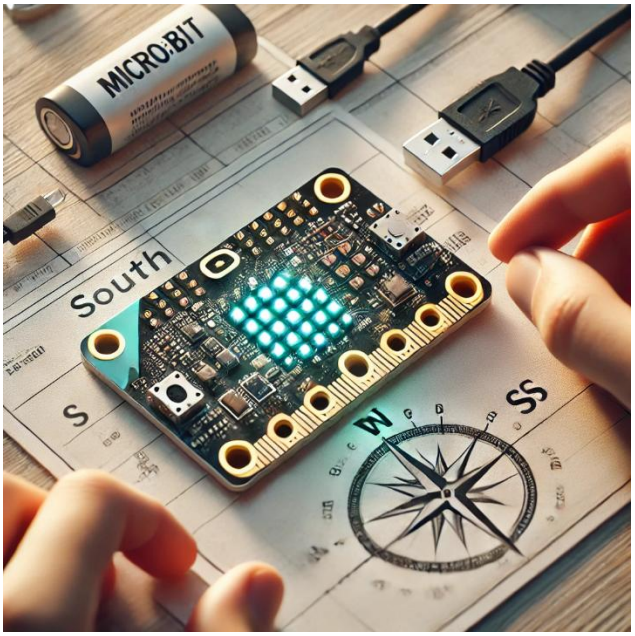
# Digital Compass with Micro: Bit




## Overview

The Digital Compass Project transforms the Micro: bit into a pocket-sized compass that displays cardinal directions (North, East, South, West) on its LED matrix. It leverages the Micro: bit's built-in magnetometer to detect the Earth's magnetic field and provide real-time orientation feedback.

## Goals Addressed

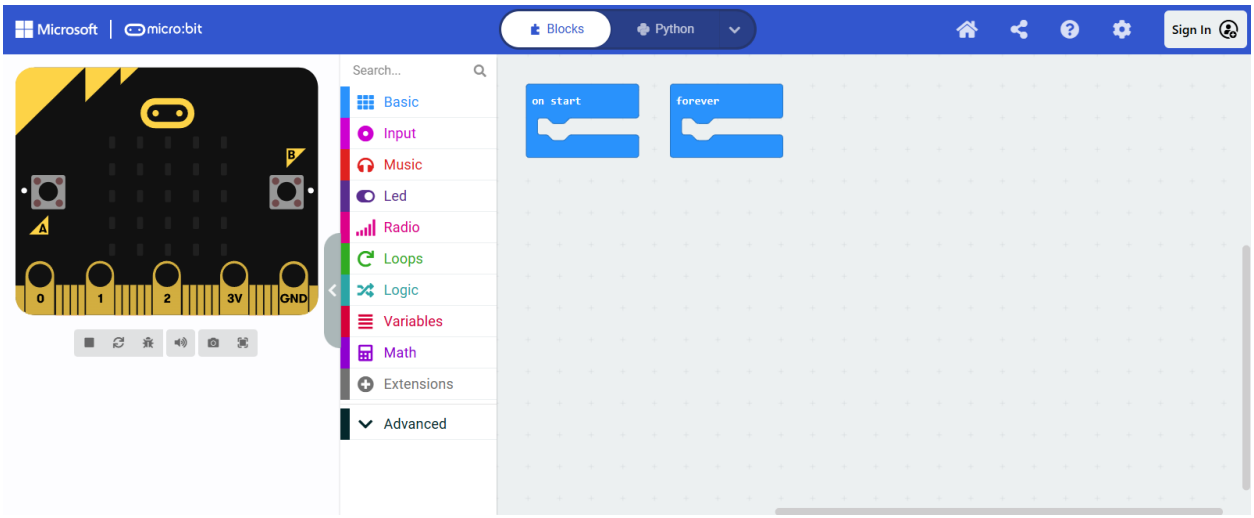
- **Goal 1. Logical Systems**
  - Program the Micro: bit to using Blocks from Microsoft MakeCode editor to track the number of steps
- **Goal 15. Product Prototyping**
  - Build a functional prototype for steps tracking

## Steps to create a digital compass

- **Step 1**

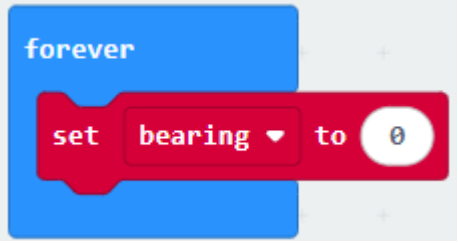
  Go to MakeCode website start a new project and Name it

  “Digital Compass” Click OK then this window will appear:



