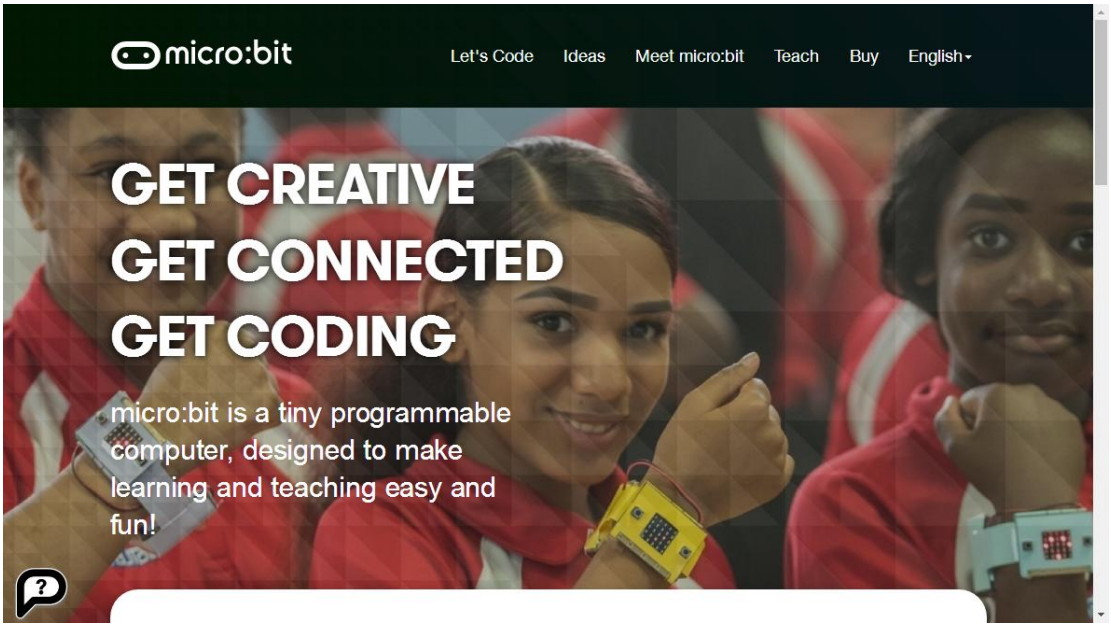
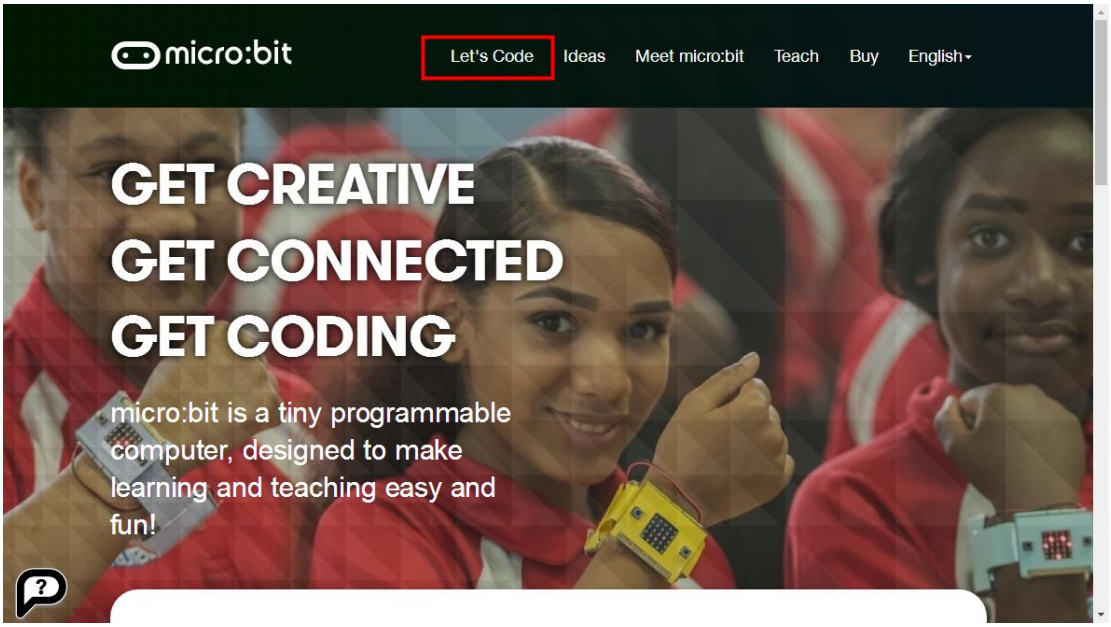
There are two ways to Python programming, offline programming and online programming.

