Smart Belt

Video:
https://www.youtube.com/watch?v=p9pnue60rho

Wearing some gadget is very challenging. Honestly, in this project, I got help from my mom to sew the case for me because I cannot sew by myself. Be careful when sew using sewing machine. If you never experience sewing with sewing machine, it is also fun doing this project by hand.

Smart Belt with Micro:bit can show many results when shaking, tilting, and pressing the button on the Micro:bit. It will show different images and functions, such as temperature and compass direction.

Without further ado, let's start this project.

1x [Micro:bit](), include 1x Battery holder, 2x AAA Batteries and 1x USB Cable
1x Sewing Machine
1x Thread
1x Needle
1x Belt
1x [Seam ripper]() (it is used to cut remaining unnecessary thread)
1x Scissors
Fabric
[Microsoft Makecode Software]()

Microbit Case

Prepare the sewing machine. Cut the fabric. The size that we want for the case is 4.5" x 3". Therefore, cut the fabric with the size of 5.5" x 6".

It leaves extra space for the length to sew on. The extra space for sewing is 1", so divide it into two, which is ½" for sewing on both side (left and right sides). Fold the fabric into two with the inner side of fabric faces up (see the red line in Figure 1).
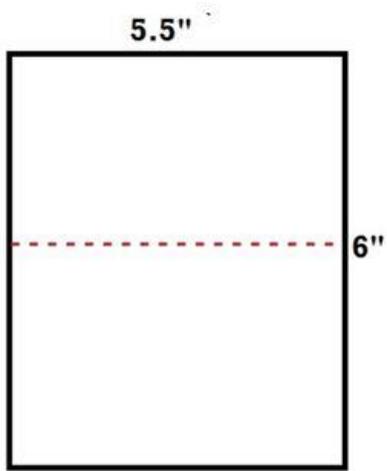
5.5"

6"

Figure 1

Sew the fabric with following the blue line in the figure 2. (Each width of the blue line is 1/2 ")
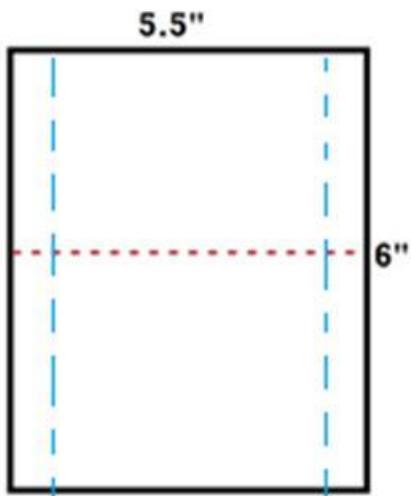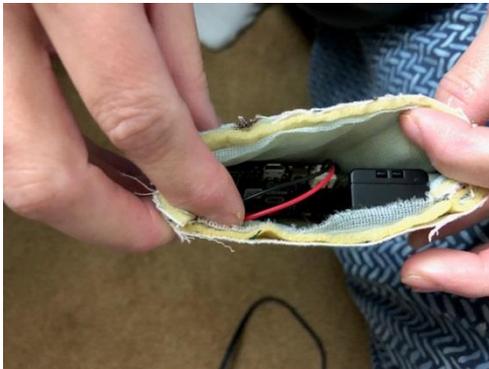
5.5"

6"

Figure 2

Turn the inner part of the fabric out, so the outer fabric becomes the outside of the case.

Check whether Micro:bit and the battery holder fit in the case.

Trim the top edge of the case. Measure the micro:bit. The size is 2"x 1.5". Make the hole by cutting a rectangle shape of the front side of the case. The hole's measurement is 1.8" x 1.25". See figure 3.
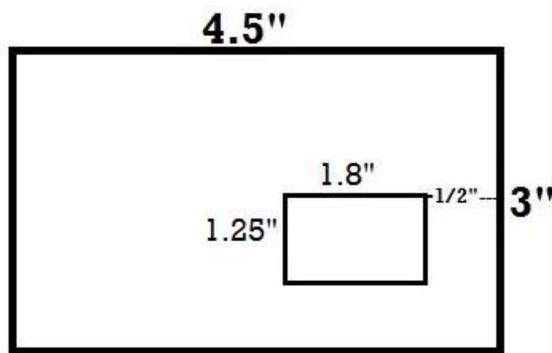
Figure 3

Sew the Snap-on button in the case.

Belt loop

Sew with other fabric for forming a belt loop, so the belt can be inserted into the Microbit case.

Open new project in Makecode

Open the Makecode software. Here is the link: https://makecode.microbit.org/#
The software is online and free. Make sure you have internet connection when doing this.
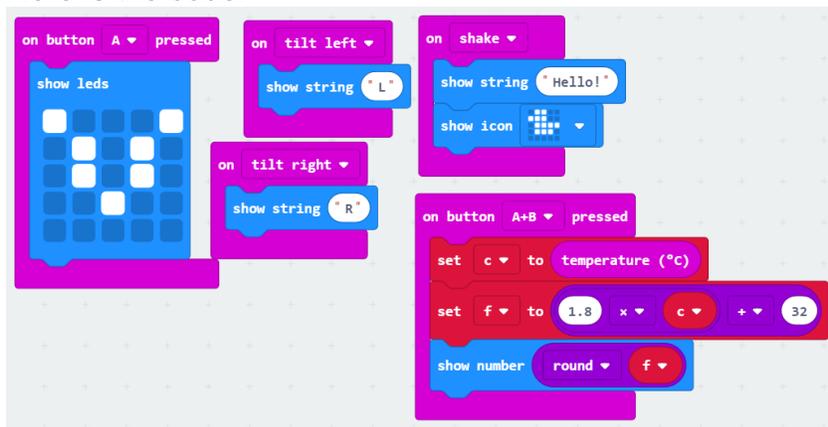
When creating the project for the first time, it will show up the new project page. Rename the project and save it.
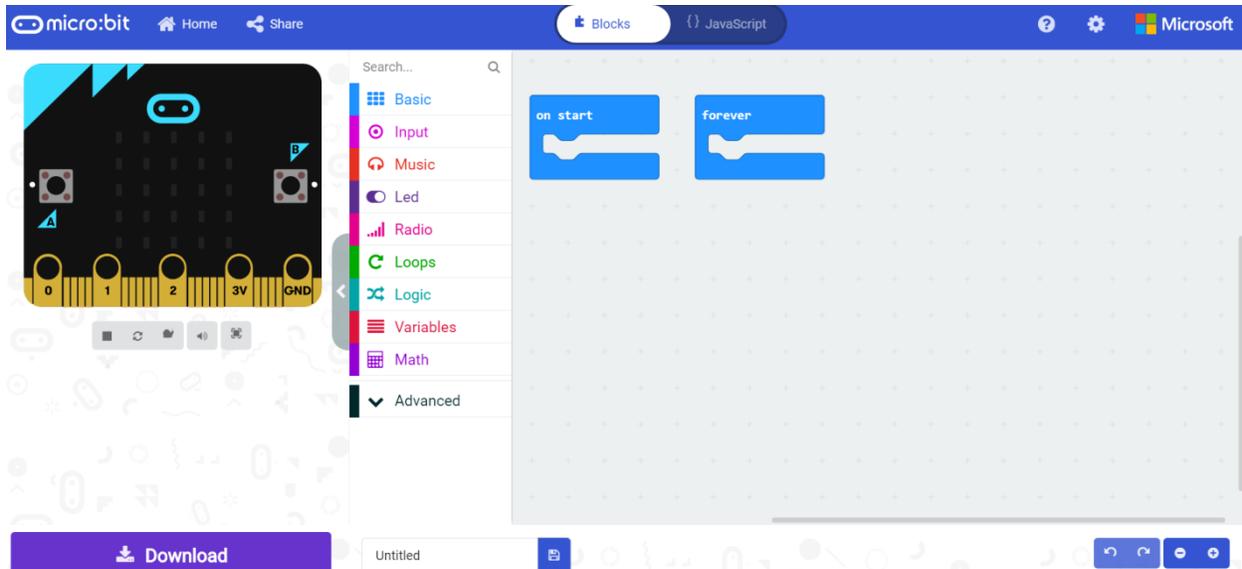
There are two choices for coding in Makecode, which are blocks and JavaScript. You can choose which language you desire. I choose block because it is easier to use.
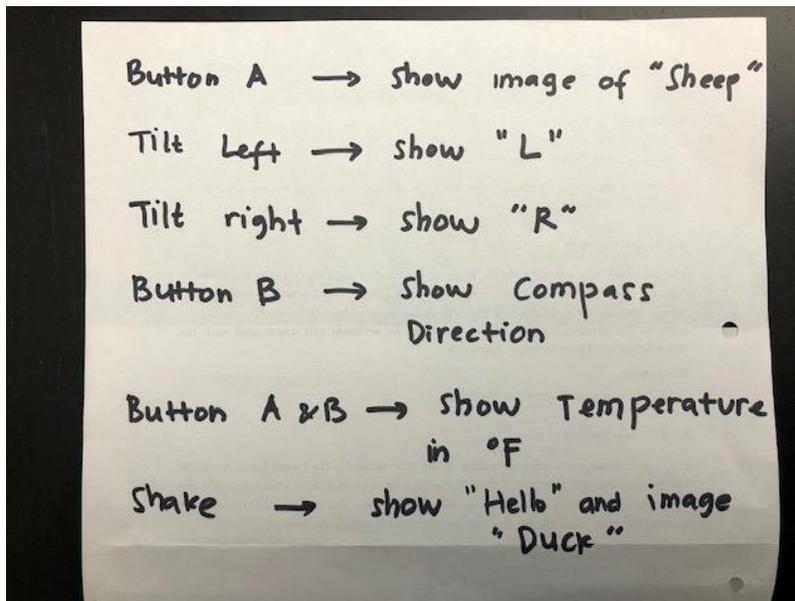
Program the Micro:bit

