

Count Your Steps

Introduction

Brief presentation of your project:

- It will take the power of The Microbit
- To make a more accurate step counter,
- If the acceleration is greater than ($>$) 1000, the steps variable is increased to be shown after in the led
- Nowadays, automation is needed everywhere, so this project will help to improve your sport activity by counting the duration and the calories burned as well

General Description

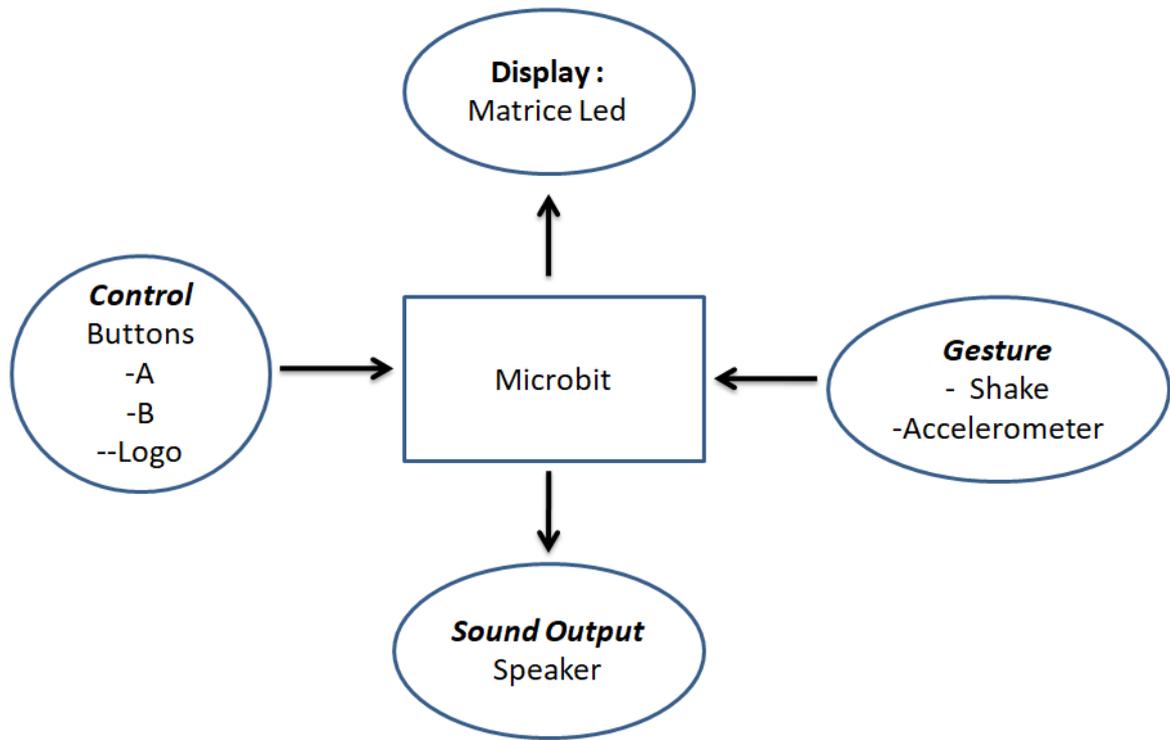
The idea is quite simple, the idea is to Turn the micro:bit into a step counter (pedometer) to help you track how active you are.

It counts how many times the micro:bit has been shaken and if the acceleration is greater than ($>$) 1000, It stores this number in a variable called 'steps', every time the micro:bit accelerometer input senses a shake, the program increases the variable by 1, and shows the new number on the LED display output.

Once the steps reach 10 steps, the variable called 'Calories' will be increased by 40.4 and the distance as well with 0.0006.

To restart the game, you press at A, and to stop the program and display the results, you press at B, it starts and stops after hearing a music from the speaker of the microbit.