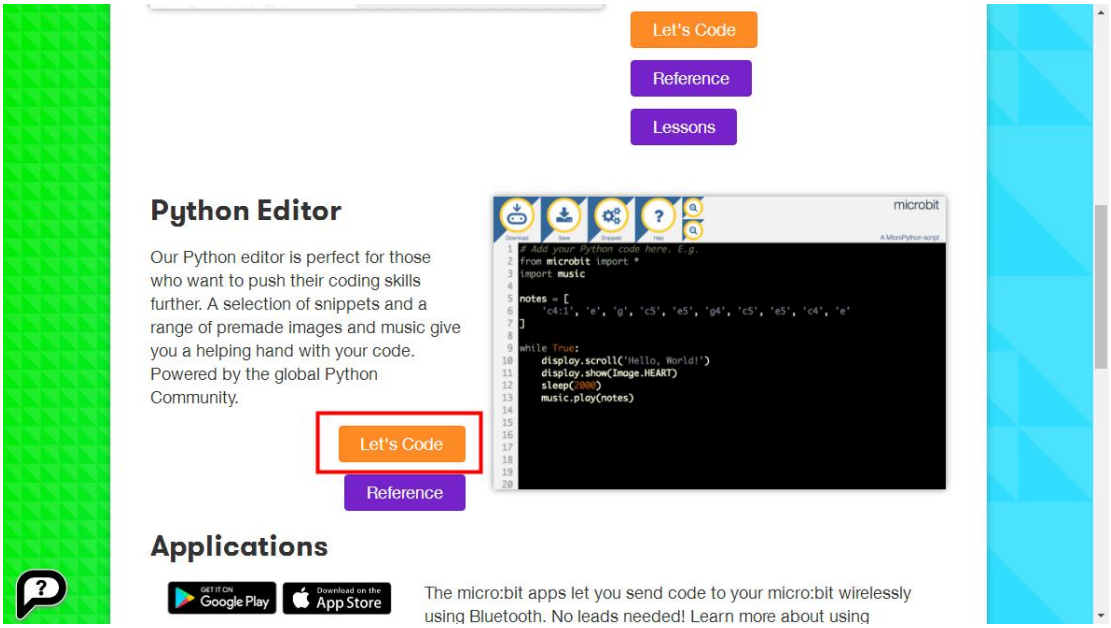
Online Programming

1.Enter the micro:bit official website as shown in Figure 0-1. The official website address is: http://microbit.org/

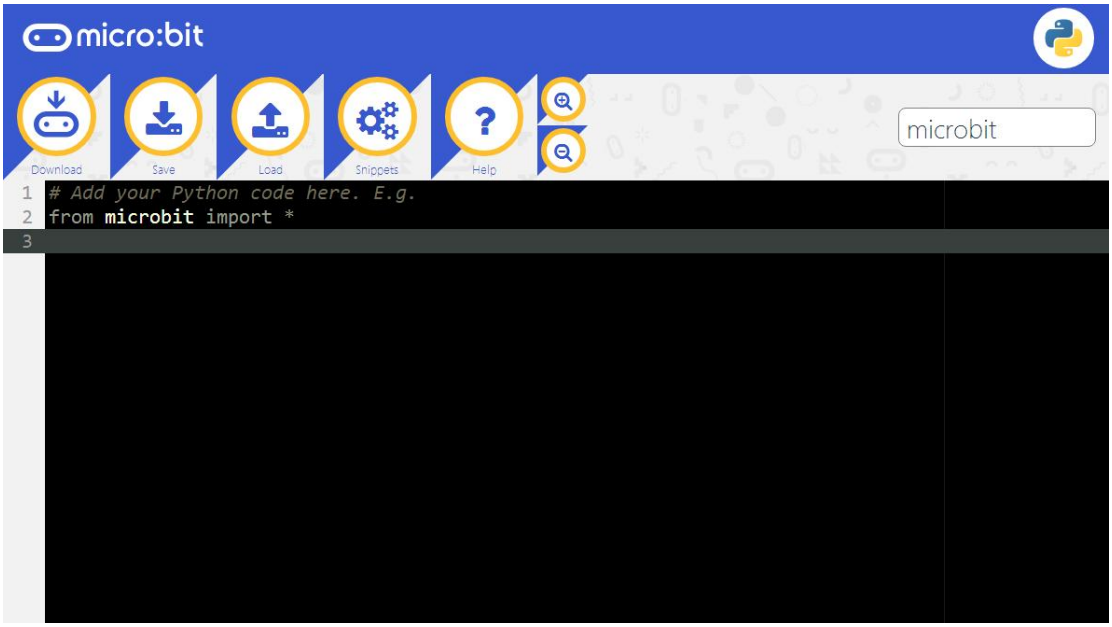


2. As shown in the figure below, click “Let's Code”, then scroll down and select Let's Code in the Python Editor section.





3.The Python editor is shown in the figure below.



