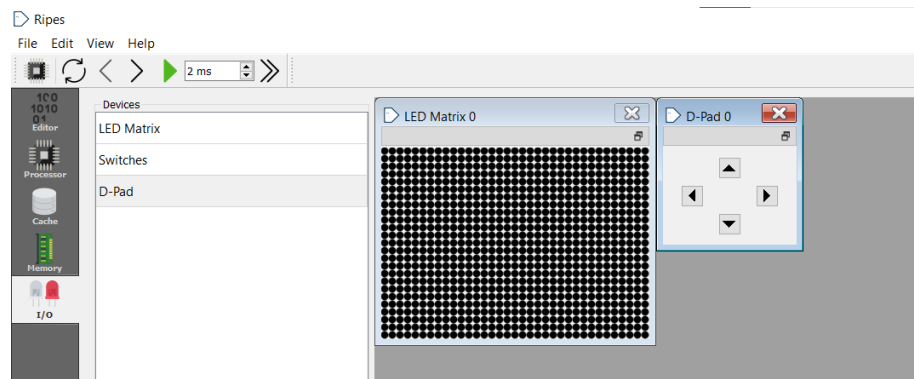
Navigate to I/O.



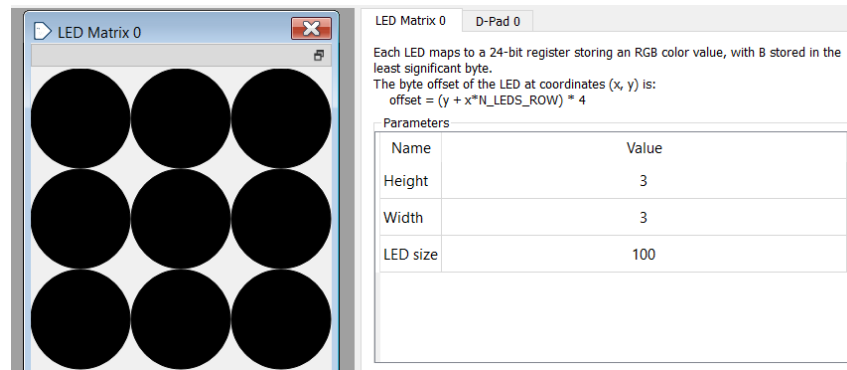
Within the I/O tab, double click on LED Matrix and D-Pad.



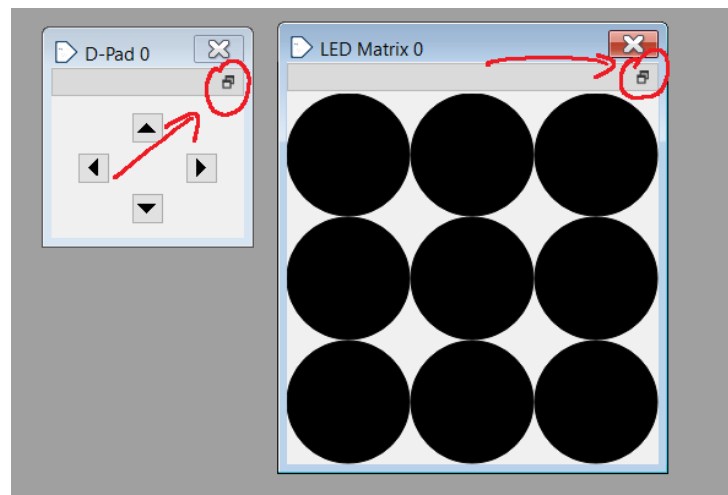
Upon successful initialization, these 2 will be displayed.



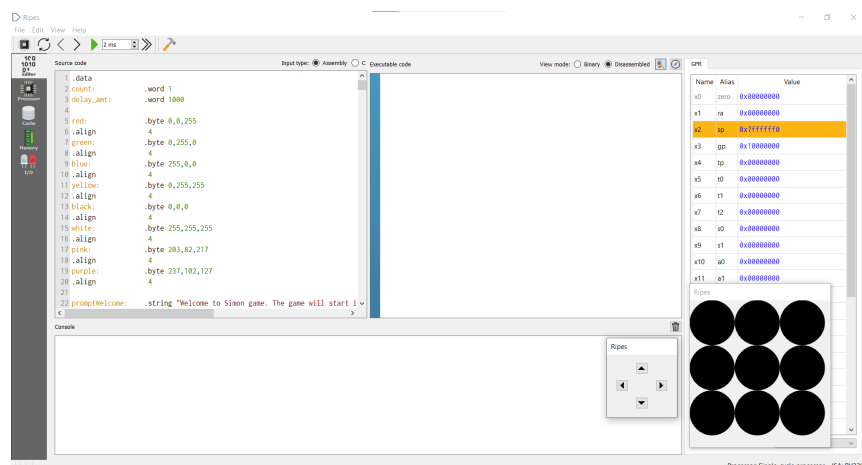
Click on the LED Matrix 0 to focus on it. Change the height, width, and LED size to 3, 3, and 100, respectively.



