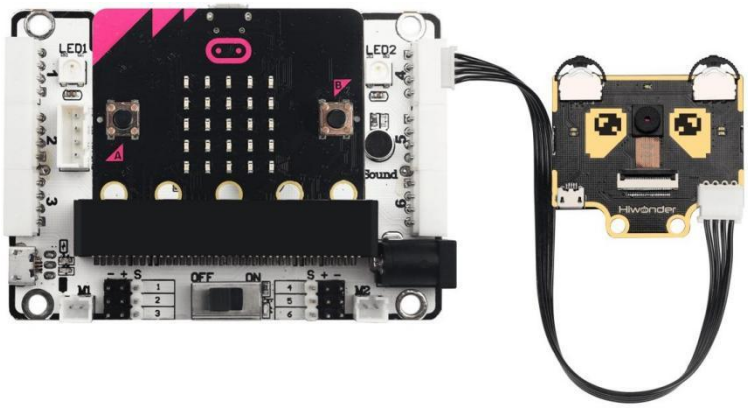
Lesson 3 Tag Recognition Integration with micro:bit

1. Preparation

Connect WonderCam to micro:bit Expansion Board Port 4.



2. Learning Objective

① To know the connectivity of WonderCam on micro:bit Expansion Board.

② To understand the program logic.

3. Program Logic

In this lesson, we will integrate WonderCam with the output from micro:bit Expansion Board. The program will first initialize the Visual module following by detecting the tag angular rotation on x axis. And through conditions set in the codes, the LED light position will be lighted or dimmed as accordingly to the detection.