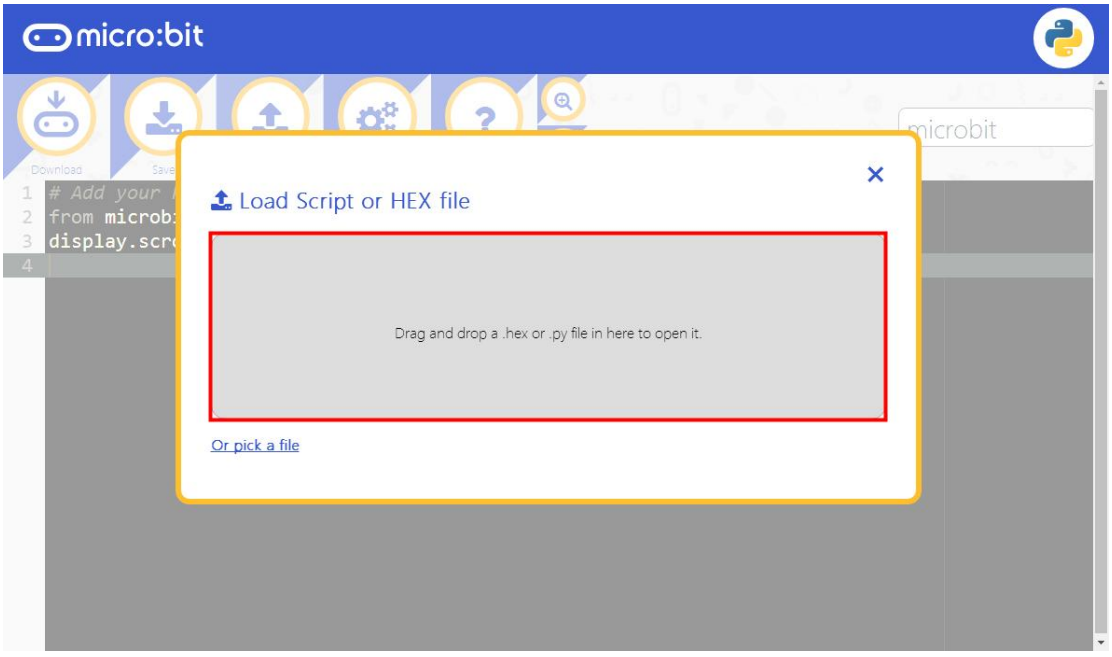
4. You can see some buttons above the editing area, as shown below

The meanings of these buttons are as follows:

Download: Click the "Download" button and a special "hex" file will be saved on your computer. Connect the micro USB cable to your micro:bit and drag and drop the newly saved file into the micro:bit device. The code will run on the micro:bit (or you will see an error message scrolling across the dots on the micro:bit).

Save: Click the “Save” button to save the code in “py” format to your computer.

Load: Load a program file from the computer, which can be a "hex" file or a "py" file. Click the "Load" button and a gray area will appear as shown in Figure 0-6. Drag the code file to the gray area to open the program file, or you can directly click the "Or pick a file" below to select a program file from the computer and open it.

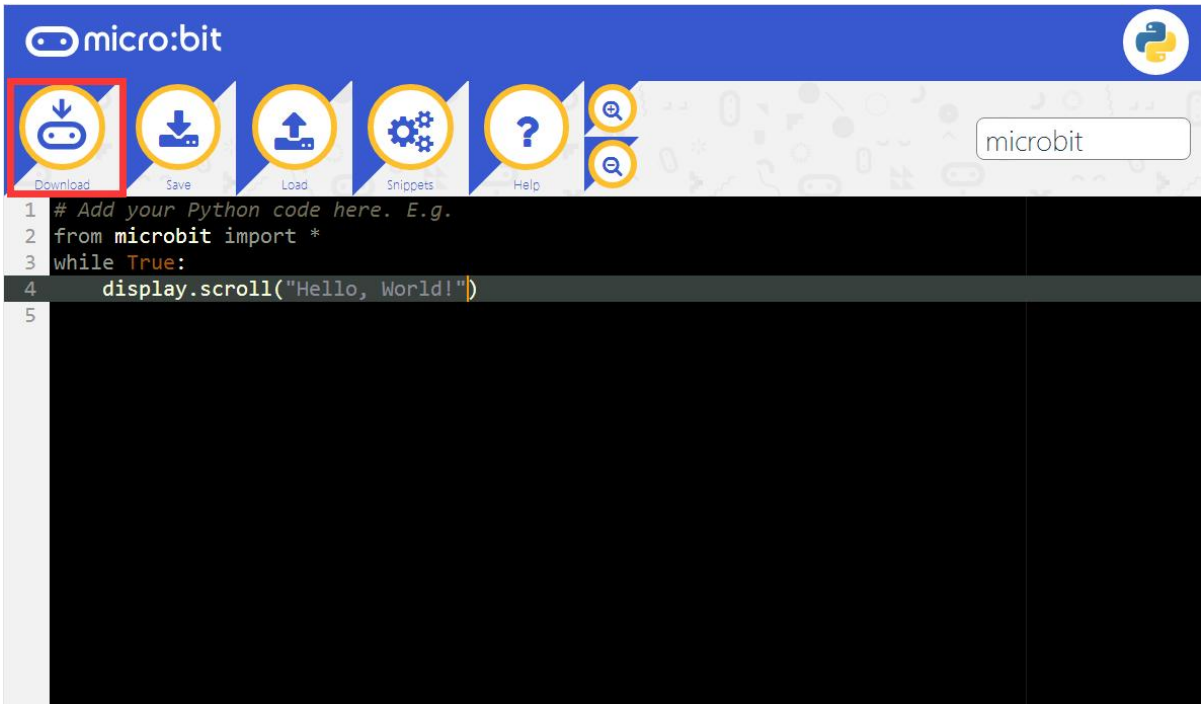


Snippets: Click the "Snippets" button and a menu of Python code snippets will pop up. For some common functions, there are some code snippets. You can select the code snippet you need and fill in the blanks in the code editor to make it achieve the function we need.

Help: Clicking the Help button will open a new tab in your browser that explains how to use the Python editor.