Here is the code.

Download the code by clicking the download button at the bottom left of the screen. Connect the Micro:bit to the computer by plugging the USB Cable to the computer. Then, copy the downloaded to the Micro:bit.

The meaning of the code should be like the one shown in the picture.

Test the code

To test the code, unplugged the USB cable from the computer. For Micro:bit to standalone, plugged in battery holder with the battery inside it.
For compass, the Micro:bit needs calibration. Tilt the Micro:bit to fill the screen.

Press button A

When pressed button "A" (the left button), it showed a sheep image. You can make image that you like. There are two ways for doing this. First, you can customize your image by clicking the "show leds icon" and second, you can choose the image option in "show icon". See the pictures.
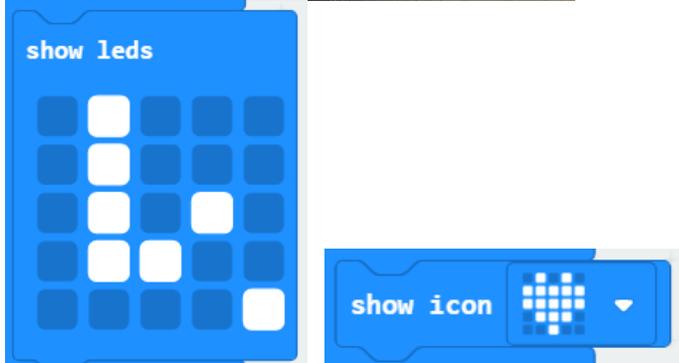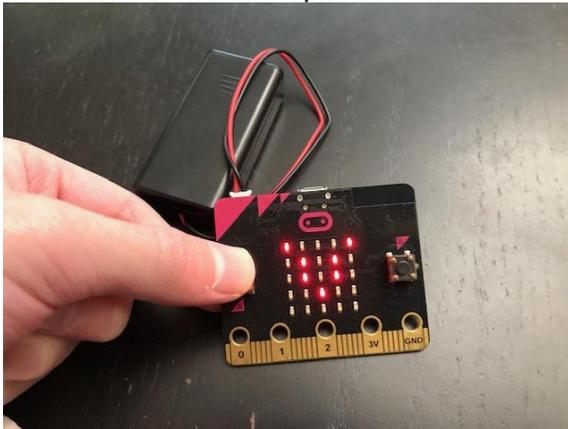
Press button B

When pressed button "B" (the right button), it showed a compass. Do not forget to calibrate the micro:bit first by tilting the Micro:bit to fill the screen. If you move to other direction, it will show different compass direction.
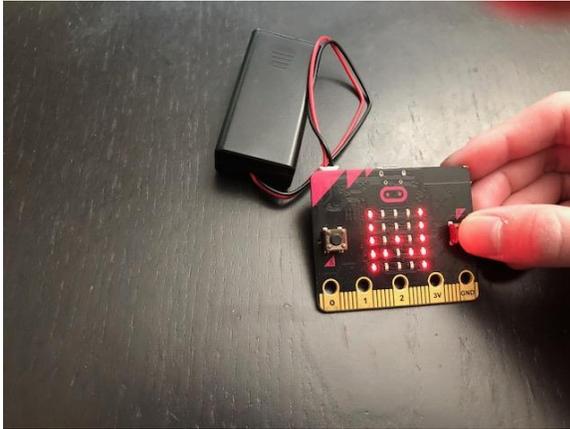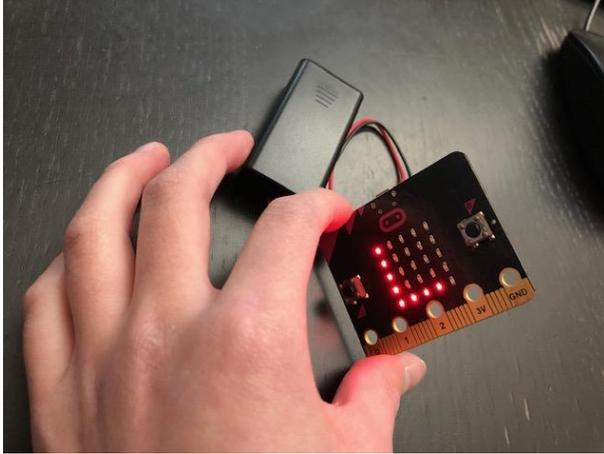

