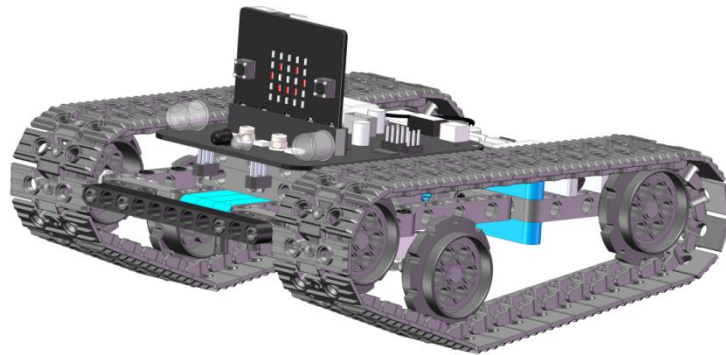


## Lesson1 Building:bit Tank---“Infrared obstacle avoidance”



### 1.Experimental phenomena

After downloading the program, turn on the power switch of the Tank car, the Tank car will run forward. If you encounter obstacles, it will back for 1 second, then turn right for 1 second, and finally straight.

### 2.Preparation before class

We need to be ready:

Building Block Tank car\*1

USB data cable\*1

#### 2-1.Two programming methods:

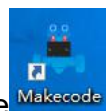
Online programming:

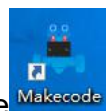
First, we need to connect the micro:bit to the computer by USB data cable, the computer will pop up a USB flash drive. Then, click on the URL in the USB flash drive: <http://microbit.org/> to enter the edit process interface, click to

【Extensions】, and copy the package URL:

[https://github.com/lzty634158/yahboom\\_mbit\\_en](https://github.com/lzty634158/yahboom_mbit_en) to the input field, and you can use the building blocks of the Yahboom software package.

Offline programming:



Open the offline programming software , click to 【Extension】 and copy the package URL: [https://github.com/lzty634158/yahboom\\_mbit\\_en](https://github.com/lzty634158/yahboom_mbit_en) to the input field, and you can use the building blocks of the Yahboom software package.

For detailed programming, please read the documentation before class 【1. Preparation before class】 ---- 【Introduction of programming method】. We use micro:bit official website for online programming in here.

### 3. Infrared obstacle avoidance principle

The infrared sensor possesses a pair of infrared emitting and receiving tubes. The transmitting tube emits infrared light of a certain frequency. Within a certain range, if there are no obstacles, the infrared light emitted will gradually weaken because of the distance of the spread, and finally disappear. If there is an obstacle, the infrared light will encounter the obstacle and it will be reflected to reach the receiving tubes.

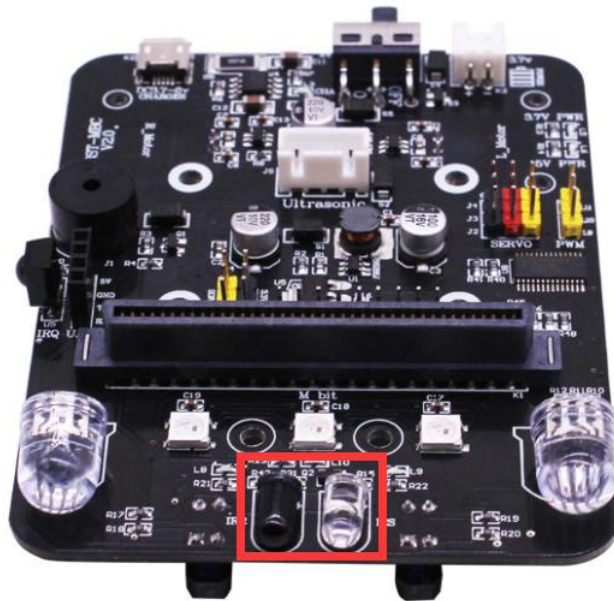


Figure 1 Infrared obstacle avoidance sensor

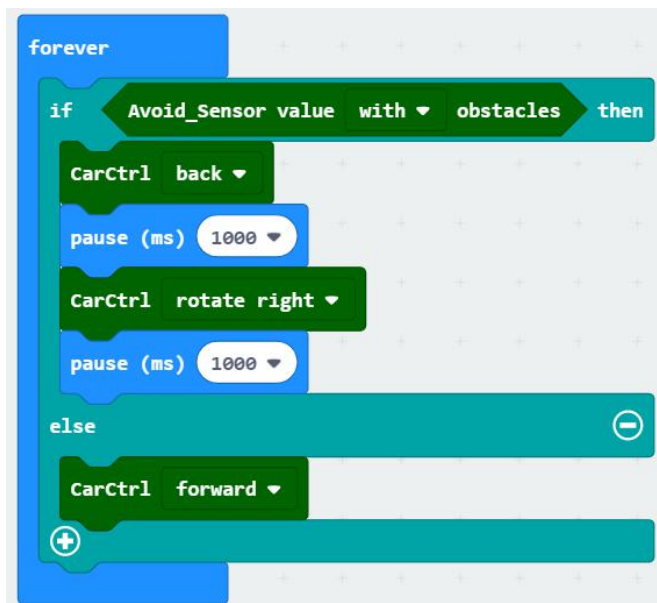
#### 4. Studying blocks

Blocks	Instruction
	<p>The code inside is executed after booting.</p>
	<p>If true then execute. If it is false, it will not be executed.</p>

	<p>If there is an obstacle in front, then the car will back, otherwise the car will forward.</p>
	<p>The program pauses for 100 milliseconds and the time can be modified by yourself.</p>
	<p>The infrared sensor detects if there is an obstacles in front.</p>
	<p>The car's motion state selection. You can select forward, back, turn left, turn right, rotate left, rotate right, and stop.</p>

## 5. Programming

Next, we started to write the infrared obstacle avoidance program for the building block Tank car. After writing, we need to download the program to the micro:bit board of the building block Tank car.



**! Note: This experiment must be done indoors to reduce the interference of sunlight on the infrared sensor.**