Step 1: Connect the Pico Microcontroller and Buttons

Begin by placing the Pico microcontroller at the end of the breadboard, ensuring that the USB connector is oriented outward. Add the buttons to the right half of the breadboard as seen in figure 1. Ensure the pins are oriented as seen in figure 2.

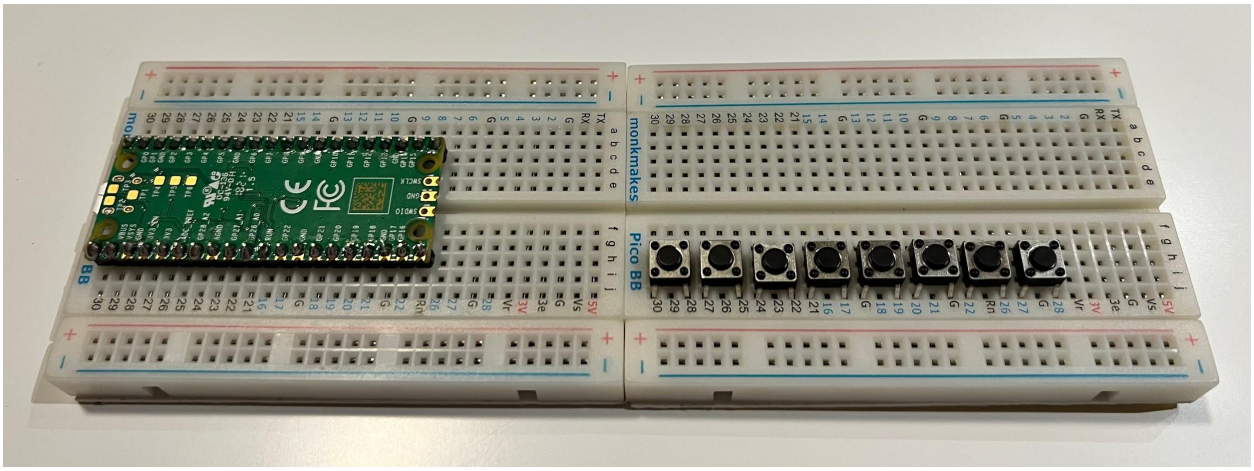


Figure 1

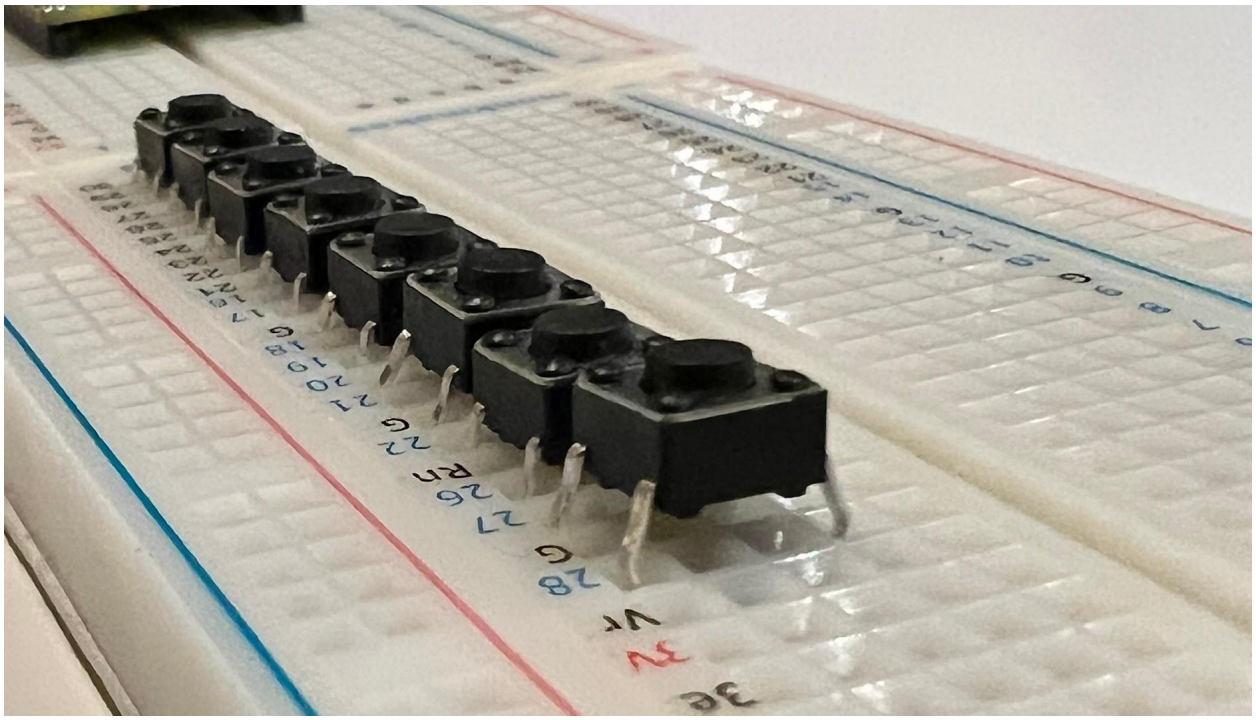
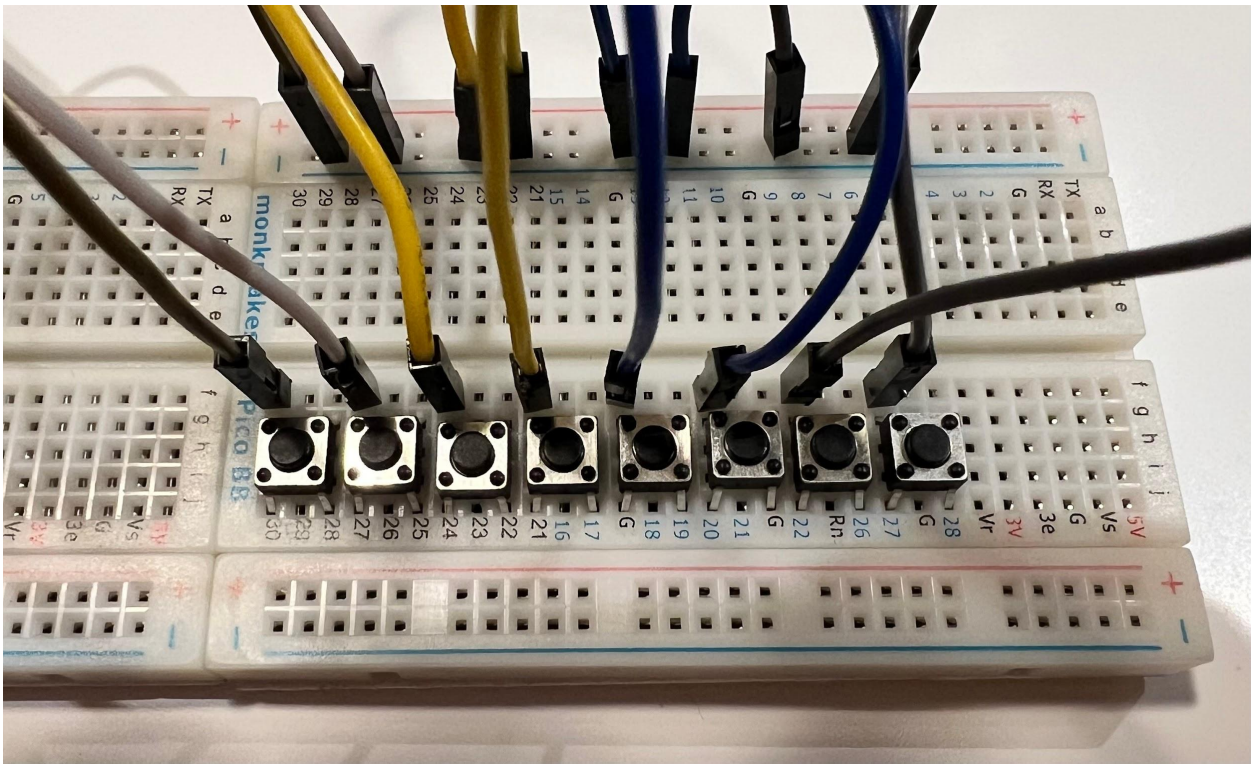


Figure 2

Step 2: Connect to Ground

Using any 8 wires from the kit. Connect the left pin of each button to the running ground channel. (The blue one)

