

N8 Controller Tutorial

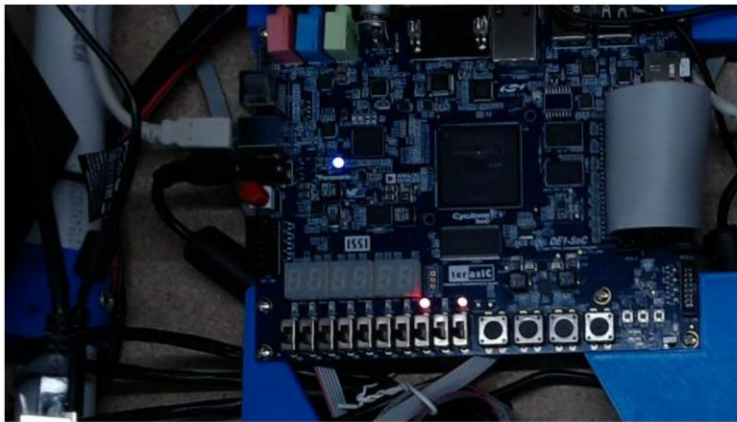
Introduction

This tutorial provides a method for using the N8 controller input on LabsLand, which is a simulator of the Nintendo N8 controller:

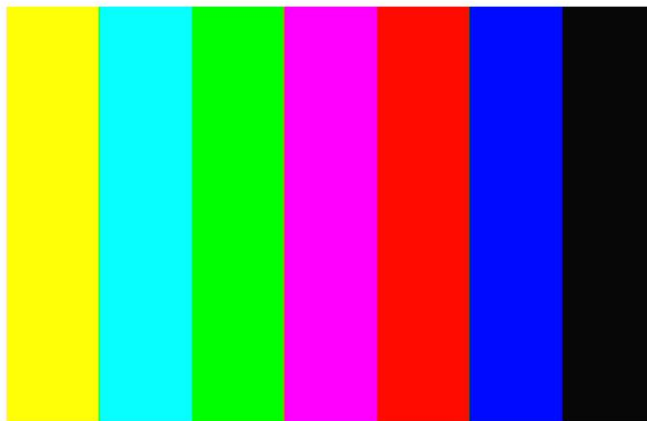


Web Interface

You must select the “Full experience with N8” user interface, which also includes VGA output and audio input/output. The “Configure” button will allow you to upload audio files if you intend to use the audio features of this interface.



You are using: uw-cluster3-de1_soc_s4i1. Experiencing any problem with this device? [Let us know](#)



Each of the 8 buttons (up, down, left, right, select, start, B, A) are **clickable** on the image of the controller using your mouse. However, the mouse does limit you to clicking a single button at a time. To overcome this limitation, there is also a keyboard interface for the controller buttons:

- AWSDF for left (A), up (W), down (S), right (D).
- HJKL in the same order as in the controller: H (select), J (start), K (B), L (A).

Using the N8 Controller

Provided code

- ***serial_driver.sv*** – A generic serial driver for communicating with the LabsLand FPGA management system (a Raspberry Pico).
- ***n8_driver.sv*** – The driver that converts the serialized data from `serial_driver` to the N8 interface (*i.e.*, individual button signals).
- ***n8_example.sv*** – Example code that uses `n8_driver` to read the button inputs and then shows any asserted values on the DE1-SoC outputs. Intended to be a starting point for your own project.
- ***n8_display.sv*** – Helper module to display N8 signals on the HEX displays. Not needed if you plan to use different output methods for your project.

You can find a video of `n8_example` in action here: <https://youtu.be/iU4bHUIUCO>

Driver ports

```
module n8_driver (  
    input clk,  
    input data_in,    // connect to V_GPI0[28]  
    output reg latch, // connect to V_GPI0[26]  
    output reg pulse, // connect to V_GPI0[27]  
    output reg up,    // outputs for the corresponding button  
    output reg down,  
    output reg left,  
    output reg right,  
    output reg select,  
    output reg start,  
    output reg a,  
    output reg b  
);
```

Tutorial developed by LabsLand and modified by Justin Hsia. Code supplied by LabsLand.