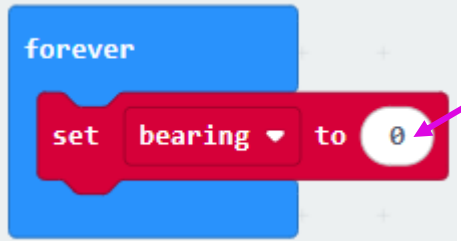

- **Step 2**

  Remove On start block right click on this block and choose “Delete Block”, And from Variables click on Make a Variable... and name the variable “bearing” click OK and choose set bearing to 0 drag it inside [forever] block like this:

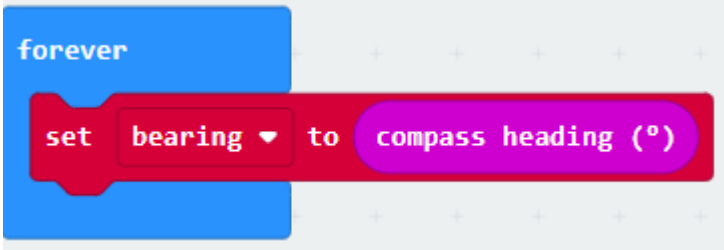


- **Step 3**

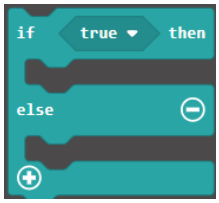
  from Input choose compass heading (°) drag it inside here:



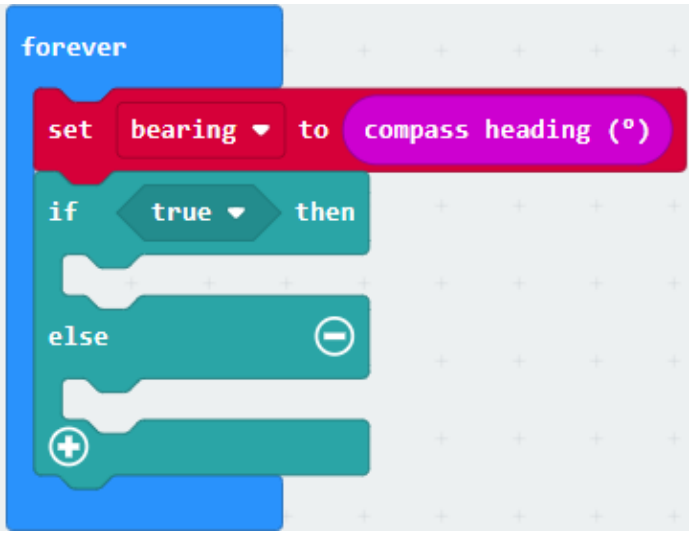

To be like this :



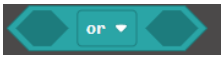

- **Step 4**

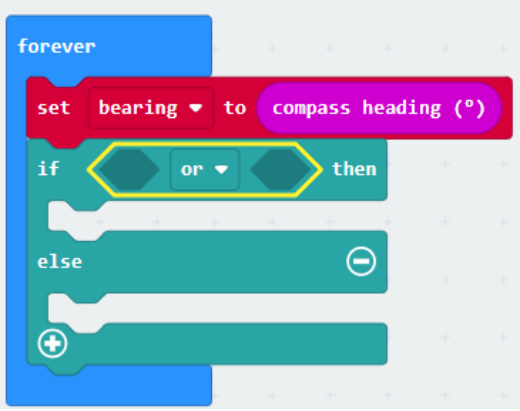
From Logic choose 

drag it below the [set] block like this:

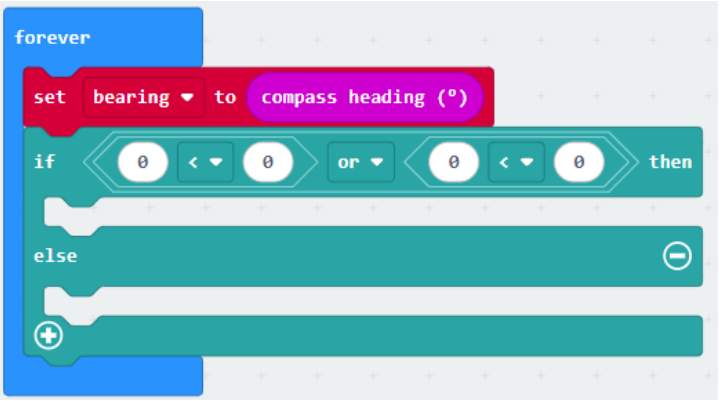


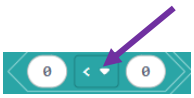
- **Step 5**

From Logic choose  drag it inside the “true” like this:

