

# Transform heavy hammer truck to crane

## Goal

The hammer truck can not only swing the hammer arm to attack, but also become a crane.  
In this lesson we will learn how to turn the Magic\_Car heavy hammer into a crane.

## Programming method

(1) online programming: connect micro:bit with the computer through the USB cable, open my computer, find the MICROBIT memory and open it, double-click MICROBIT.HTM, and open the browser programming page. After creating a new project, click advanced, click expand, enter the extension package address <https://github.com/emakefun/pxt-magicbit.git> enter enter or search, add the Microbit extension package, and you can start programming the car

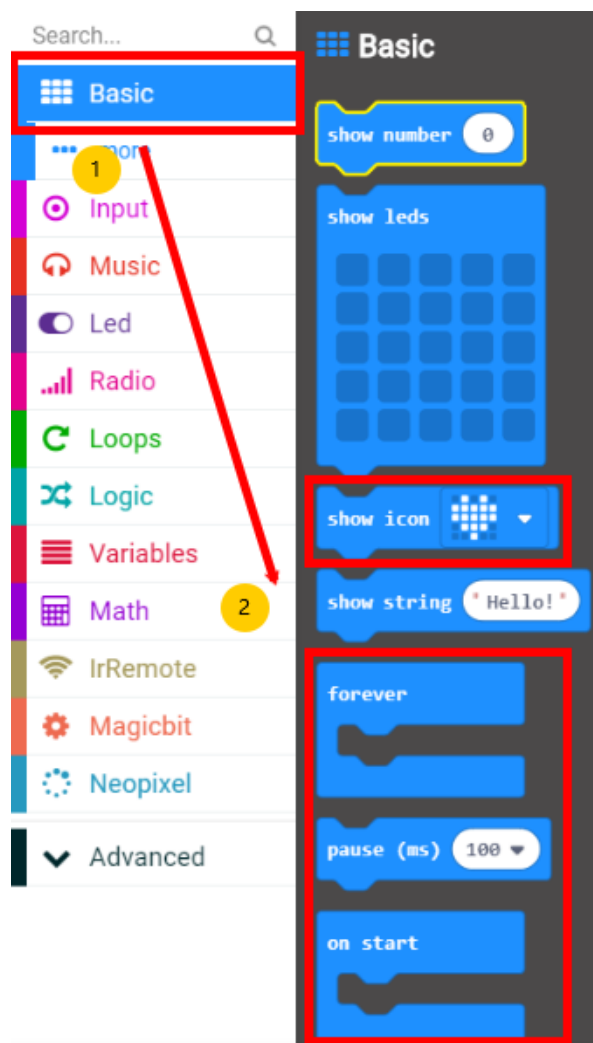
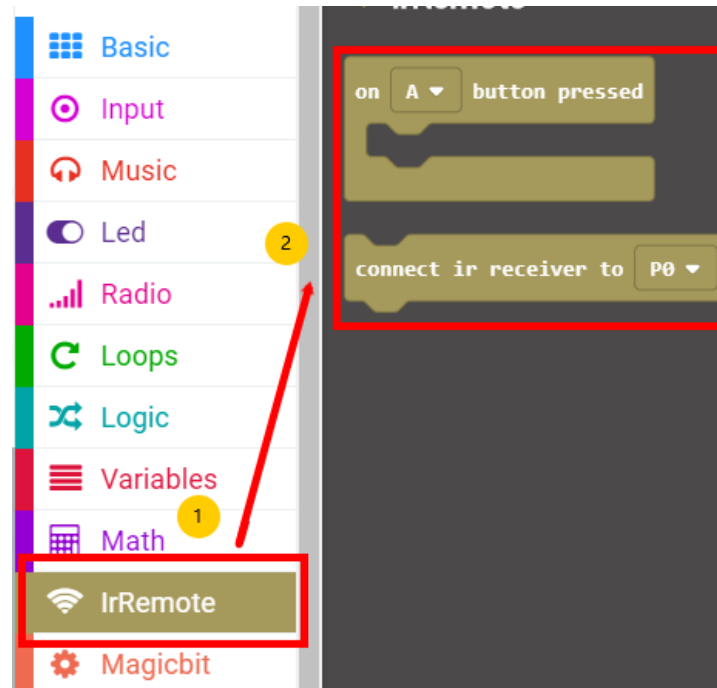
(2) offline programming: open the offline programming software, enter the programming interface, create a new project, click advanced, click expand, enter the address of the extension package <https://github.com/emakefun/pxt-magicbit.git> and press enter or search, add the Microbit extension package, and then you can start programming and control the car.

## Transformation principle

Don't know the classmates know not to know, in order to lift the stability of the object, the crane boom from top to bottom and move around or is very slow, so when the rise and fall of the hammer hammer car arm speed became very slow, and heavy hammer car back turn around time is very slow, heavy hammer car crane can be used to do for you, let's try how to write the program.

## Block programming

1. Location of building blocks required



Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

Math

IrRemote

**Magicbit**

Neopixel

Advanced

**Magicbit**

Servo S1 degree 0

Geek Servo S1 degree -45

Stepper 28BYJ-48 STPM2 degree 0

Stepper 28BYJ-48 STPM2 turn 1/4

Dual Stepper(Degree) STPM1 0 STPM2 0

Car Forward Distance(cm) 10 Wheel Diameter(mm) 48

Car Turn Degree 90 Wheel Diameter(mm) 48 Track(mm) 125

Motor M3 speed 0

Motor



Loops

Logic

Variables

Math

IrRemote

**Magicbit**

Neopixel

Advanced

Functions

Arrays

Text

Stepper 28BYJ-48 STPM2 degree 0

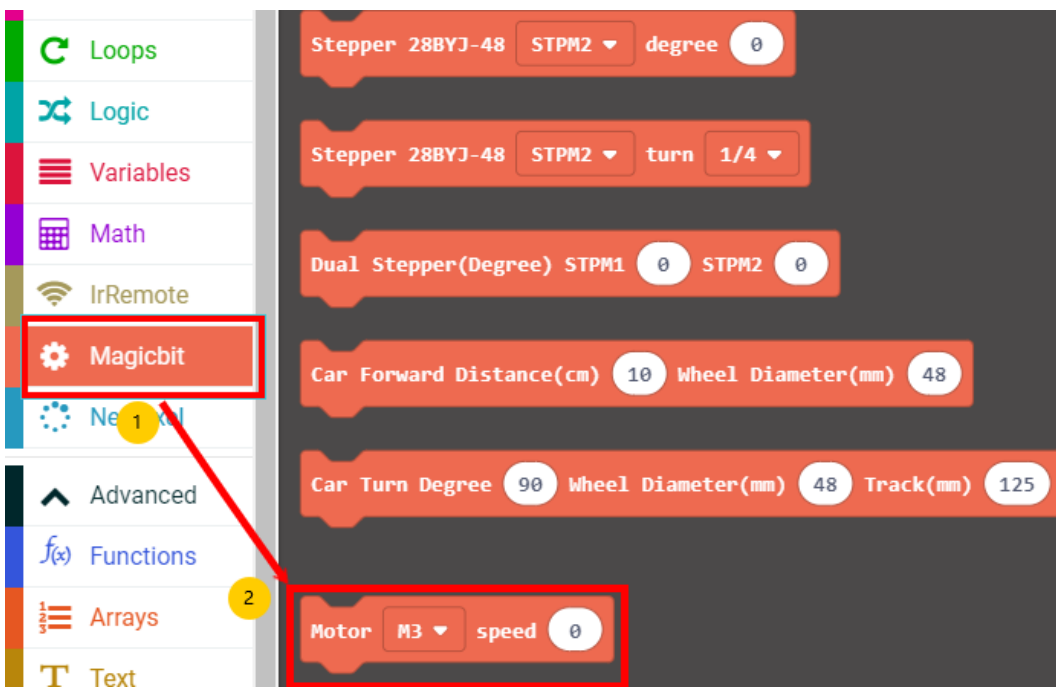
Stepper 28BYJ-48 STPM2 turn 1/4

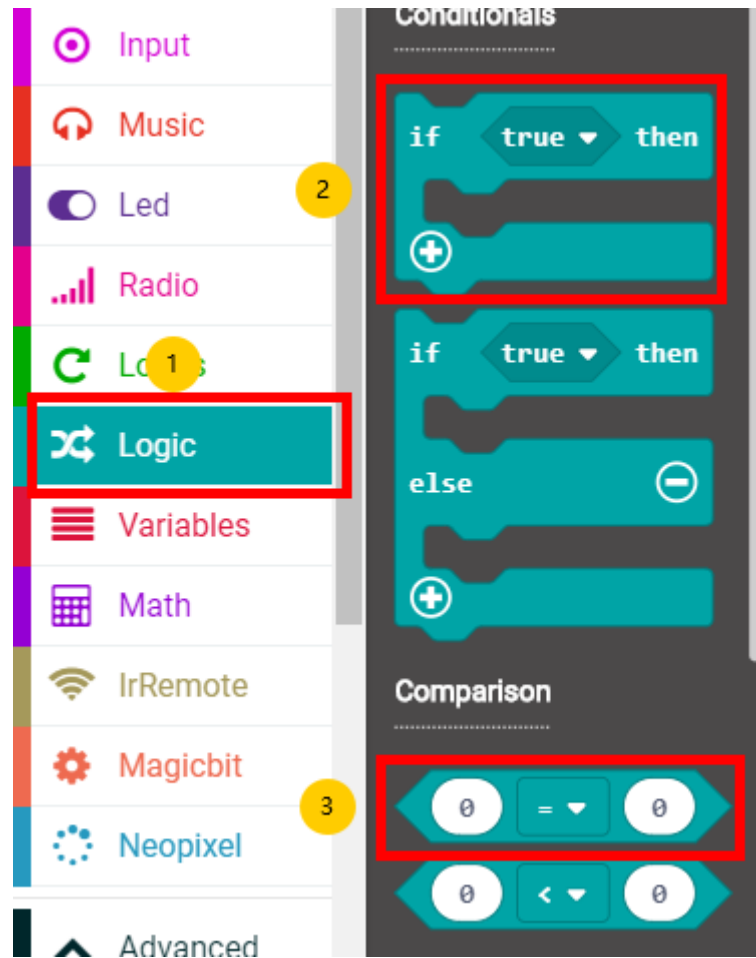
Dual Stepper(Degree) STPM1 0 STPM2 0

Car Forward Distance(cm) 10 Wheel Diameter(mm) 48

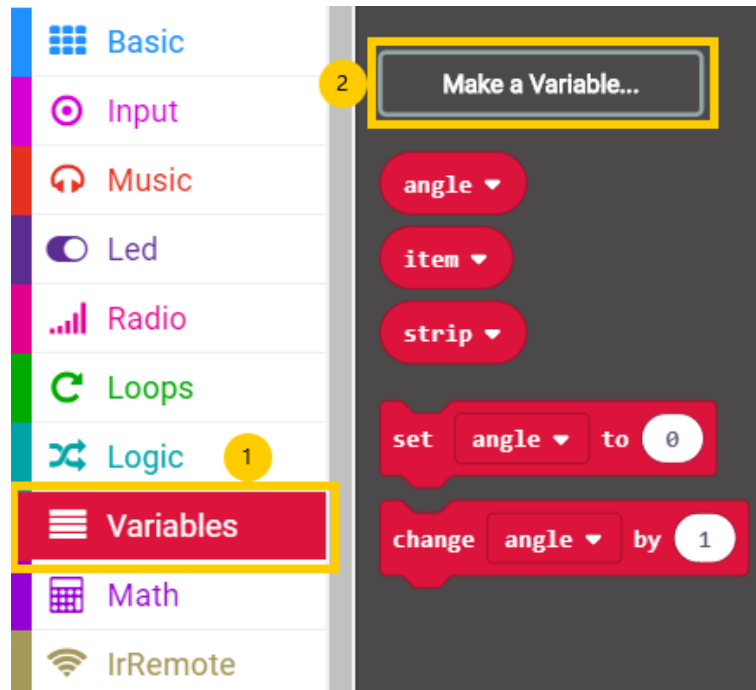
Car Turn Degree 90 Wheel Diameter(mm) 48 Track(mm) 125

