6.13 Spinning top

Spinning-top.hex

http://www.yahboom.net/xiazai/Tiny_bit/6.Playing%20with%20Tiny%20bit/Spinning-top.hex

1.Preparation

This course mainly uses the accelerometer that comes with micro:bit. When I hold the Tiny-bit and move it, the values of X, Y and Z in the three directions of acceleration will change.

In this experiment, we use the data be changed in the X direction.

Programming method:

Mode 1 online programming: First, we need to connect the micro:bit to the computer by USB cable. The computer will pop up a USB flash drive and click on the URL in the USB flash drive: http://microbit.org/ to enter the programming interface. Add the Yahboom package: https://github.com/lzty634158/Tiny-bit to program.

Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click【New Project】, add Yahboom package: https://github.com/lzty634158/Tiny-bit, you can program.

In the picture shown below, the ultrasonic module with red wire frame.

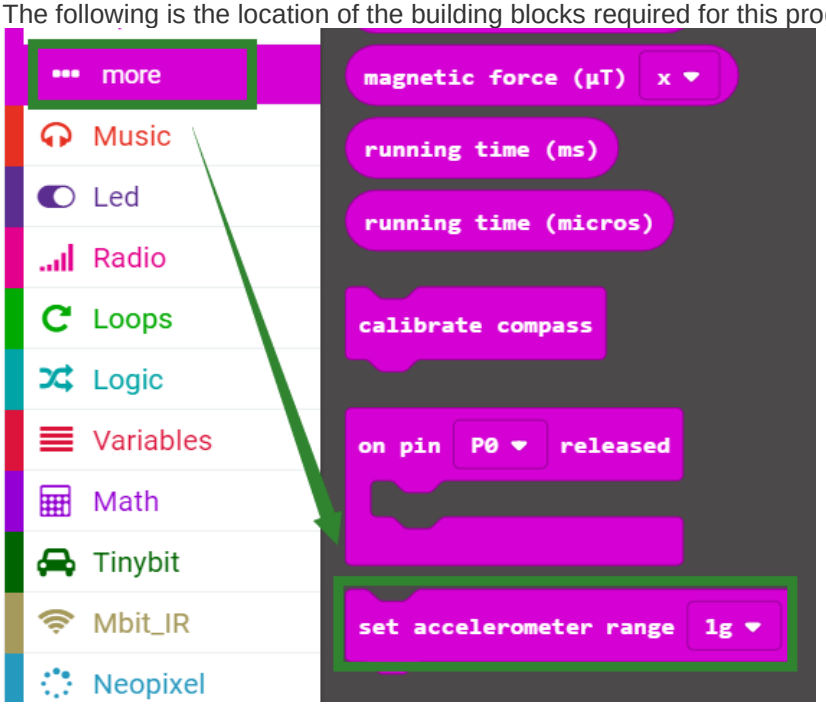
2.Learning goal

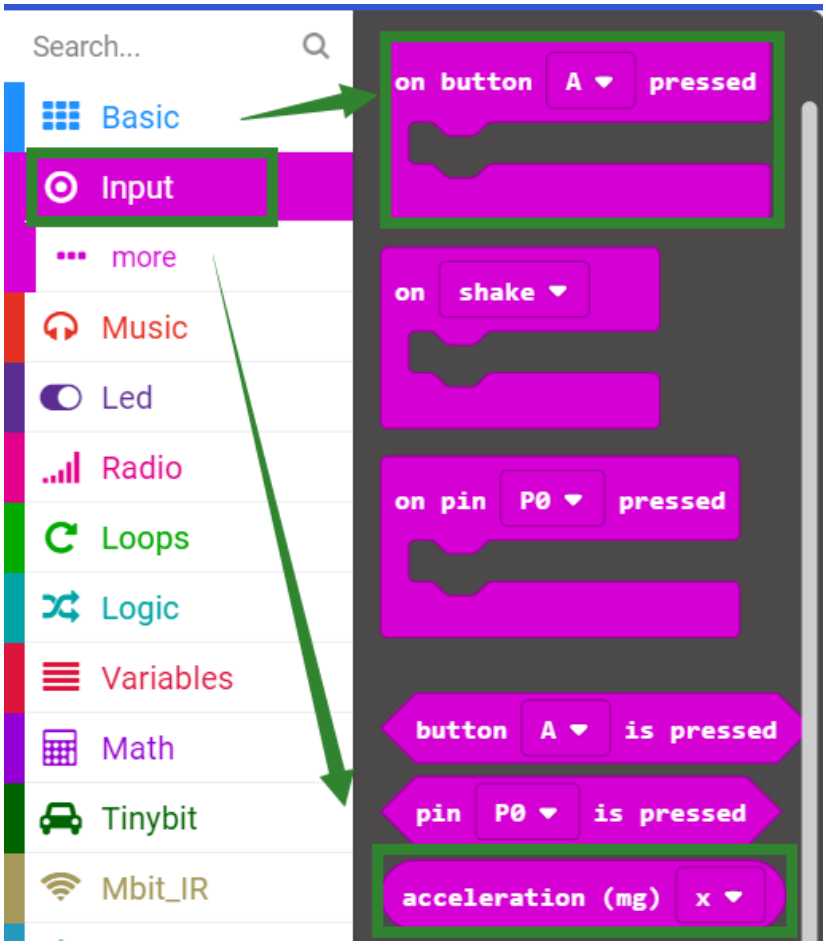
2-1. Learn how to use compass graphically program building blocks