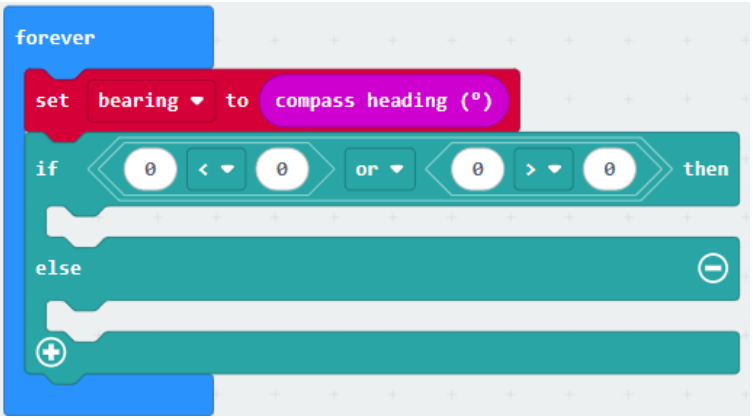



Also from Logic choose 2 of  but the first one in the right side and in [or] block and the other one in the left side like this:

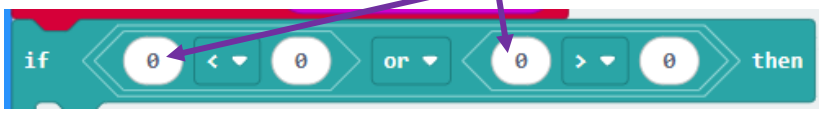



Chage the comparison sign of the left side to be larger than from here 

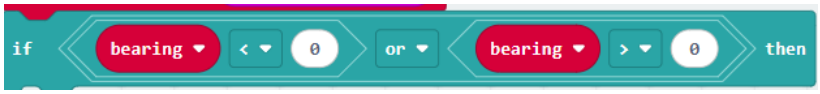
Choose > to be like this:



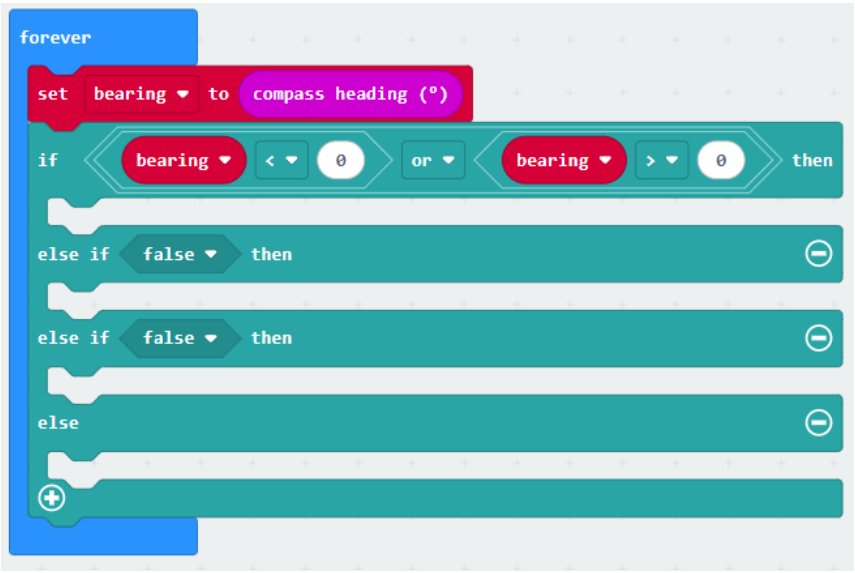
Now go to Variables choose 2 of bearing drag them here :




To be like this:

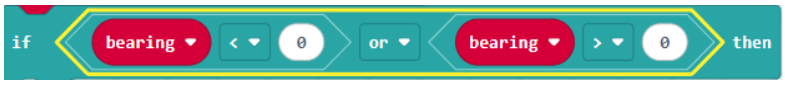



click the ⊕ sign in the [if] block 2 times, the else if will appear and the blocks will be like this :




- **Step 6**

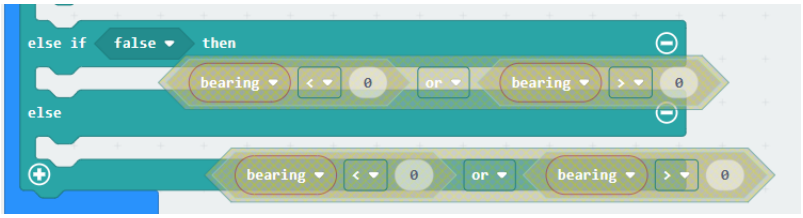
  Now select the [or] Block, a yellow boundary will appear like this :