Press button A and B

When press both buttons (A+B), it shows room temperature. When I test the code, my room temperature is 72 degree Fahrenheit.
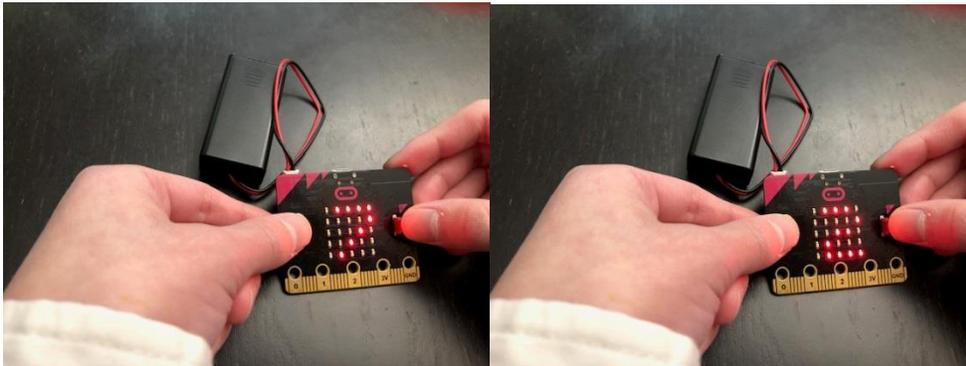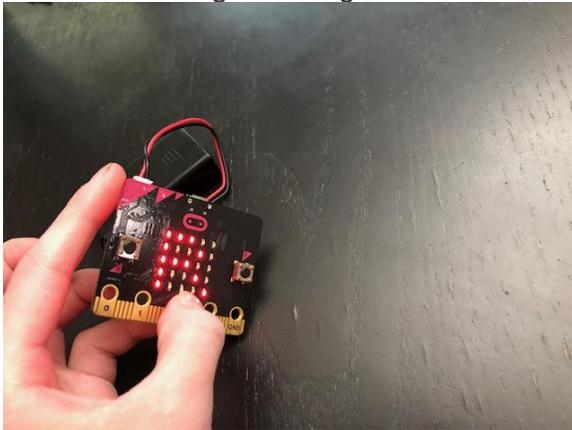
Tilt to the left

Tilt the Micro:bit to the left and it will show "L". I made the image of "L" to show that Micro:bit is tilting to the left.
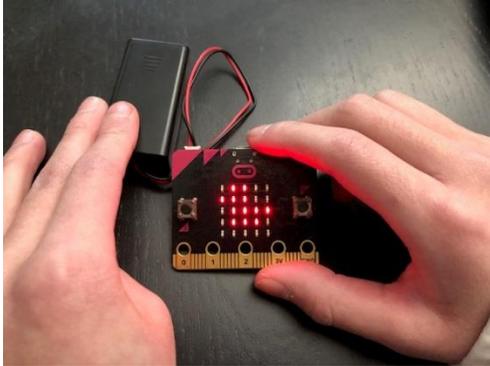

Tilt to the Right

Tilt the Micro:bit to the right and it will show "R". I made the image of "R" to show that Micro:bit is tilting to the right.

Shake

Shake the Micro:bit and it shows "Hello!" and image of duck. You also can customize the word or the image that I have already explained in previous step.

Wear and Show off the Belt Gadget

Put the micro:bit and battery holder into the case. Insert the belt to loop. Wear the belt to your waist. Finally, start attempting to play around with the micro:bit. It is very fun.

I hope you like my instructable. Thank you very much for reading it and do not forget, "Please vote for me".