Experiment 2 – Switch light

Instruction

Congratulations, you have mastered the method of controlling the LED on and off. But just like the lights at home, can we add a switch to control the lights on and off at any time? Of course, in this experiment, we will use our switch module to control the lights anytime and anywhere.

Target

- Learn how the switch work and use it to make a switch light with LED.
- Learn how to use the if/else logic statement.
- Learn how to read the state from the digital module.

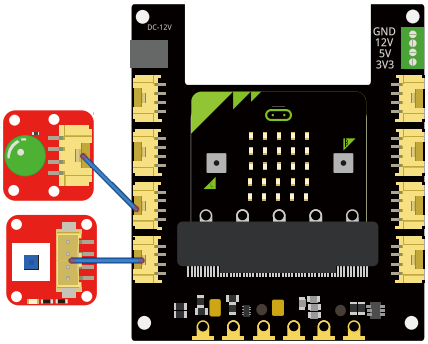
Required Parts

- Micro:bit x1
- Crowtail-Base shield for Micro:bit x1
- Crowtail-LED（Green）x1
- Crowtail-Switch x1
- Crowtail-Cable x2
- USB cable x1

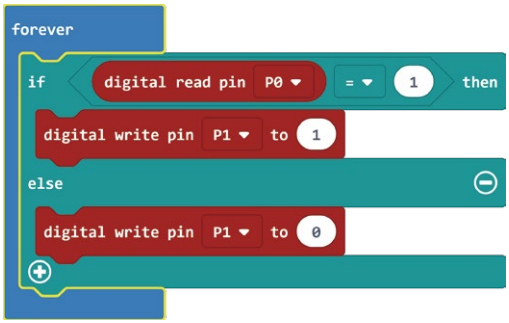
Hardware learning and connection

The Crowtail- Switch is a Latching switch. When the switch is pressed for the first time, the switch maintains current regulation and the button outputs a HIGH signal in the self-locking state. When the switch is pressed for a second time, the switch button pops up and the switch turns off and then outputs a LOW signal. In fact, it is very similar to the button, except that the switch has a self-locking function so that it can output logic high level signal without pressing it all the time.

Connect Crowtail-Switch and Crowtail-LED to P0 and P1 ports of Crowtail-Base shield for Micro:bit. The hardware connections are as follows:



Programming and note



- **Digital Read:** Just like the way **digital write** block turns a pin on (1) or off (0), the **digital read** block check at the state of a pin, which is either HIGH (1) or LOW (0). In this case, we can detect if the switch is pressed or not by using this block.

- **If/else:** The **if/else** block is a logical structure. If the logical statement that is attached to it (switchState=1) is true, then it will execute the code blocks inside of the if. If that statement is false, it will execute the **else** blocks. In this case, if the statement is true(the value is digital read from P0 port equal to 1), then turn on the LED on pin 1; else, turn off the LED on P1.

- **Download the program to micro:bit to see what happens.**

Result

When you press the switch, the LED lights up, and when you press the switch a second time, the LED turns off.

Do you have this experience? whenever you go up the stairs at night, the lights will light up in front of you. Can we make such a lamp?

Experiment 3 – Micro:bit singer

Instruction

Do you like music? Have you ever dreamed of becoming a singer? The power of music is really great, it can make people happy physically and mentally. In this experiment, we will make the micro:bit to be a "singer", let's see how to do it!