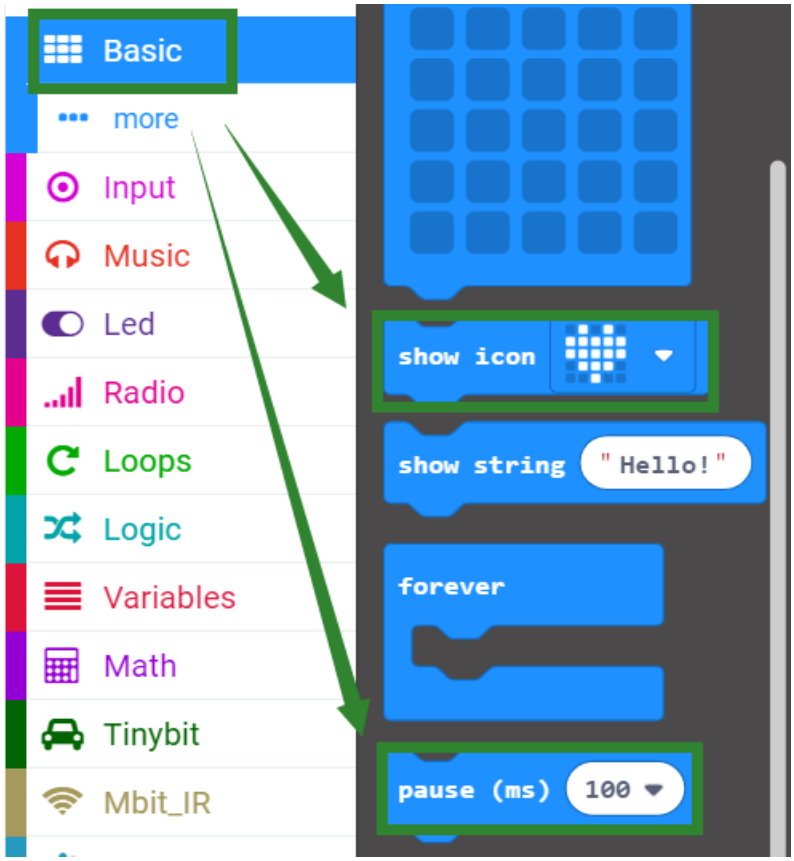
2-2. The function is realized by programming: When we tilt the Tiny-bit by hand, measuring the magnitude of the data is changed in the x-axis direction of the accelerometer, and set the time of the Tiny-bit rotation based on this data.

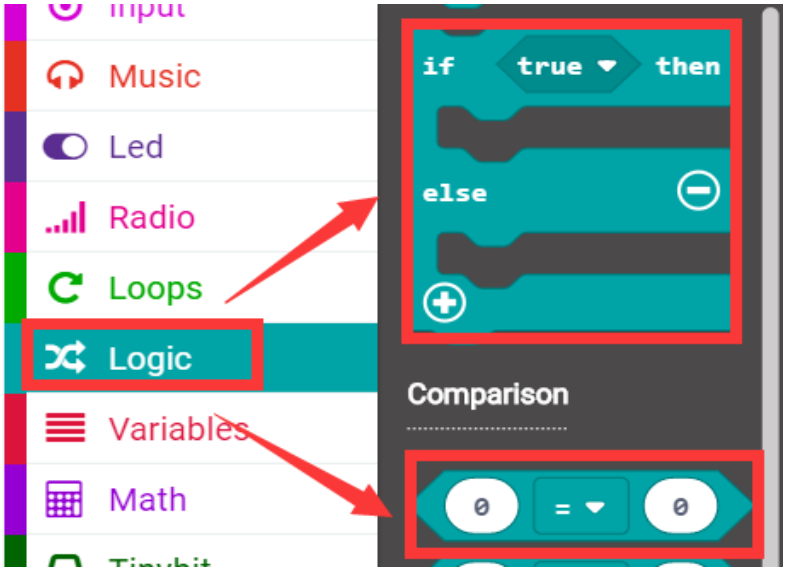
3.Search for block

The following is the location of the building blocks required for this programming.