The conceptual scheme of the project is as follows:



Hardware Design

Here's all about hardware design and components :

- Microbit
- Buttons
- USB for Microbit
- Python Microbit editor
- Led
- Accelerometer

Software Design

Description of the application code (firmware):

- Press Button B to restart and to set the counter to 0 while hearing a music(power up)
- Once the acceleration is greater than (>) 1000, the variables are increased

- Measure the calories burned, the duration and the speed as well

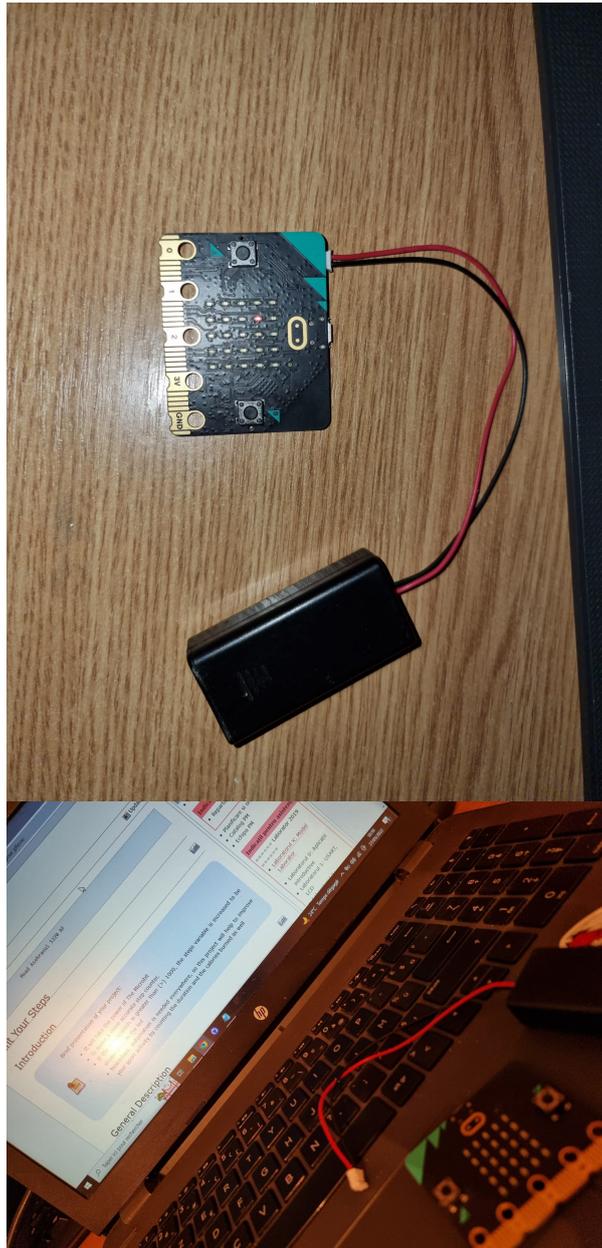
```
While true :
  if accelerometer.get_y() > 1000:
    steps += 1
    counter2 += 1
    display.scroll(steps)
  if counter2 == 10:
    calories = calories + 40.4
    distance += 0.0006
    speed = accelerometer.get_y()
    counter2 = 0
```