+-: Click the "+" button to enlarge the code, and click the "-" button to reduce the code.

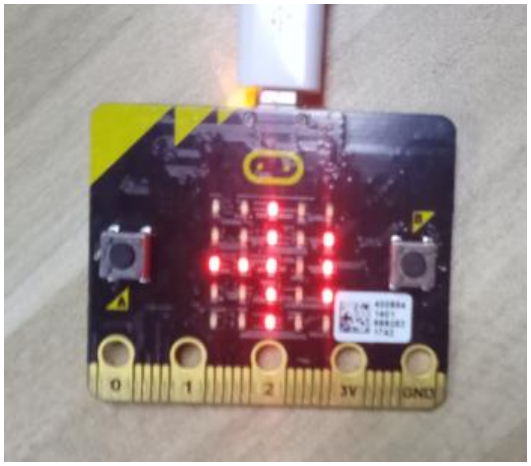
5. Next, let's try to download the code to micro:bit. For example, if we need to display Hello, World! on the micro:bit dot matrix, we can write the code as shown in the following figure in the editing area.
Then connect the micro:bit to the computer with a micro USB data cable, as shown in the figure below, and click Download to download the code to micro:bit.

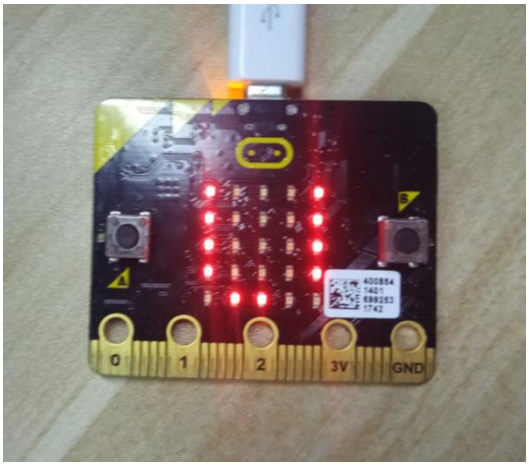


After click “Download”, a download task will appear. Click "Browse" to download the content to micro:bit as shown below.

After clicking Download, you can observe that the indicator light on the micro:bit is flashing as shown in the figure below, indicating that the program is being downloaded.

When the indicator light is on, it means the program has been downloaded successfully. You can see a line of English "Hello, World!" slowly moving to the left on the micro:bit dot matrix, as shown in the figure below.