4. Coding

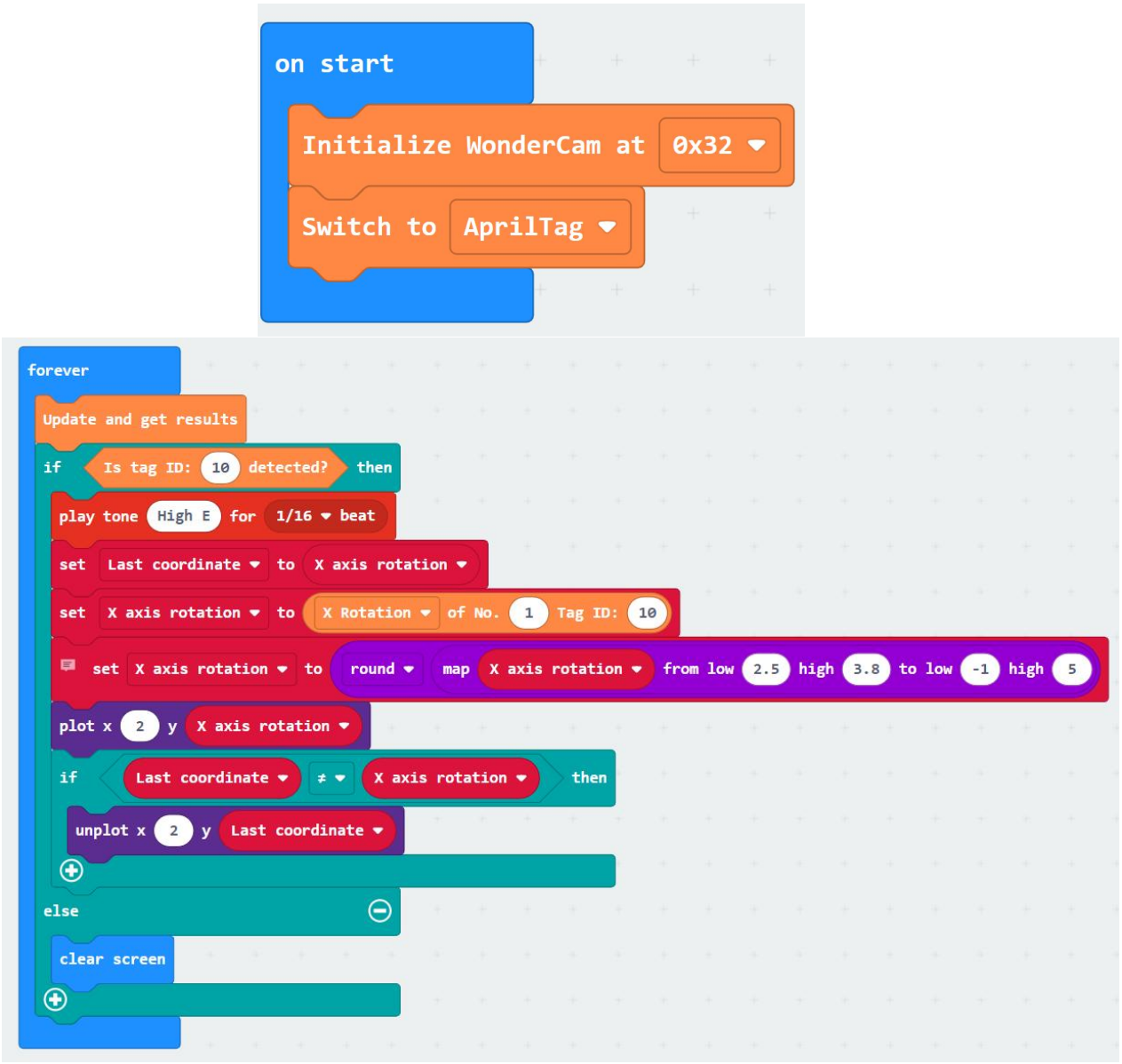
◆ Adding Extension

Go to https://makecode.microbit.org/ and create New Project. In the MakeCode Toolbox, select Advanced, click on Extensions to add the following two extension packs:

https://github.com/hiwonder/wondercam

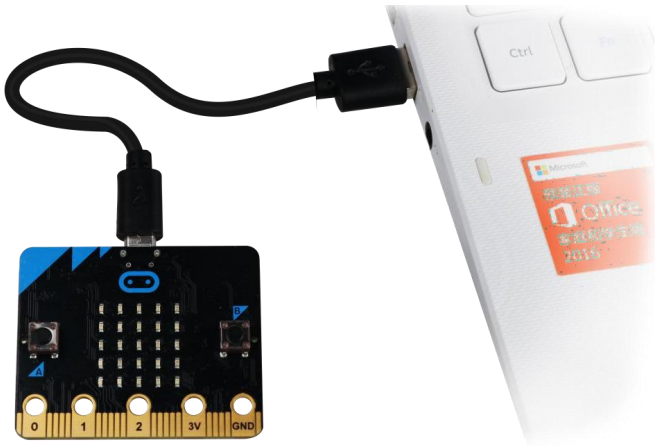
https://github.com/Hiwonder/Startbit

◆ **Command Blocks**



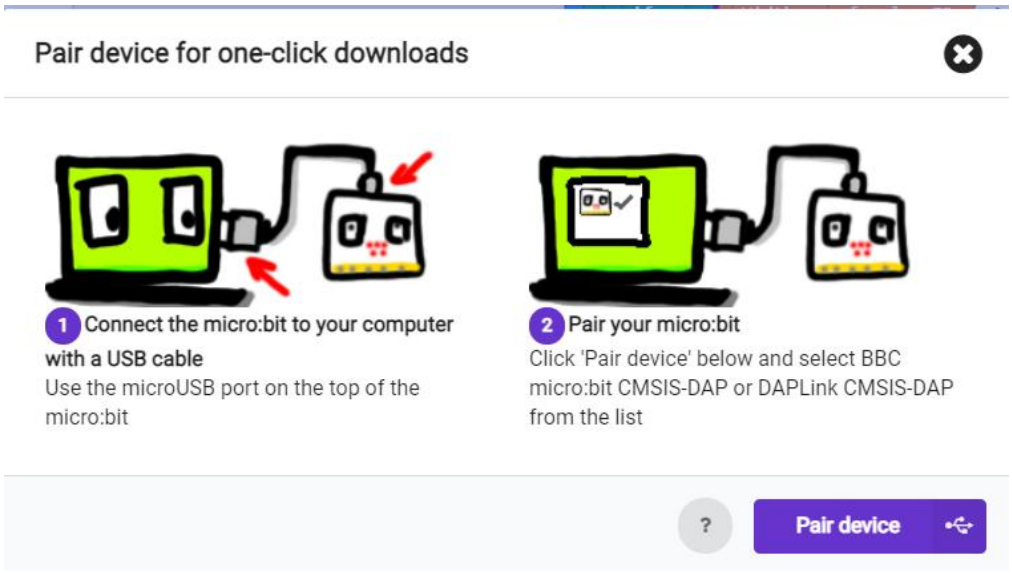
4.1 Pairing devices and program download

1) Connect micro:bit to computer.