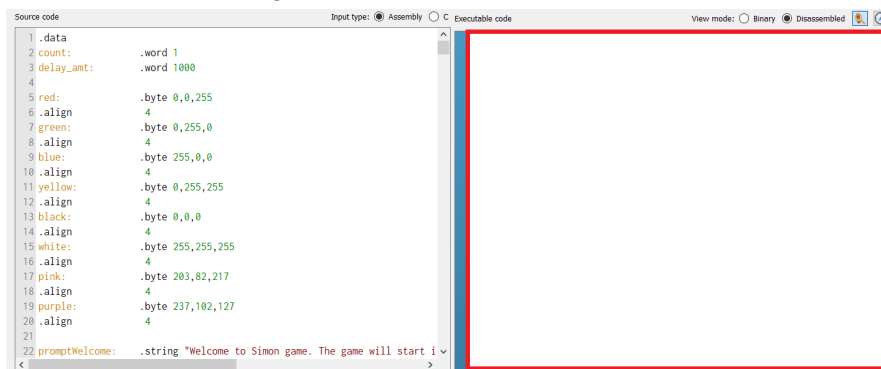
Select the button right below the close button in the D-Pad and the Matrix to pop the display out.



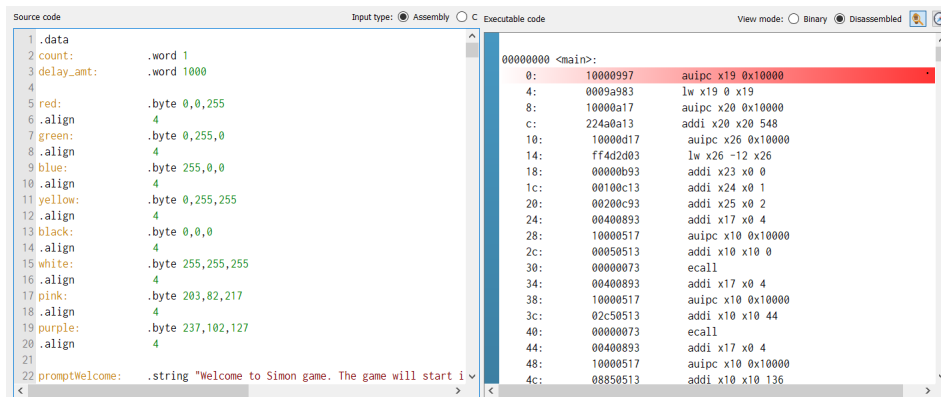
We are now ready to navigate back to the Editor tab along with the D-Pad and the LED Matrix.



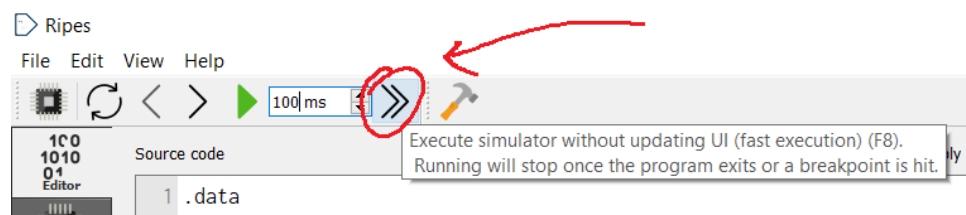
We now need to load the program into memory, specifically, we need to initialize the screen on the right.



To do so, edit the source code screen on the left by adding redundant contents, such as adding a letter, which can be done by moving the cursor to any place in the code, press any alphabetical key on the keyboard, and then delete the newly added content. As a result, the screen on the right will now be updated. The game is ready to be started.



Select fast execution to start playing.