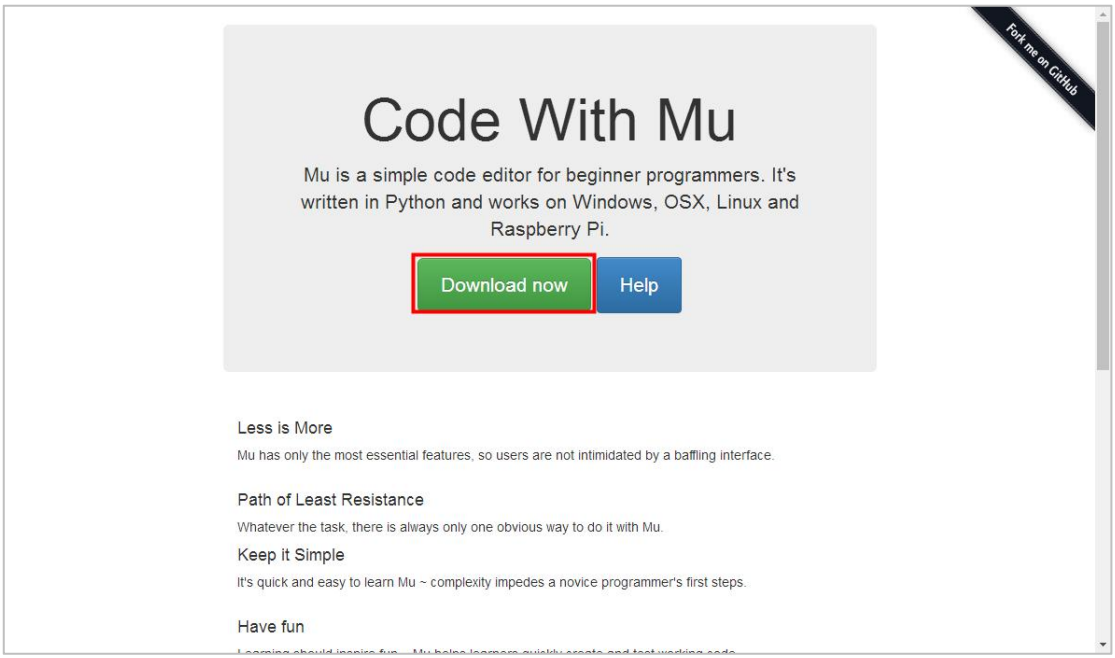




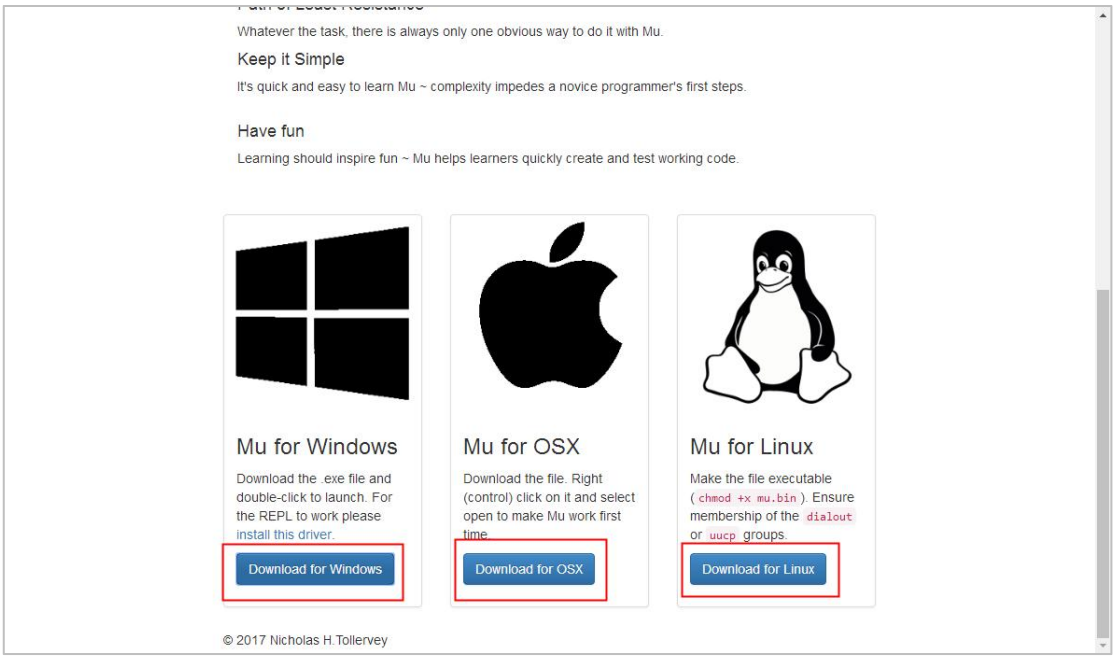
Offline Programming

Offline Mu download address: https://codewith.mu/

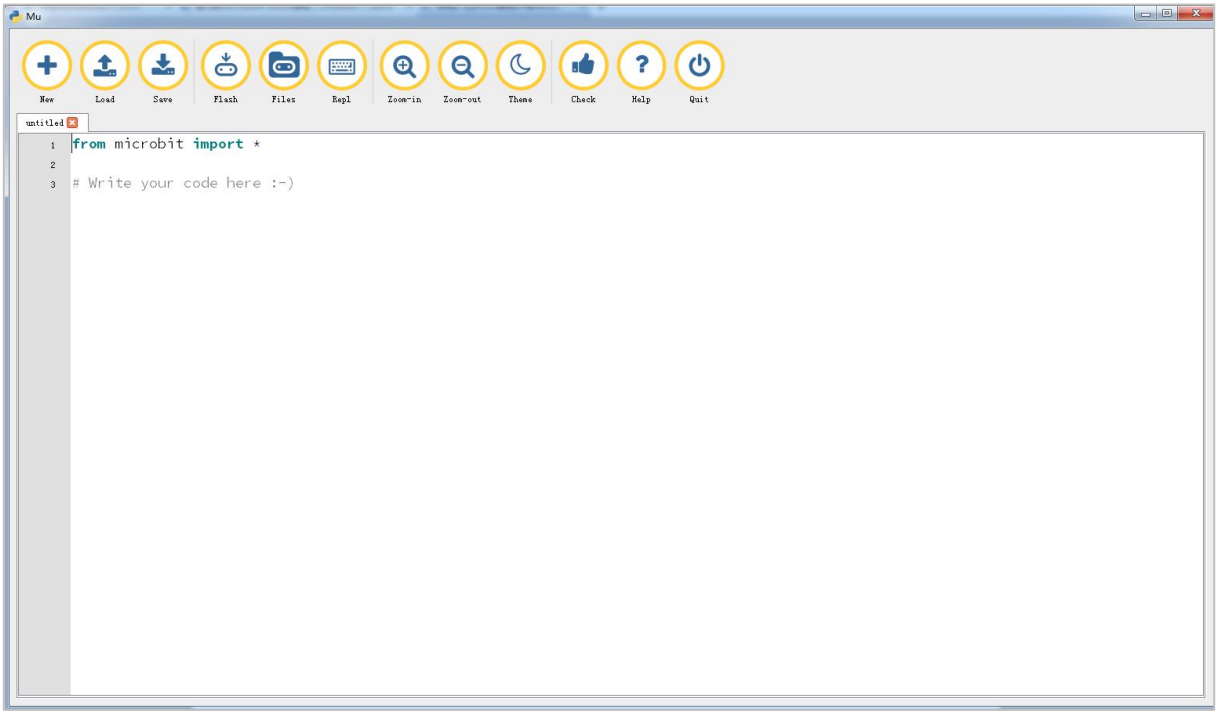
1.Open a browser, enter the offline Mu download address into the URL bar and open it, as shown below. Click "Download now".