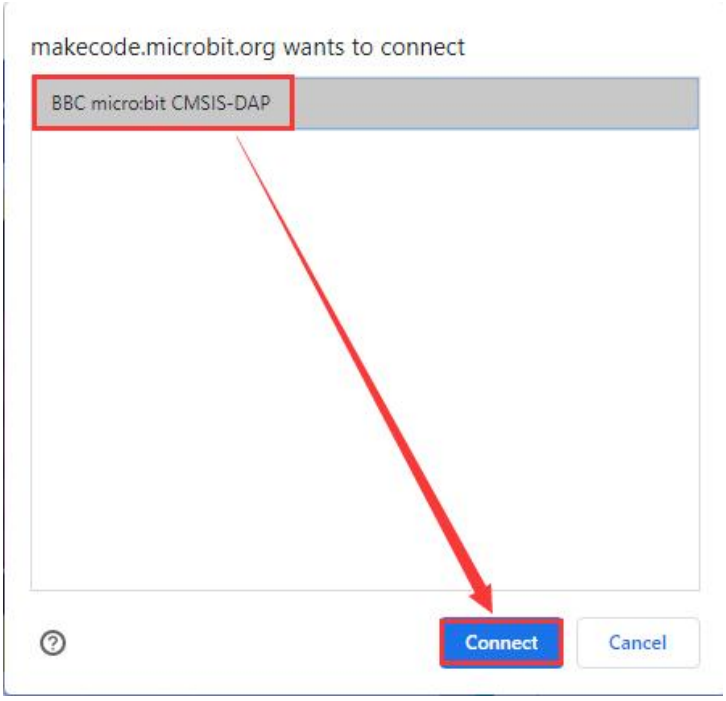


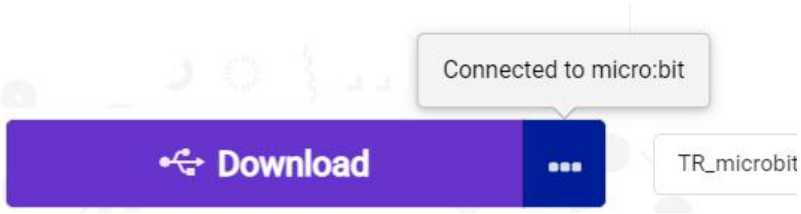
2) Click on "…" located beside"Download" and select "Pair device".

3) Click on on "Pair device" on the Pop-up screen.



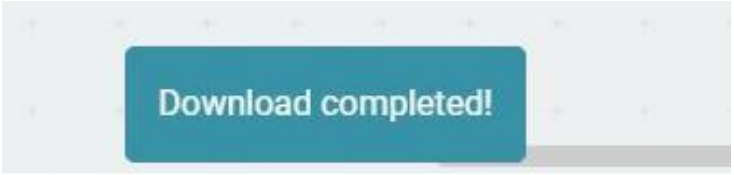
4) Click "Connect" as shown in image below.

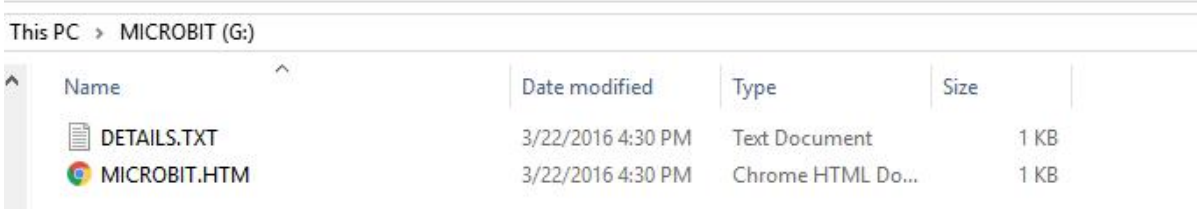




5) Once connection is successful,click “Download”. During downloading process, the yellow light on micro:bit will blink consistently, do not disconnect or change USB cable.

6) When download is finished, the light on micro:bit will remain on and screen will appear Download completed message.





Tips: In micro:bit drive there are two files as show in image above. DETAILS.TXT records the data information of the micro:bit board. MICROBIT.HTM links to micro:bit official webpage (computer need to be online when click).

5. Results

* Please use the tags provided in folder name “April Tags Collection”. Unzip folder is required to access.

After program is downloaded, connect micro:bit to Expansion board and switch power to ON. WonderCam will automatically start on Tag Recognition function.

Focus WonderCam on AprilTag ID01. When the tag is detected, one dot will be lighted on LED Dot Matrix Display. The position of the lighted dot will move according to the shifting angle of WonderCam.

6. Extended Function

How to edit Tags? As shown in the commands blocks below, editing of Tag ID can be done by change the ID number in the blocks: