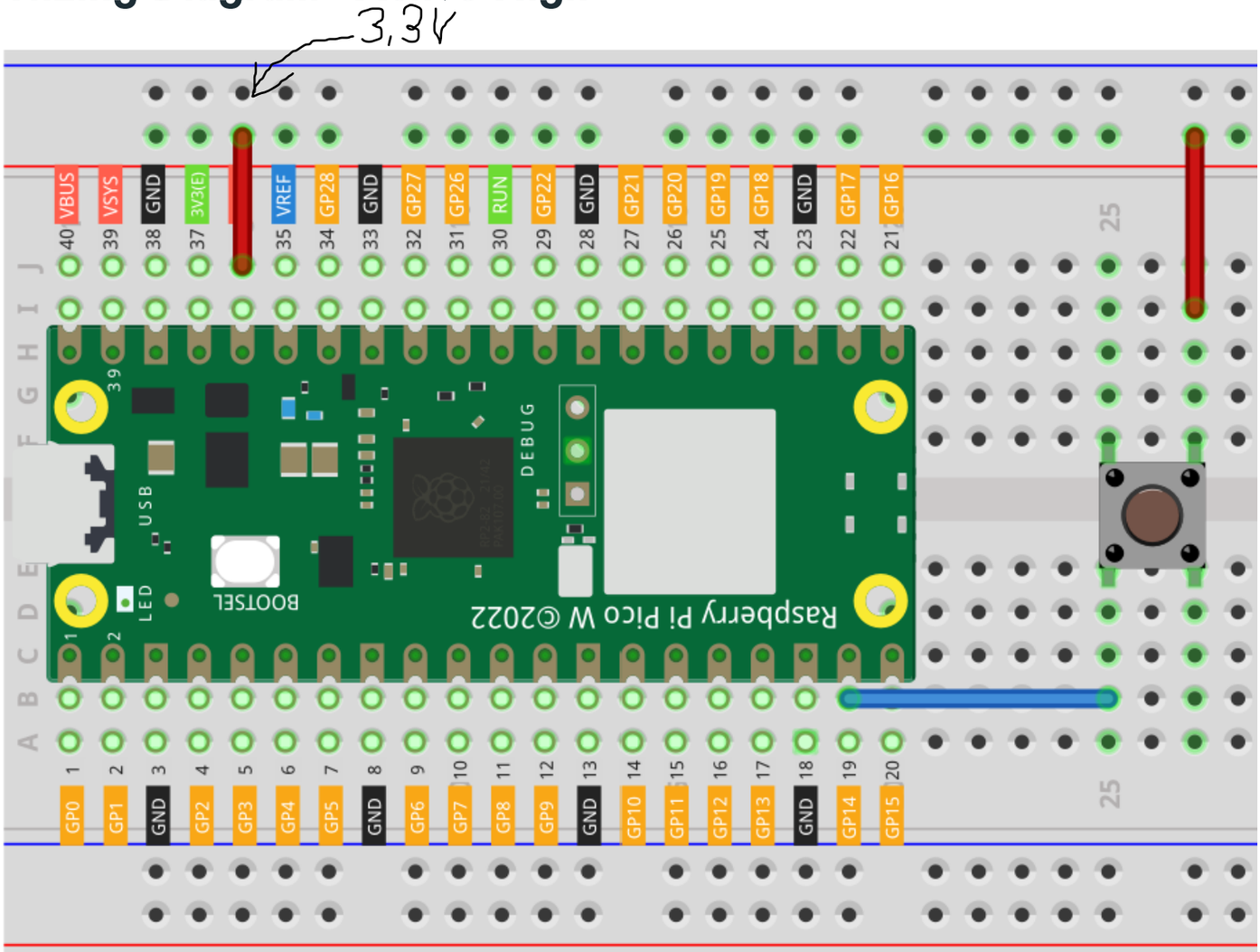
Tutorial 4 - Button

In many electronic projects, buttons are a common way to provide user input. In this tutorial, we'll learn how to use a button with the Raspberry Pi Pico microcontroller board. We'll write a Micropython program that reads the button's state and prints a message when it is pressed.

Components Needed

Component	Quantity
Raspberry Pi Pico W	1
Micro USB Cable	1
Breadboard	1
Wires	Several
Button	1

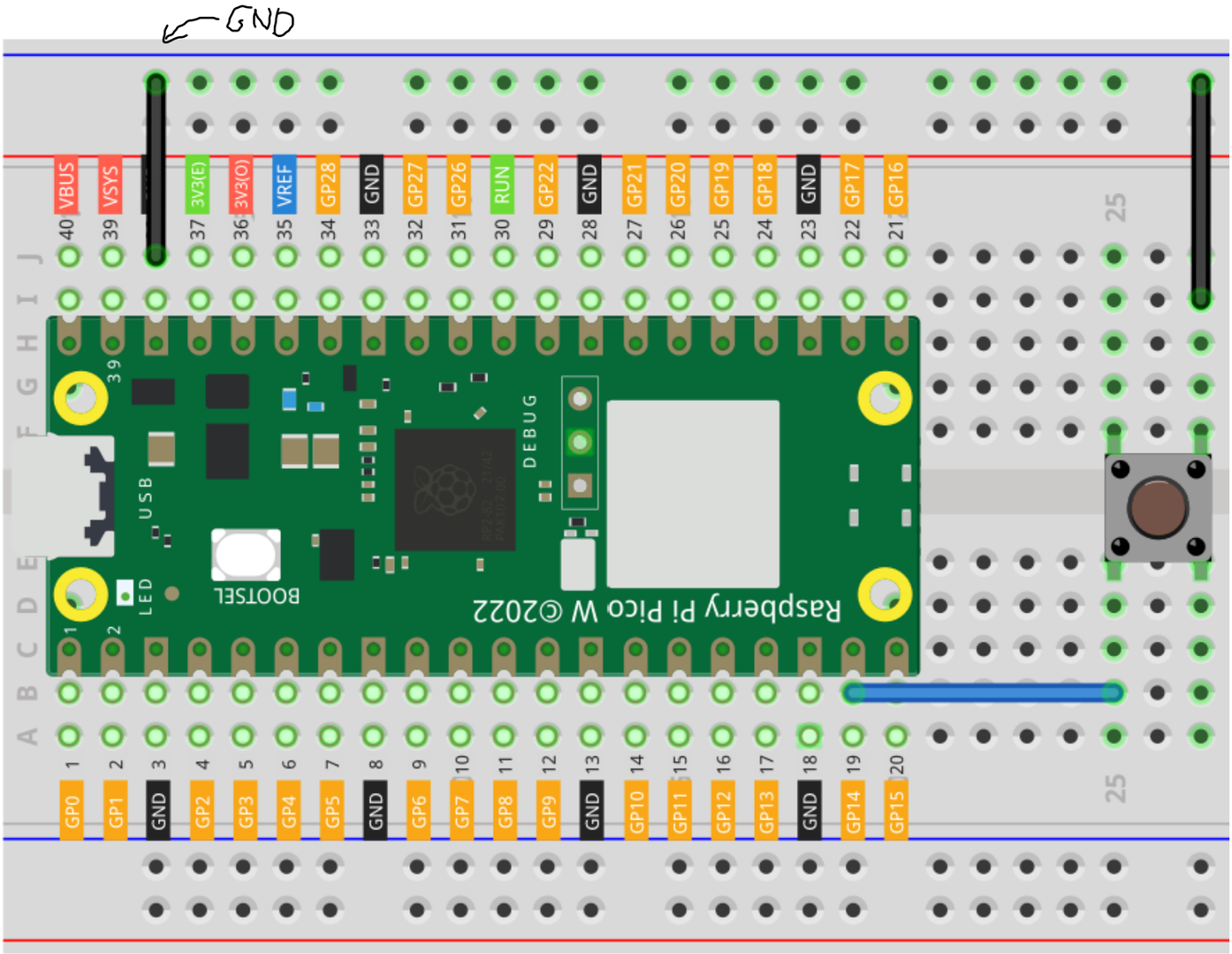
Fritzing Diagram - Active High



Code

```
from machine import Pin
import utime
button = Pin(14, Pin.IN, Pin.PULL_DOWN )
while True:
    if button.value() == 1:
        print("You pressed the button!")
        utime.sleep(1)
```

Fritzing Diagram - Active Low



Code

```
from machine import Pin
import utime
button = Pin(14, Pin.IN, Pin.PULL_UP )
while True:
    if button.value() == 0:
        print("You pressed the button!")
        utime.sleep(1)
```

Code Explanation

```
from machine import Pin
import utime
```

This code imports the `Pin` class from the `machine` module, which allows us to control the input and output pins on the Raspberry Pi Pico. The `utime` module is also imported, which allows us to pause the program for a specified amount of time.

```
button = Pin(14, Pin.IN , Pin.PULL_UP / Pin.PULL_DOWN)
```

This code sets up pin 14 as an input pin, which will be used to read the state of the tilt switch. The `Pin.IN` argument specifies that the pin should be set up for input. We have the choice to either pull the pin to High or Low by using either `PULL_UP` or `PULL_DOWN class` .

```
while True:
    if button.value() == 1:
        print("You pressed the button!")
        utime.sleep(1)
```

```
while True:
    if button.value() == 0:
        print("You pressed the button!")
        utime.sleep(1)
```

This code continuously loops while the program is running, checking the state of the button. The `button.value()` method returns the current state of the button, which is either 0 or 1. If the button is tilted or closed, the value will be 0 or 1 depending on which setup we used

If the value of the button is 0 or 1, the program prints a message to the console indicating that the switch is working. It then pauses for one second using the `utime.sleep(1)` function call.

The program will continue to loop and check the state of the button as long as the program is running.