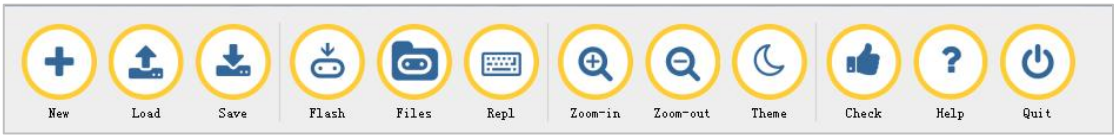
2.Next, you will be redirected to the selection interface, as shown below. Select your current computer system and click Download. There are three options to choose from, namely Windows, OSX, and Linux.



3.After downloading, run Mu software, as shown below.



We can see that there is a large window editing area, and there are some buttons above the editing area as shown in the figure below.



The meanings of these buttons, as following below.

Load: Load the "py" program file from the computer.

Save: Click the “Save” button to save the code in “py” format to your computer.

Flash: Connect the micro USB cable between the micro:bit and the computer, click the "Flash" button, and the code will run on the micro:bit (or you will see an error message scrolling on the micro:bit's dot matrix).

Zoom-in: Click the "+" button to zoom in on the code.

Zoom-out: Click the "-" button to zoom out the code.

Theme: Click "Theme" to switch to day or night theme.

Check: After the code is written, click the "Check" button to check whether there are any errors in the code.

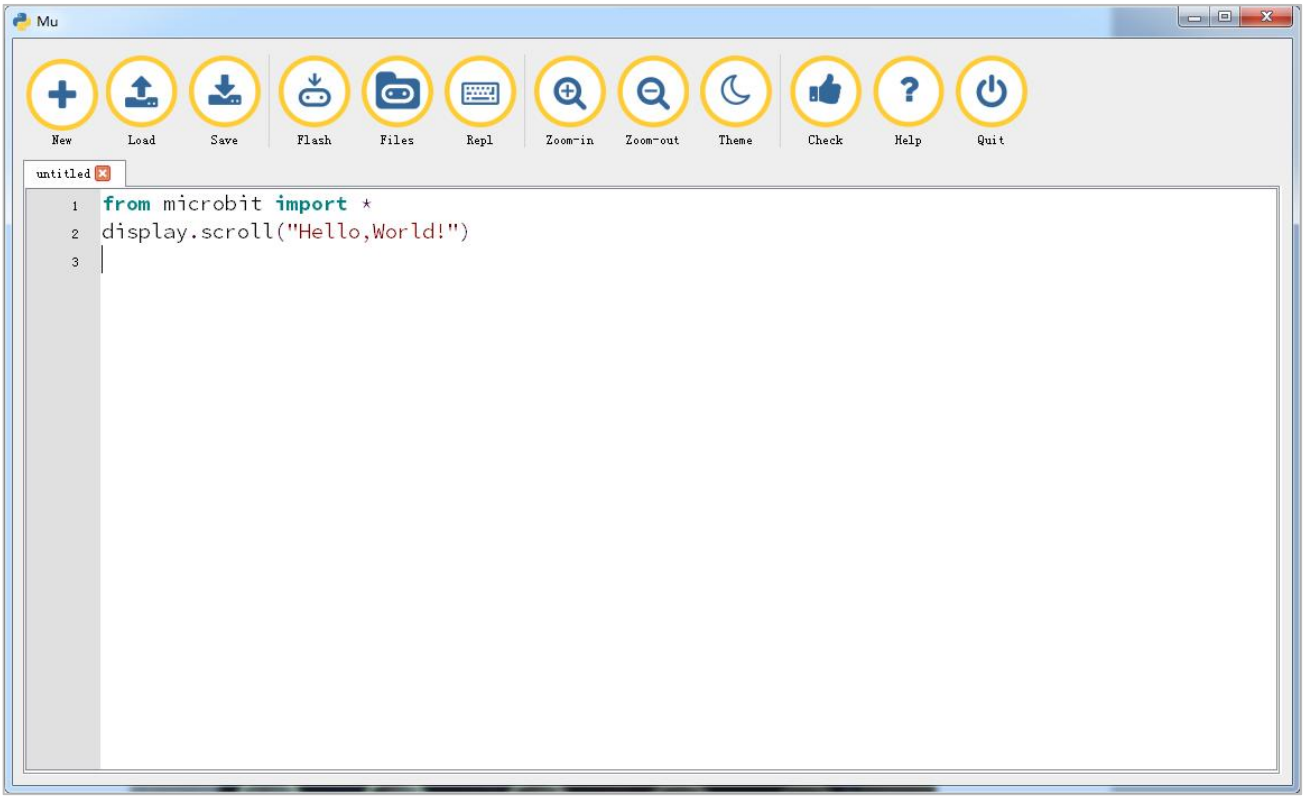
Help: Clicking the "Help" button will pop up a page in your browser that can provide you with some help.

Quit: Click the "Quit" button to close the Mu software. Before closing, Mu will make sure you have saved your program files.