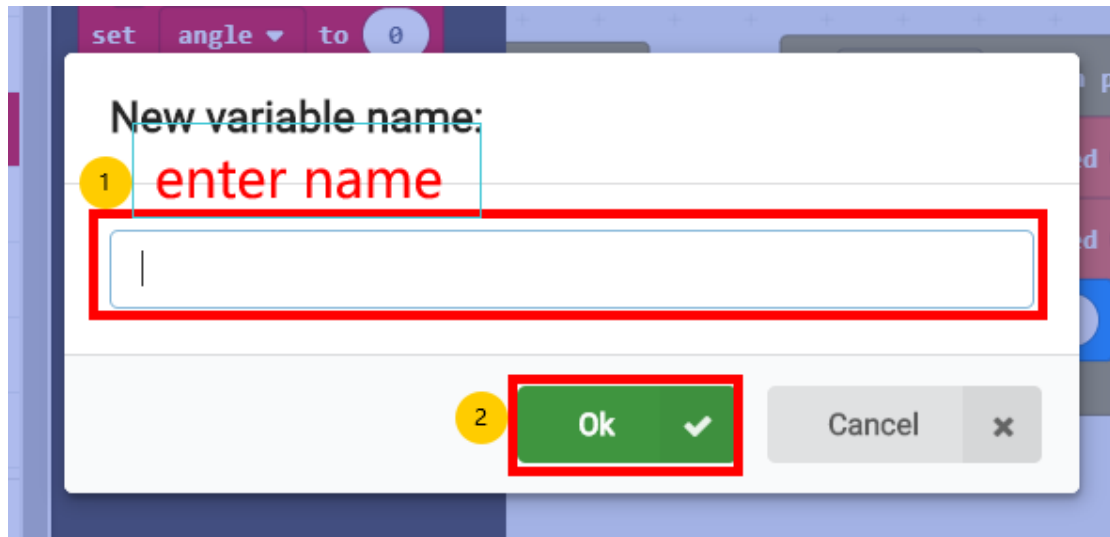
Motor M3 speed 0



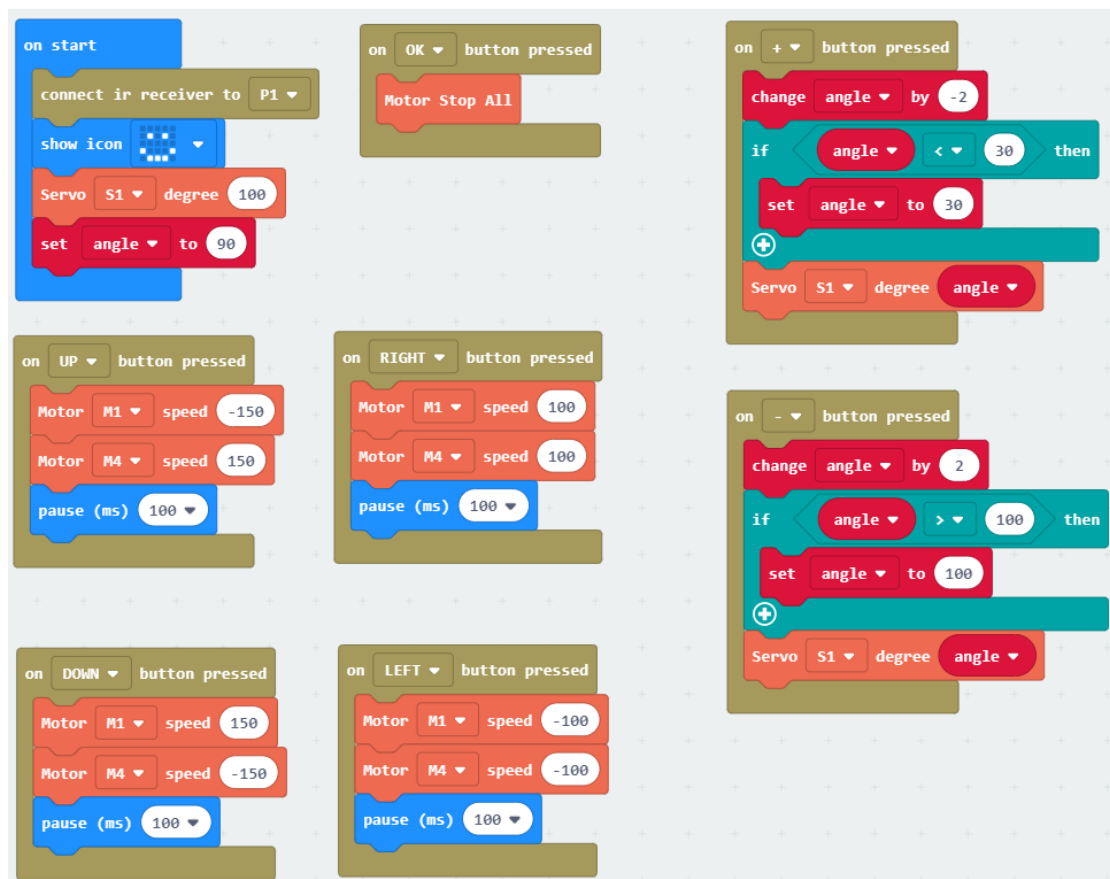


1. Creation of variable building blocks





## 1、 Final program building block combination



## Wiring

### 1. Connection of steering gear;

The car steering gear is connected to the S1 pin of the PWM steering gear of the expansion board, in which the yellow line of the steering gear is connected to the blue pin of the

expansion board, the red line of the steering gear is connected to the red pin of the control board, and the brown line of the steering gear is connected to the black GND pin of the control board.

## 2. Motor connection;

The motor to the left of the car is connected to the extension board M4 interface

The motor to the right of the car is connected to the expanded M1 interface

3. Installation of jumper cap of infrared receiving head; The jumper cap between the infrared receiver of the control board and the buzzer should be inserted well, otherwise the infrared receiver cannot be used.

## The experimental results

After downloading the program to the microbit motherboard of Magic\_Car car, open the main switch of the expansion board, microbit displays a smiley face, when the button up of the remote control is pressed, the heavy hammer car will advance; When the DOWN button of the remote control is pressed, the heavy hammer truck will fall back. When the LEFT button of the remote control is pressed, the heavy hammer truck will turn LEFT in place; When the RIGHT button of the remote control is pressed, the heavy hammer truck will turn RIGHT on the spot. When the remote control + button is pressed, the hammer arm will slowly rise; When the remote-key is pressed, the hammer arm of the heavy hammer truck will slowly descend. In this way, when we add a sling to the heavy hammer truck, our heavy hammer truck realizes the function of the crane. In actual operation, the Angle of steering gear can be adjusted to adjust the height of hammer arm.