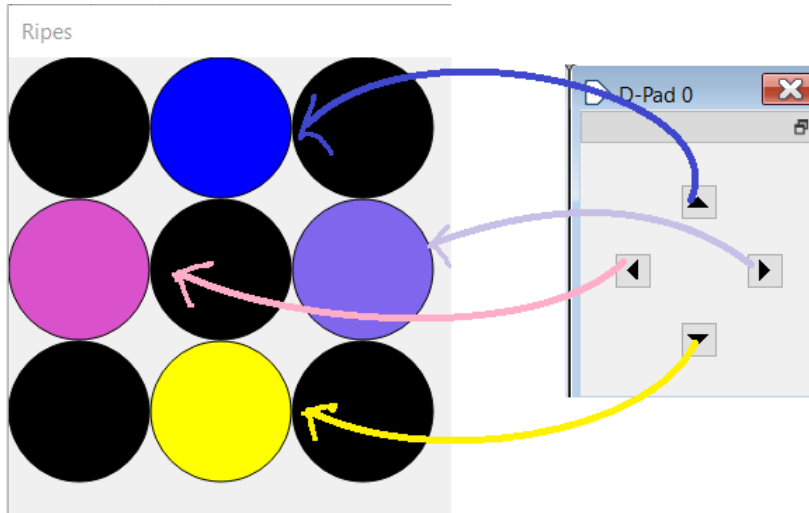
4. Gameplay

Upon starting the game, the console will display the game instruction to the player.

```
Console

Welcome to Simon game. The game will start in 5 seconds.
When it's your turn, press the dpad in accordance with the sequence that will appear on the LED matrix.
Blue is up, yellow is downn, pink is left, purple is right.
The middle will light up as green if you enter the sequence correctly.
```

The D-Pad button corresponding colors are as follows.



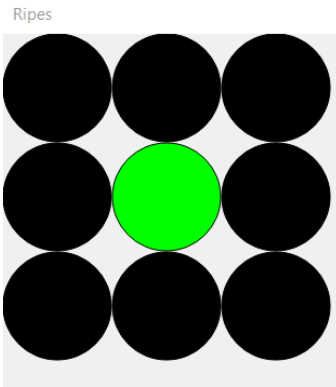
The game will allow the player to have time and look at the displayed sequence. When it's the player's turn, the console will say so.

As an example, suppose that before the player's turn, the D-Pad lights up in the following order: Blue -> Purple -> Yellow -> Pink, the player should press the following D-Pad keys: UP -> RIGHT -> DOWN -> LEFT.

The corresponding LED will light up as the player press the buttons on the D-Pad.

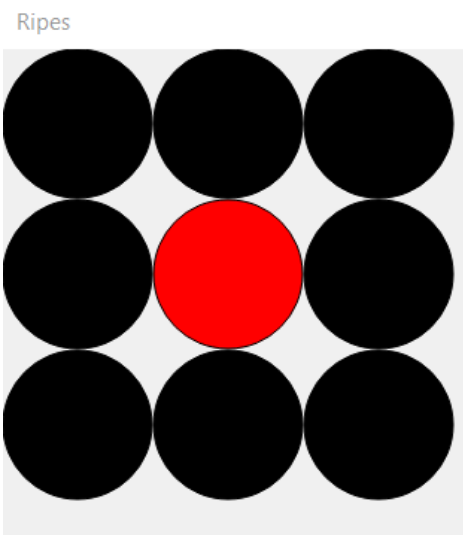
```
Welcome to Simon game. The game will start in 5 seconds.
When it's your turn, press the dpad in accordance with the sequence that will appear on the LED matrix.
Blue is up, yellow is downn, pink is left, purple is right.
The middle will light up as green if you enter the sequence correctly.
Round 1 starting.
Generating sequence...
Your turn.
```

If the entered sequence is correct, the middle LED will blink green twice. A "Well done" message will also be displayed to the console to motivate the player.



```
Round 1 starting.  
Generating sequence...  
Your turn.  
Well done.  
Round 2 starting.  
Generating sequence...  
Your turn.
```

If the entered is wrong, the middle LED will blink red twice, the game is over.
The console will prompt the user if they want to play again or not.



```
Round 2 starting.  
Generating sequence...  
Your turn.  
Game over.  
Do you want to play again? Press up on the dpad to restart the game, press other buttons to end the game.
```

If the player presses up on their keyboard, the game starts anew. Otherwise, the game ends.

Have fun.