Activity 2: Blinking LED

Certainly! Here's a step-by-step guide to program and wire a Raspberry Pi Pico to blink an LED on pin 14 using MicroPython. I'll include comments in the code to explain each step:

Wiring:

1. Connect the LED:

- Connect the anode (longer leg) of the LED to pin 14 (GP14) on the Raspberry Pi Pico.

- Connect the cathode (shorter leg) of the LED to a current-limiting resistor (e.g., 330-ohm resistor).

- Connect the other end of the resistor to the GND (ground) pin on the Raspberry Pi Pico.

Programming:

2. Install Thonny IDE:

- If you haven't already, install the Thonny IDE on your computer.

3. Connect Raspberry Pi Pico:

- Connect your Raspberry Pi Pico to your computer using a USB cable.

4. Install MicroPython Firmware:

- Make sure your Raspberry Pi Pico has the MicroPython firmware installed. If not, you can download the firmware from the [official MicroPython website](https://micropython.org/download/rp2-pico/) and follow the installation instructions.

5. Open Thonny:

- Open the Thonny IDE on your computer.

6. Create a New Script:

- Create a new Python script by selecting "File" > "New" in Thonny.

7. Write the Blinking LED Code:

- Copy and paste the following code into the script:

```
from machine import Pin
import time

# Define the LED pin
led_pin = Pin(14, Pin.OUT)


while True:
    # Turn on the LED
    led_pin.on()
    print("LED is ON")

    # Wait for 1 second
    time.sleep(1)

    # Turn off the LED
    led_pin.off()
    print("LED is OFF")

    # Wait for 1 second
    time.sleep(1)
```

8. Save the Script:

- Save the script with a .py extension, for example, `blink_led.py`.

9. Run the Script:

- Click on the "Run" button (green triangle) in Thonny to execute the script.

10. Observe the Blinking LED:

- Observe the LED on pin 14 of your Raspberry Pi Pico. It should blink 5 times with a 1-second interval.

11. Understand the Code:

- Review the comments in the code to understand each step. The code uses a loop to blink the LED and incorporates a delay using `utime.sleep()`.

12. Exercise:

- Modify the code to create a traffic light sequence

This step-by-step guide should help you wire and program your Raspberry Pi Pico to blink an LED using MicroPython.