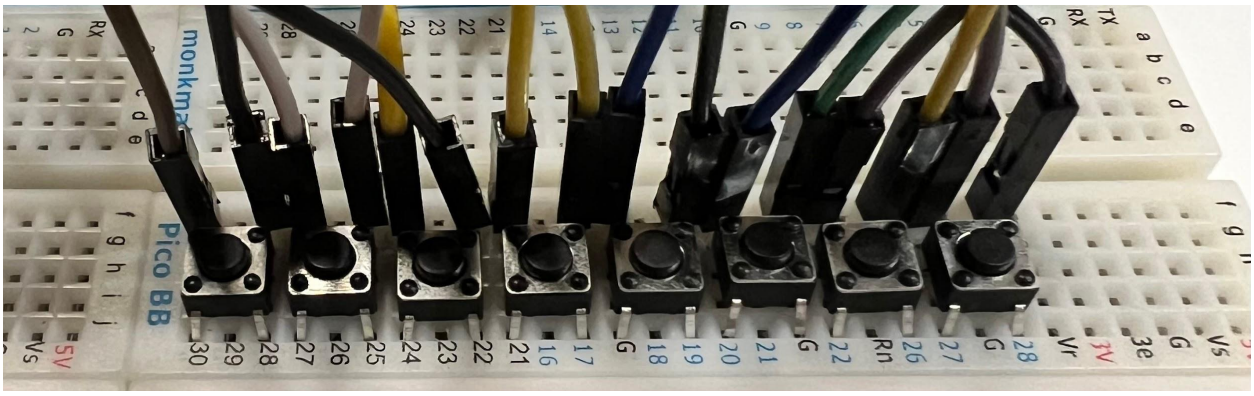


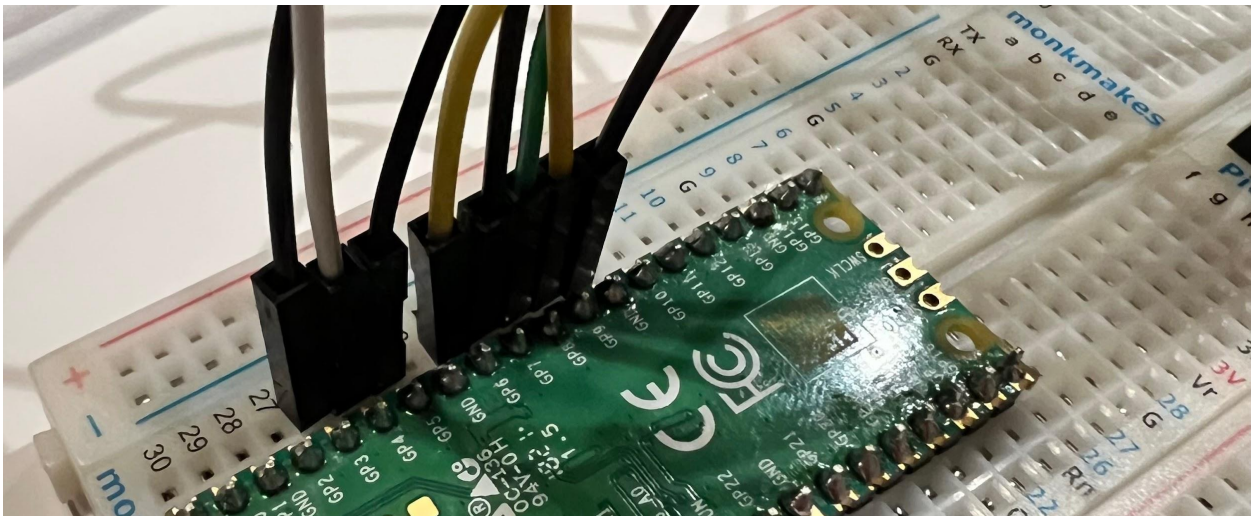
Step 3: Connecting buttons to Pico

Using 8 additional wires from the kit, connect the right pin of each button to the corresponding pins of the Pico. The leftmost button will be button 8, the rightmost button is button 1.

Connections should be as follows:

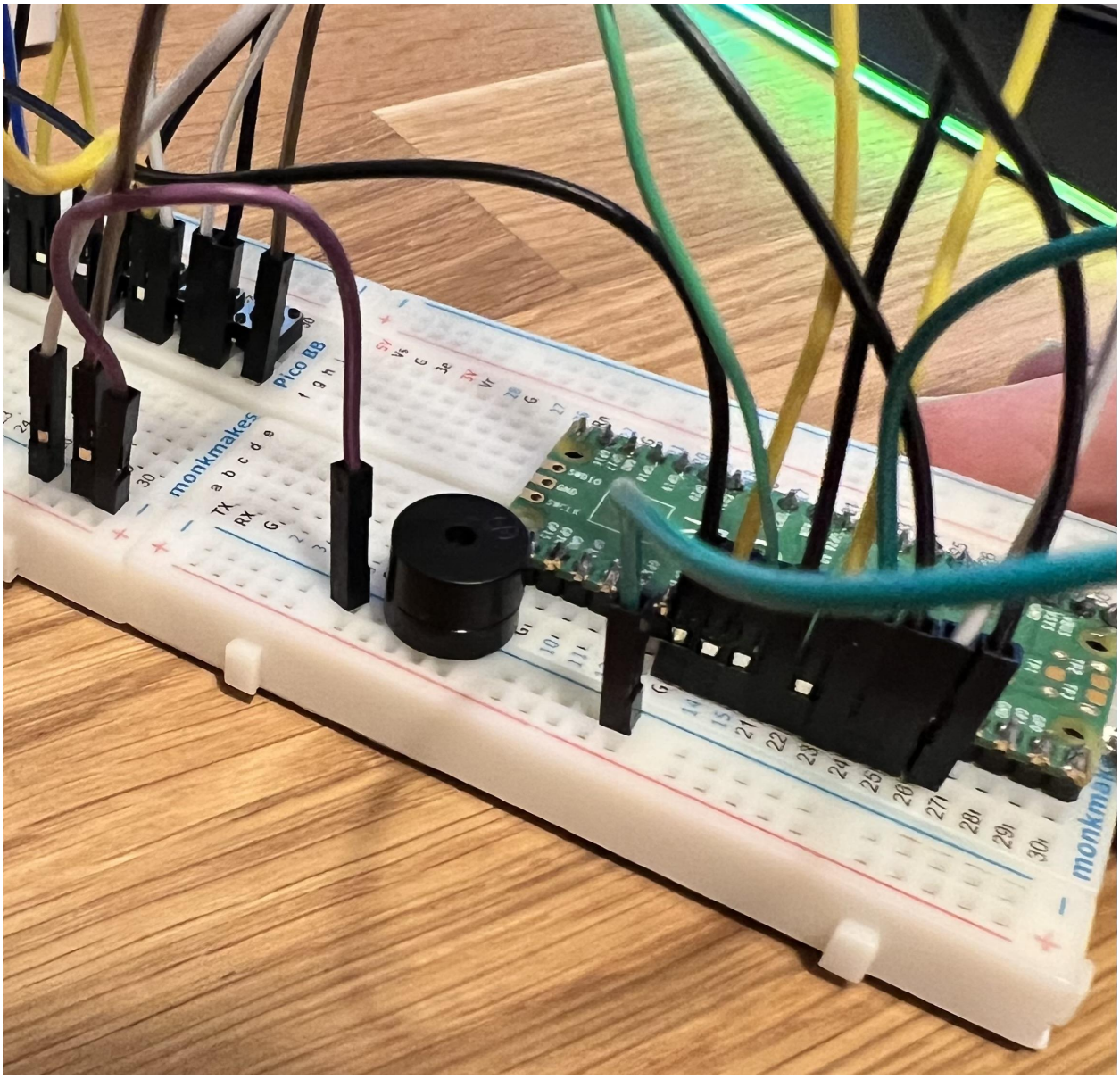
Button 1: (pin GP10)
Button 2: (pin GP9)
Button 3: (pin GP8)
Button 4: (pin GP7)
Button 5: (pin GP6)
Button 6: (pin GP5)
Button 7: (pin GP4)
Button 8: (pin GP3)





Step 4: Connecting the Buzzer and Ground

Plug the long pin (cathode) of the buzzer in the row shared with GP12, and the short pin (anode) into the ground channel. Additionally, connect a wire to a ground pin of the pico *(the green one closest to the camera is mine)*. Then connect a second wire to the ground channels on the different halves of the breadboard. *(Mine is the short purple one)*



Step 6: Code the piano!

```
const int buttonPins[] = {3, 4, 5, 6, 7, 8, 9, 10}; // Button pins
const int buzzerPin = 12; // Buzzer pin
const int tones[] = {262, 294, 330, 349, 392, 440, 494, 523}; // C major scale frequencies

void setup() {
  for (int i = 0; i < 8; i++) {
    pinMode(buttonPins[i], INPUT_PULLUP); // Set buttons as input with internal pull-up resistors
  }
}

void loop() {
  if (digitalRead(buttonPins[0]) == LOW) { // Button 3 pressed
    tone(buzzerPin, tones[0]); // Play note C
    delay(200); // Play for 200 milliseconds (adjust as needed)
    noTone(buzzerPin); // Stop playing
    digitalWrite(buzzerPin, LOW); // Turn off Buzzer
  }

  if (digitalRead(buttonPins[1]) == LOW) { // Button 4 pressed
    tone(buzzerPin, tones[1]); // Play note D
    delay(200); // Play for 200 milliseconds (adjust as needed)
    noTone(buzzerPin); // Stop playing
    digitalWrite(buzzerPin, LOW); //Turn off Buzzer
  }

  // Add similar if statements for the other notes (E, F, G, A, B, C)
```

```
  // Begin your if statement
  // Add the tone function here
  // Set your delay
  // Set the tone to stop playing

}
```