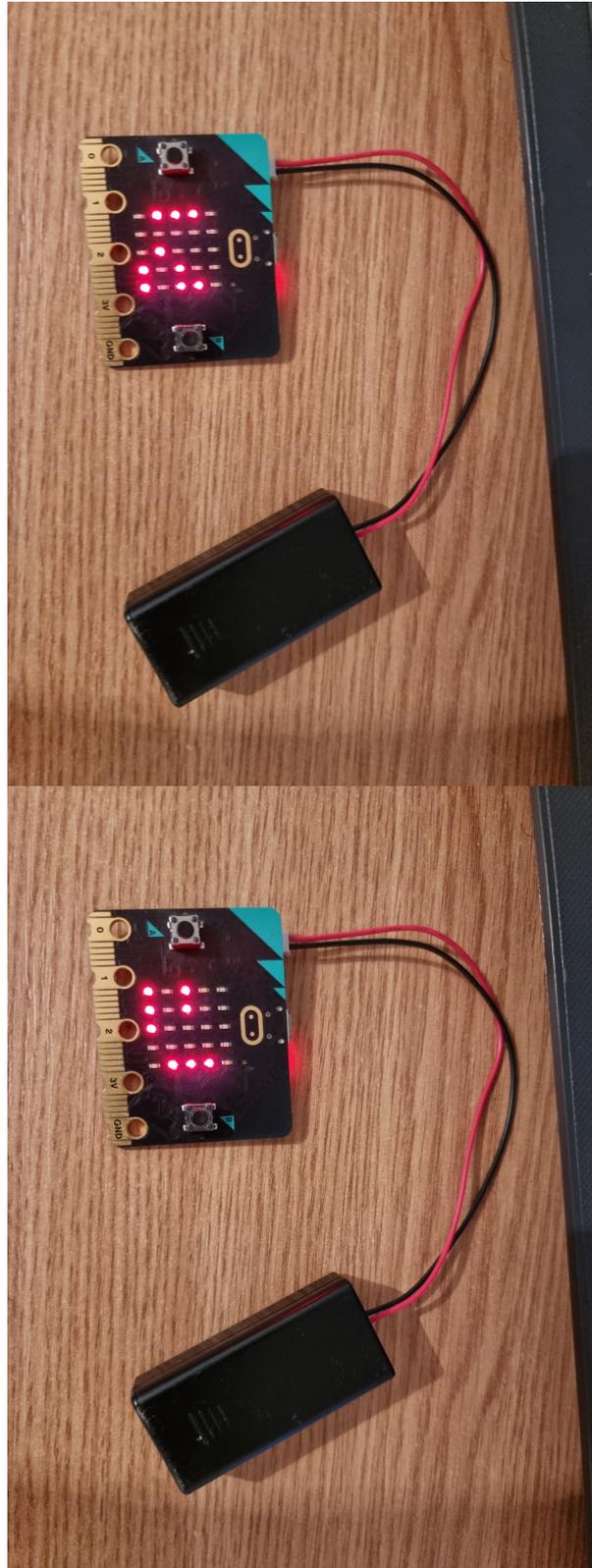
The functions for Button A and B :

```
if button_a.is_pressed():
  music.play(music.POWER_UP)
  display.scroll("restart")
  sleep(300)
  calories = 0
  distance = 0
  steps = 0
  counter = 0
  counter2 = 0
  time1 = running_time()
if button_b.is_pressed():
  time2 = running_time()
  time = (time2 - time1)/1000
  music.play(music.POWER_DOWN)
  display.scroll("Duration:")
  display.scroll(time)
  sleep(300)
  .....
```

Results Obtained

Here is some pictures of the results and the link for the video as well:





Links of the Video :

Drive : <https://drive.google.com/file/d/13ngXFNZwSfSHbOHqf-ctTG2ivulbxQru/view?usp=sharing>

Youtube : <https://youtu.be/Hnfv7vRd2BI>

Conclusions

The Micro Bit (also referred to as BBC Micro Bit, stylized as Micro:bit) is an open source hardware ARM-based embedded system designed by the BBC for use in computer education, that it can be a digital watch, a games console or fitness tracker and stepcounter as I did in my project.

The project can be also improved by adding some functions like the accelerometer so he can measure forces in 3 dimensions, called the X, Y and Z axes. You can modify the code to choose which axis to measure, depending on which way up you fix your micro:bit to your leg or shoe.

Download

The code : [code.txt](#)

Github version : <https://github.com/MoadAsehraoui/AM-Project.git>

Demo video : <https://youtu.be/Hnfv7vRd2BI>

Bibliography / Resources

<https://microbit.org/projects/make-it-code-it/step-counter/#:~:text=Like%20the%20Dice%20project%20this,of%20steps%20you've%20taken.>

<https://microbit.org/code/>

Python Microbit Editor : <https://python.microbit.org/v/2>

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Last update: **2022/05/27 21:45**

