***Note:*** *When you connect a high-power device, such as a motor, you need to connect a 12V power supply to the board.*

## Crowtail – Modules

We've made more than 100 kinds of electronic modules into Crowtail modules. They include a variety of sensors, displays, inputs and outputs modules, communication types include I2C, UART, digital or analog, which aim to provide more options to fully meet all needs for your electronic projects! All modules can be used by simply connecting them to the Crowtail- Base shield for Micro:bit with Crowtail cable, which is a huge improvement over the previously troublesome jumper connections.

# Exciting experiments

## Experiment 1 – Blinking an LED

### Instruction

Electric lights are ubiquitous in our daily life which we can't even leave. It was the invention of the electric light that marked the human society's entry into the electric era, and made people welcome the light in the dark night. Here, we will learn how to use the LED and control it's on and off.

### Target

- Learn how the LED work and use it to make a blinking light.
- Learn how to run the code forever.
- Learn how to output logic high and low signals.
- Learn how to pause the code.

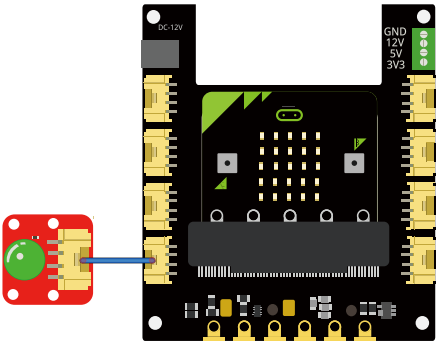
### Required Parts

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

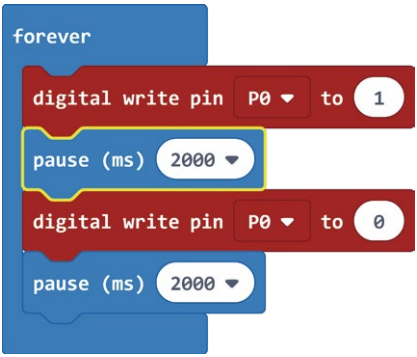
### Hardware learning and connection

LED is the best choice to help you learn I/O pins. What you need to do is connecting the LED module to the port of the base shield, then download the program to the Micro:bit. Besides the very basic usage, you can make the LED blink with the frequency you want, or adjust the brightness with PWM. Actually, LED is the most popular used for human interface.

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




## Programming and note




- **Forever:** The forever block is a block that loops any other command blocks inserted into it over and over again. It starts from the top and executes your code in order by working its way to the bottom and then starts from the top again.

- **Digital write:** The digital write block enables you to turn a pin on or off. There is a dropdown option for you to choose which pin you want to control, and it accepts a variable as the pins state. You could use 1 as on and 0 as off. If you prefer, you can also use Boolean states of true and false, but we will use 0 and 1 as our standard throughout this guide.

- **Pause:** If you were to just turn pins on and off with the digital write block without a pause, the LED would blink really, really fast. The pause block enables you to slow the micro:bit down and lets you control the timing of things happening. It accepts a number or variable as the number of milliseconds you want the micro:bit to pause. Think of this block as a stoplight for your code!

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

**Result**

You will see the LED blink on and off at 2 seconds interval. If it doesn't, make sure you have connected the LED to correctly port.

*Just like the lights at home, can we add a switch to control the lights on and off at any time?*