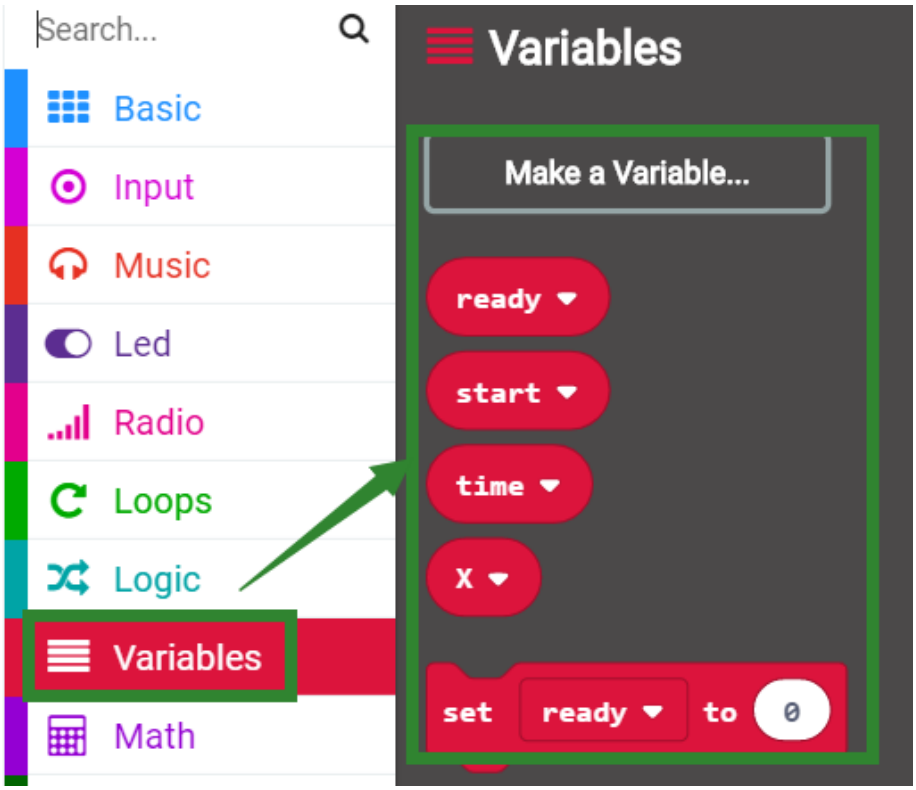


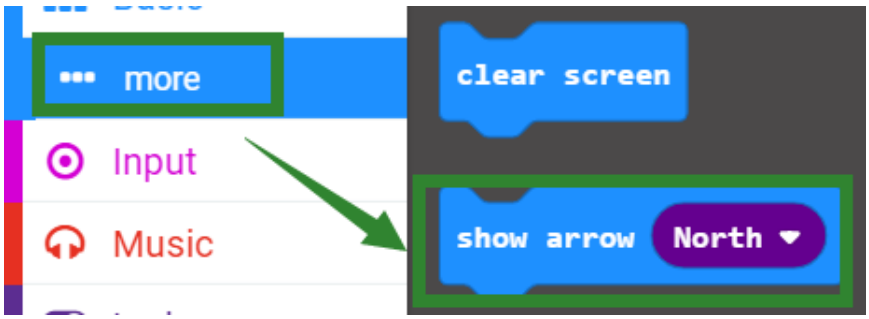

Search...
Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Tinybit
Mbit_IR
on button A pressed
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x

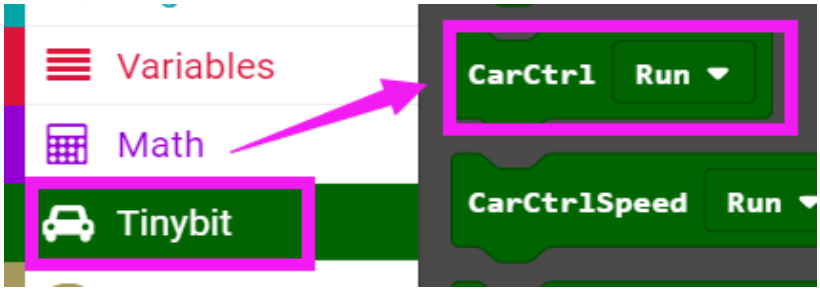

Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Tinybit
Mbit_IR
show icon
show string "Hello!"
forever
pause (ms) 100