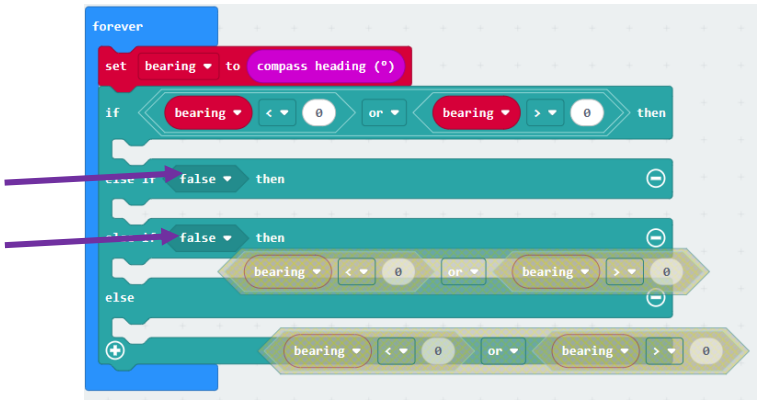

  Now click CTRL + C to Copy it

  Then paste it 2 times by clicking on CTRL + V

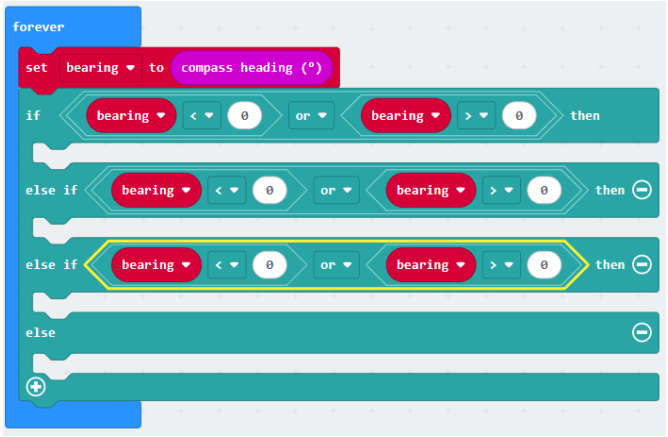
  These 2 copies will appear:



Drag them here:



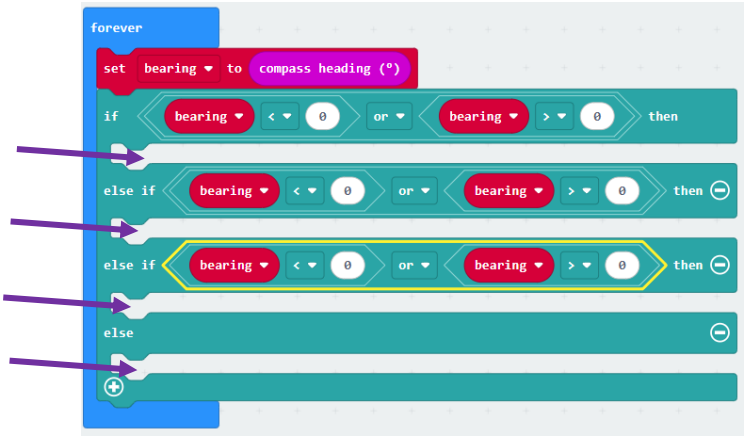

To be like this:



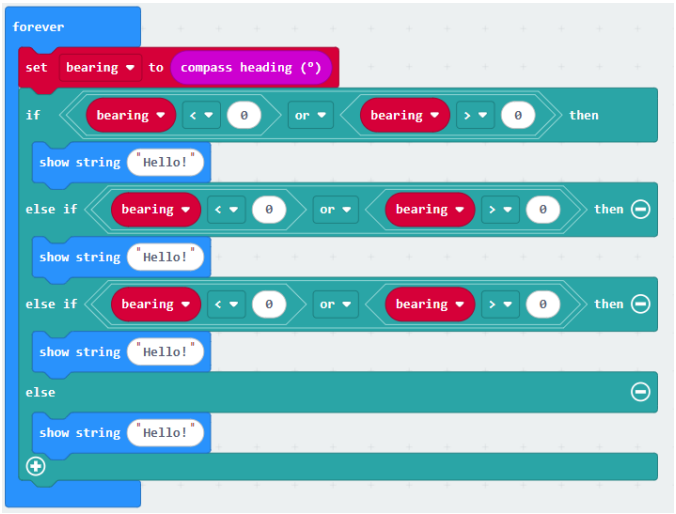

- **Step 7**

From Basic choose 4 of  and place them here





To be like this:




Now change the “Hello” by clicking on “Hello” then you can change it by the cardinal directions (North, East, South, West):

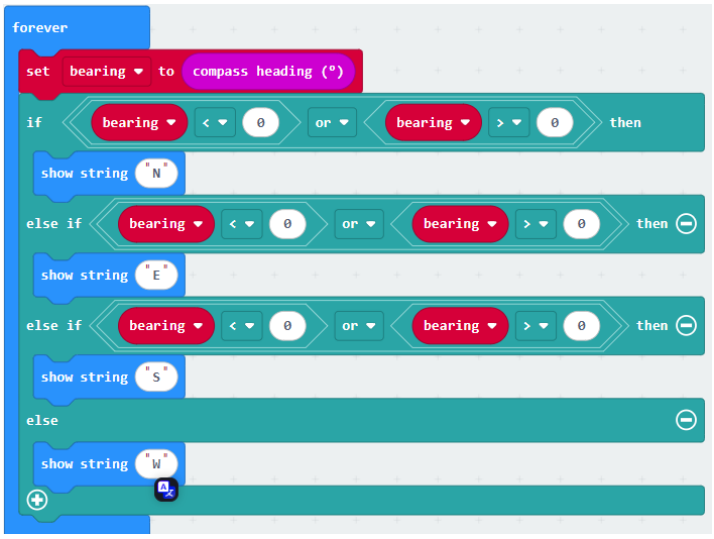
Change the first one by: N

Change the second one by: E

Change the third one by: S

Change the forth one by: W

Like this:



Now we need to set the bearing ranges of cardinal directions

45(North, East, South, West):

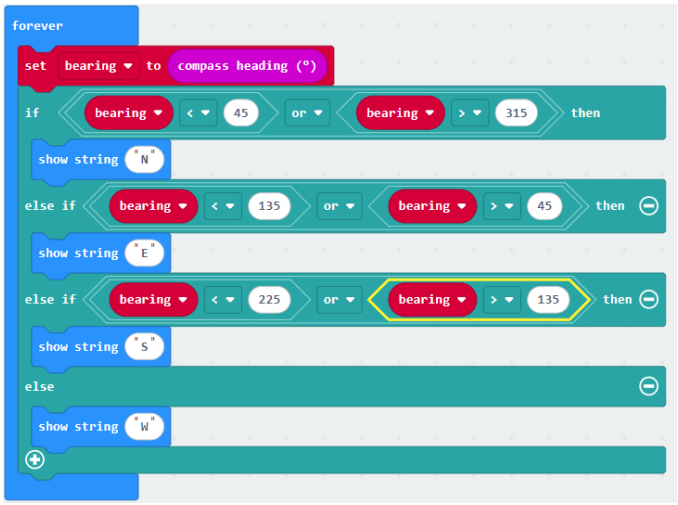
For the North range is less than 45 or more than 315

For the East range is less than 135 or more than 45

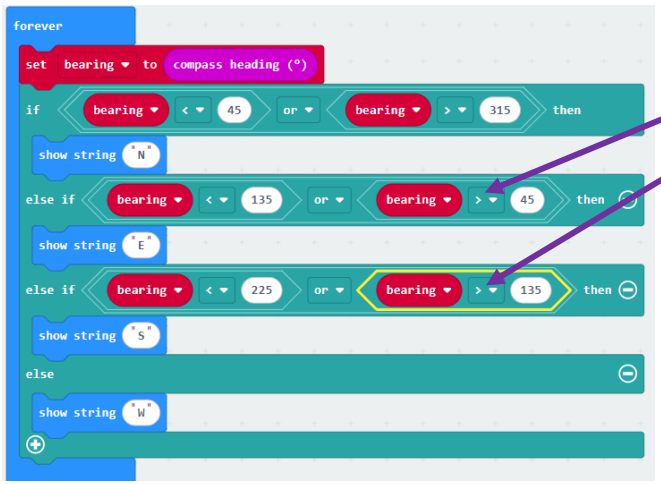
For the South range is less than 225 or more than 135

For the West the range is less than 315 or more than 225

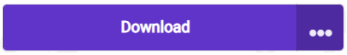
It should be like this:




We have reached the final step on this project, Change those signs to “Equal to” =



To be like this:


Now plug the micro bit to the computer and press 


**Great work now you have finished this project, you have a digital compass in your hand enjoy <3**