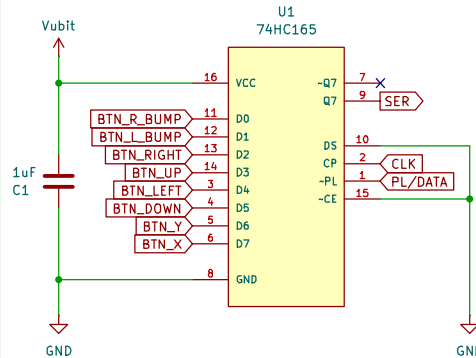


PISO shift register

The 1uF capacitor acts as a decoupling capacitor, stabilizing the power supply by filtering out noise and preventing voltage spikes, which ensures smooth operation of the shift register.

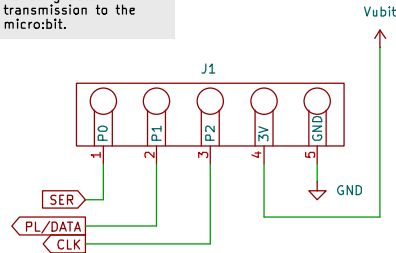
Note that the layout of the shift register below does not exactly match that of the component.



The 74HC165 is an 8-bit parallel-in/serial-out shift register. It converts parallel data to serial output, allowing for simultaneous data capture and sequential output.

micro:bit edge connector

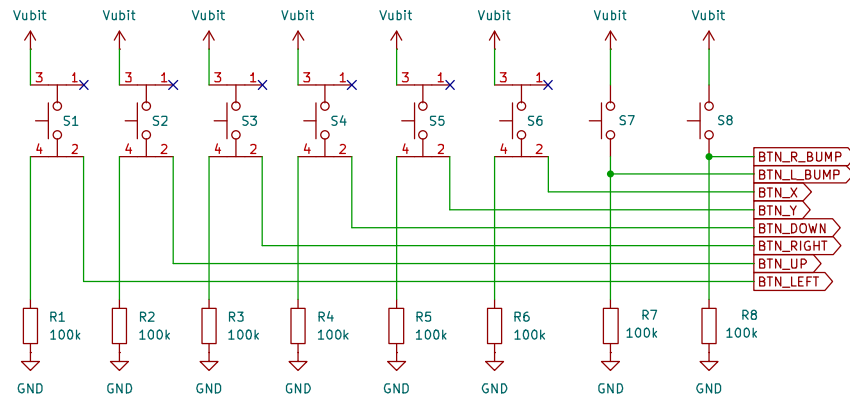
P0 is connected to the serial (SER) output of the shift register, handling data transmission to the micro:bit.



P1 is used for the parallel load (PL) control of the shift register and also manages data (DATA) output to the NeoPixels. Configuration and control are implemented via software.

P2 outputs the clock (CLK) signal for the shift register.

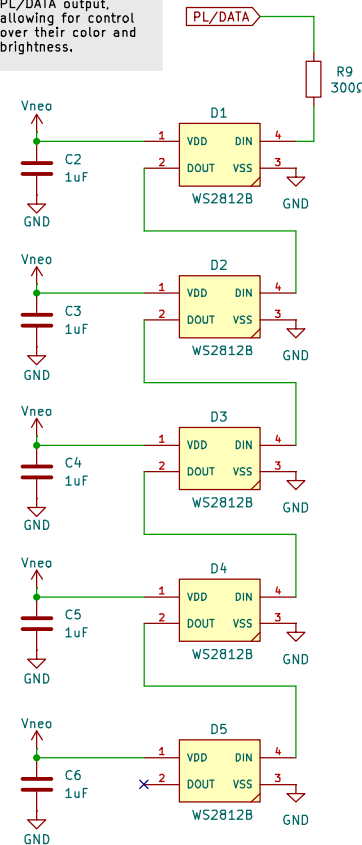
Input buttons



Six 4-pin and two 2-pin tactile buttons are connected to the shift register, each configured with a pull-down resistor to ensure a default low state when unpressed. When a button is pressed, the corresponding shift register input goes high, accurately reflecting each interaction.

NeoPixels

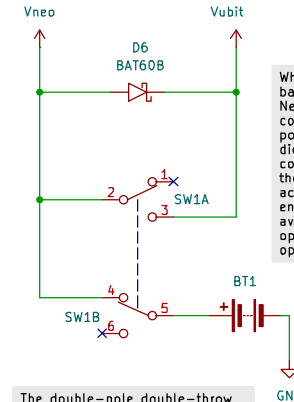
The NeoPixels receive data from the PL/DATA output, allowing for control over their color and brightness.



Each NeoPixel is equipped with a decoupling capacitor to stabilize the power supply, ensuring consistent performance and reducing flickering.

Power supply

A diode is placed between the micro:bit's power source and the battery connection to prevent current from flowing back to the on-board battery. Schottky diodes also have a lower forward voltage drop compared to standard silicon diodes.

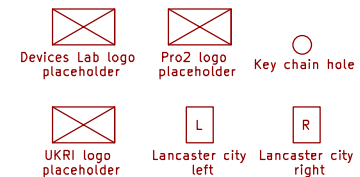


When powered by batteries, the NeoPixels are connected to draw power before the diode. This configuration avoids the voltage drop across the diode, ensuring full voltage availability for optimal NeoPixel operation.

The double-pole double-throw (DPDT) switch selects the power source for the board, allowing a choice between on-board battery power and micro:bit's power source.

Decorative footprints

These footprints are non-functional and included purely for aesthetic purposes.



Aron Eggers
Lancaster University Devices Lab

Sheet: /
File: solderbit-gamepad.kicad_sch

Title: solder:bit Gamepad

Size: A4 Date: 2024-07-04
KiCad E.D.A. 8.0.2-1

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