Music
Led
Radio
Loops
Logic
Variables
Math
if true then
else
Comparison
0 = 0

Math
Tinybit
max of 0
absolute of 0

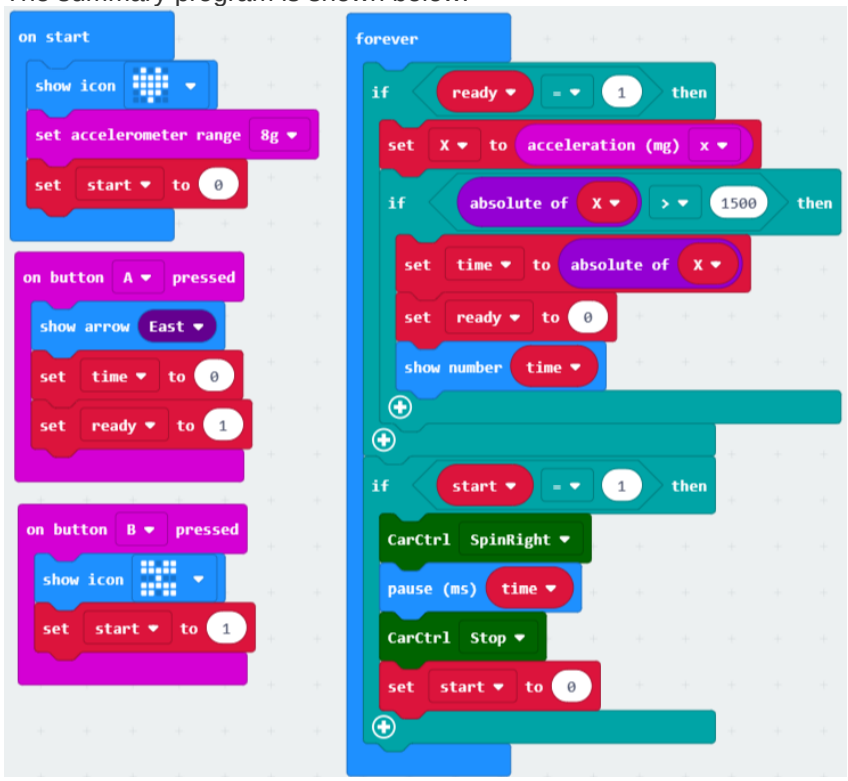

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Variables
Make a Variable...
ready
start
time
X
set ready to 0


more
Input
Music
clear screen
show arrow North



4.Combine block

The summary program is shown below:

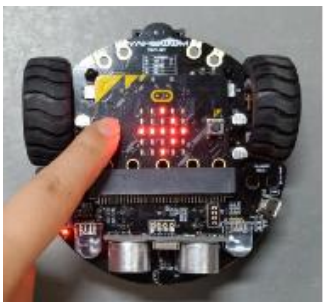
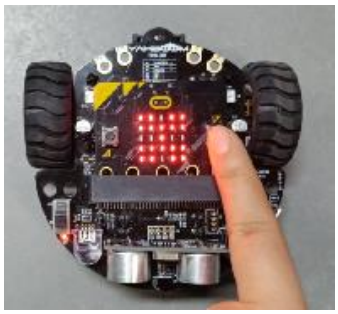


5.Experimental phenomena

After the program is downloaded, open the power of robot car, and micro:bit dot matrix will display a heart.

When we press the A button, an arrow pointing to the B button will appear as shown in Figure 1. Then we can shake Tiny-bit. We can see that the micro:bit dot matrix will display data of the x-axis will changed of the accelerometer , as shown in Figure 2 below.

Next, we need to put the Tiny-bit on the ground or on the desktop. After pressing the B button, the a butterfly will be displayed on the micro:bit dot matrix as shown in Figure 3, then Tiny-bit starts to spin right as shown in Figure 4. As shown, the spin right time is the absolute value of the accelerometer x-axis change data.

After the time is up, Tiny-bit will stop.

Until we press the A button again, shake the Tiny-bit, change the accelerometer data, and then press the B button, the Tiny-bit will spin again.