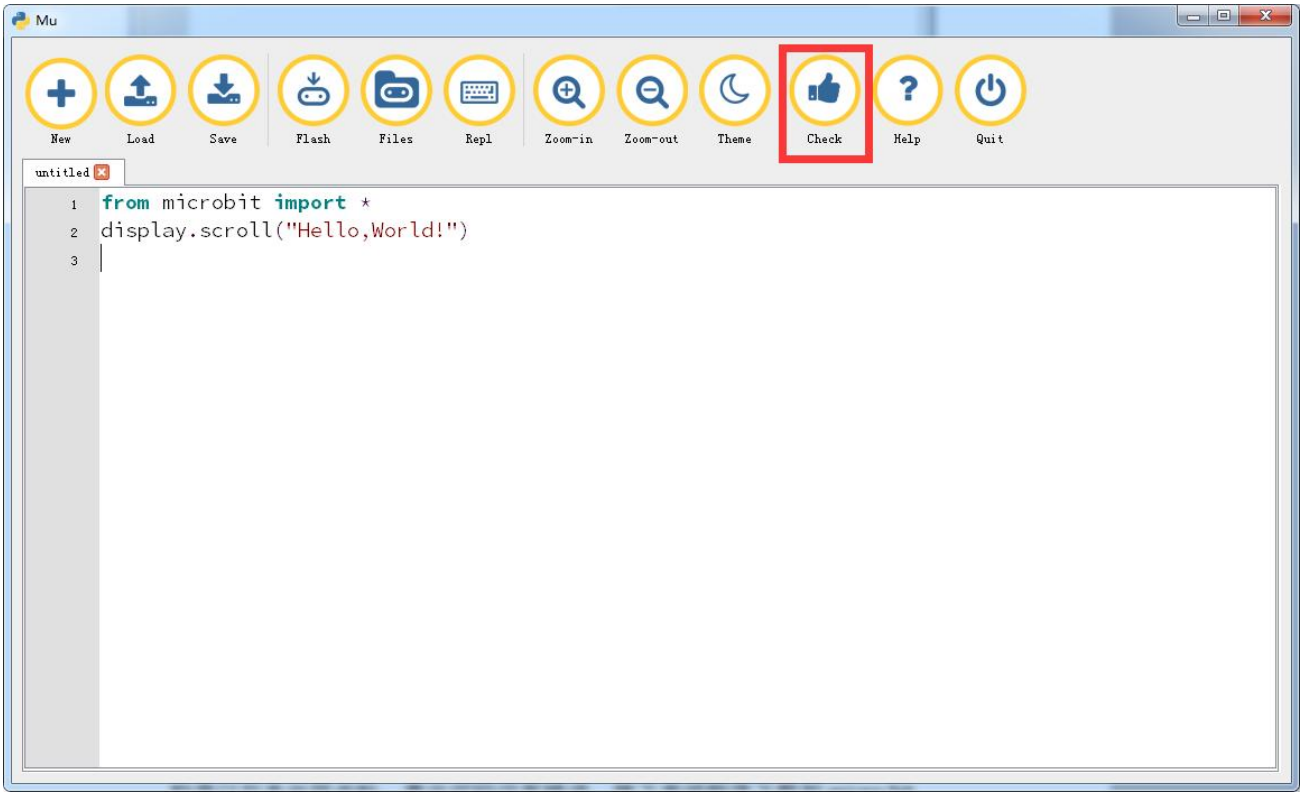
4. Next, we download the code to micro:bit. We can directly enter the code in the editing area. For example, if we need to display Hello, World! on the micro:bit matrix, enter the code.

```
from microbit import *
display.scroll("Hello, World!")
```

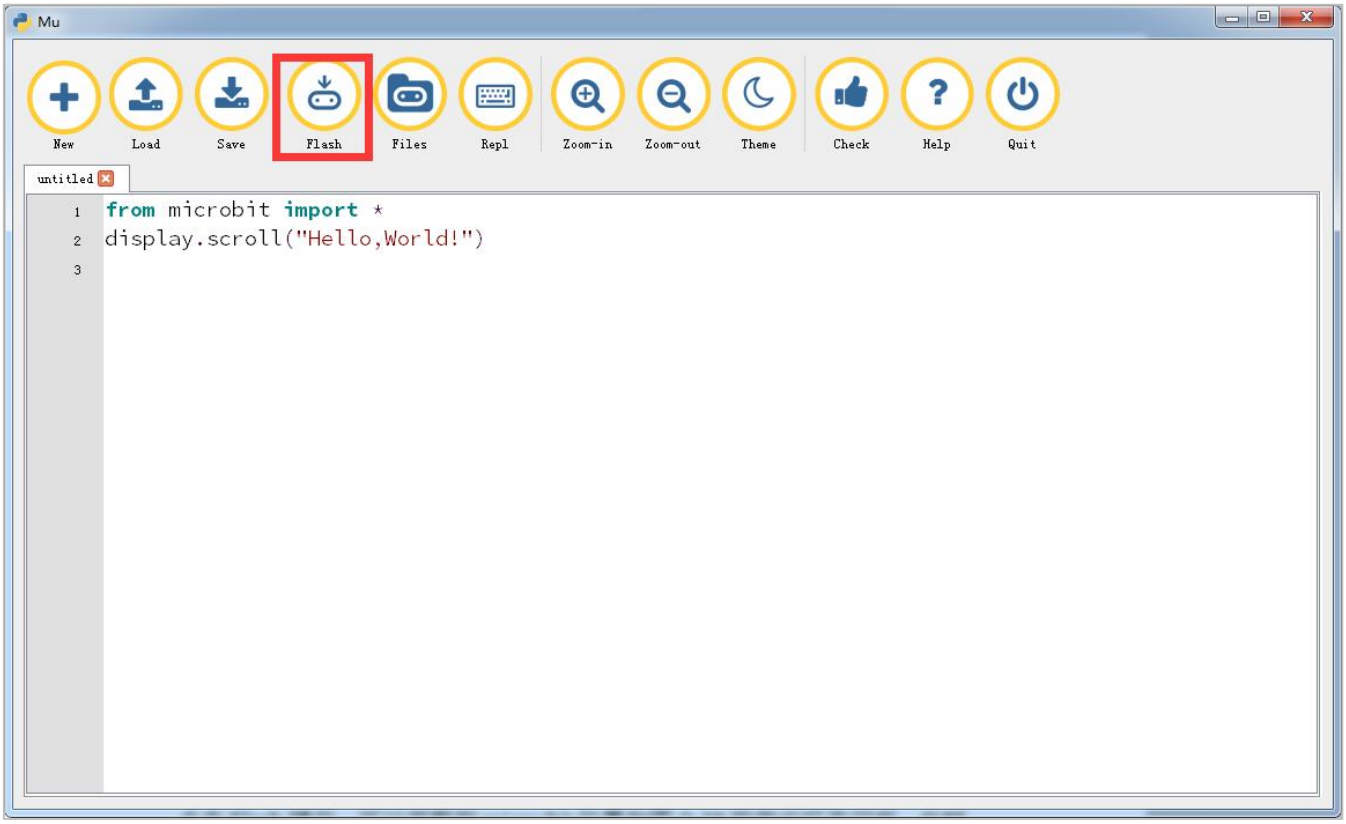
Special Notes:
Regarding the syntax and capitalization requirements of program writing:
1 - The capitalization must be correct!
2 - The spelling must be strictly correct!
3 - There must be a space between keywords such as # and the content
4 - The program ends with a blank line
5 - The program block (such as the program body contained in while) is marked by indentation. Compared with C language, Python completely omits the curly braces (along with the suffix semicolon) and uses the indentation structure to indicate the relationship.



