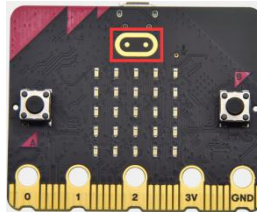


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Project 10: Touch-sensitive Logo

1. Description

If you have a micro:bit mainboard, it makes sense to use a gold touch-sensitive logo as another input in your project, which is like an extra button. It uses a capacitive touch sensor that detects small changes in electric fields when you press (or touch) it with your finger. When you touch it, you can control the micro:bit board to perform certain functions.



(Touch-sensitive Region)

2. Components Needed

		
Micro:bit * 1	USB Cable * 1	

3. Test Code

You can upload the code directly from the tutorial (read the "**Development Environment Configuration**" file if in doubt).

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Code:

```
from microbit import *

time = 0
start = 0
running = False

while True:

    if button_a.was_pressed():
        running = True
        start = running_time()
    if button_b.was_pressed():
        if running:
            time += running_time() - start
            running = False
    if pin_logo.is_touched():
        if not running:
            display.scroll(int(time/1000))

    if running:
        display.show(Image.HEART)
        sleep(300)
        display.show(Image.HEART_SMALL)
        sleep(300)
    else:
        display.show(Image.ASLEEP)
```

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4. Code Explanation

(1) Micro:bit records the time in ms (thousands of minutes per second) when it is started. This is called the running time.

(2) When you press button A, a variable called start is set to the current running time.

(3) When you press button B, the start time will be subtracted from the new running time to figure out how much time has passed since you started the stopwatch. This difference is added to the total time, which is stored in a variable called time.

(4) If you press the gold LOGO icon, the program displays the total time elapsed on the LED display. It converts time from ms (thousandths of a second) to seconds by dividing by 1000. It uses the integer division operator to give the result of an integer.

(5) The program also uses a Boolean variable named running to control the program. Boolean variables only boast two values :true or false. If running is true, the stopwatch is started. If running is false, the stopwatch is not started or stopped.

(6) If running is true, the beating heart is displayed on the LED dot screen.

(7) If the stopwatch has stopped, if "running" is false, it will only show the time when you press the gold LOGO icon.

(8) If the stopwatch is already started, if "running" is true, the code also prevents false readings by ensuring that the time variable changes only when button B is pressed.

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5. Test Result

Upload the code and plug in micro:bit via a USB cable. Press button A to start the stopwatch. When the timer is timed, the LED dot matrix displays a beating heart, tap button B can stop it. It will keep adding time, like a real stopwatch.

Press the gold LOGO logo on the front of the micro:bit can display the measured time in seconds. To reset the time to zero, press the [Reset](#) button on the back of the micro:bit board.