After the code is written, we can click the “Check” button on the thumb icon to check whether there are any errors in our code, as shown in the figure below.

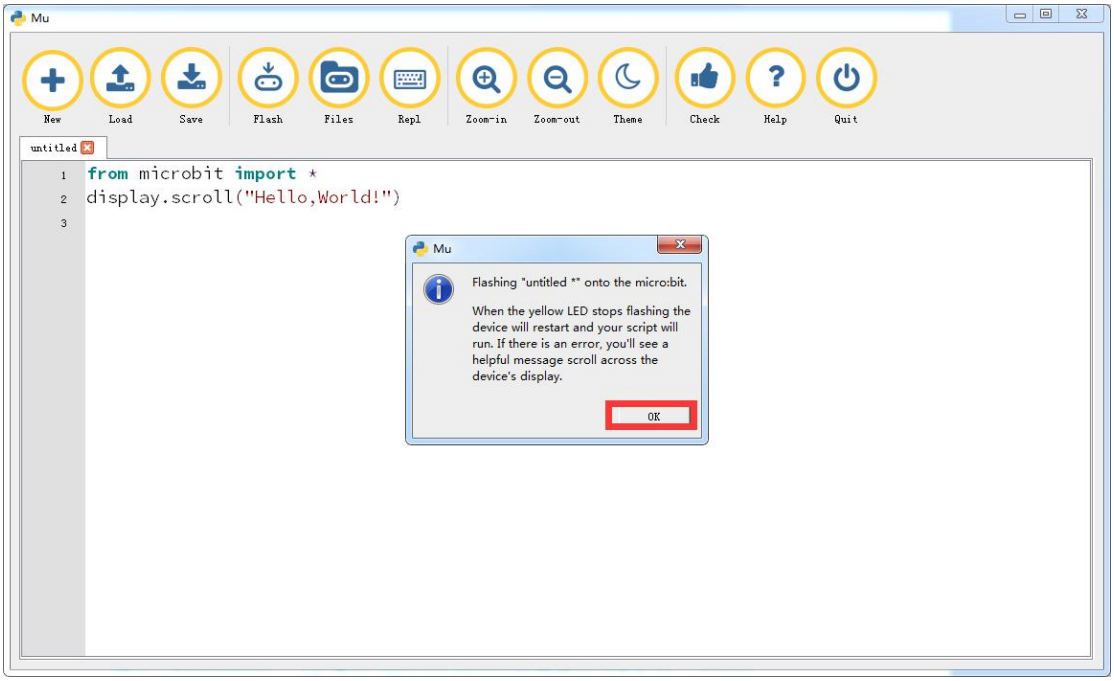


After checking, no cursor or underline appears, indicating that there is no error in the code. Next, download the program to the micro:bit.
First, connect the micro USB data cable to the micro:bit and the computer, and click the “Flash” button.



After clicking the “Flash” button, you can observe that the indicator light of the micro:bit is flashing, which means the program is being downloaded.

When the indicator light is on, it means the program has been downloaded successfully. At the same time, a prompt as shown in the figure below will appear on the screen.
Click “OK”.



After the program is downloaded successfully, you can see a line of English "Hello, World!" slowly moving to the left on the micro:bit dot matrix, as shown in the figure below.