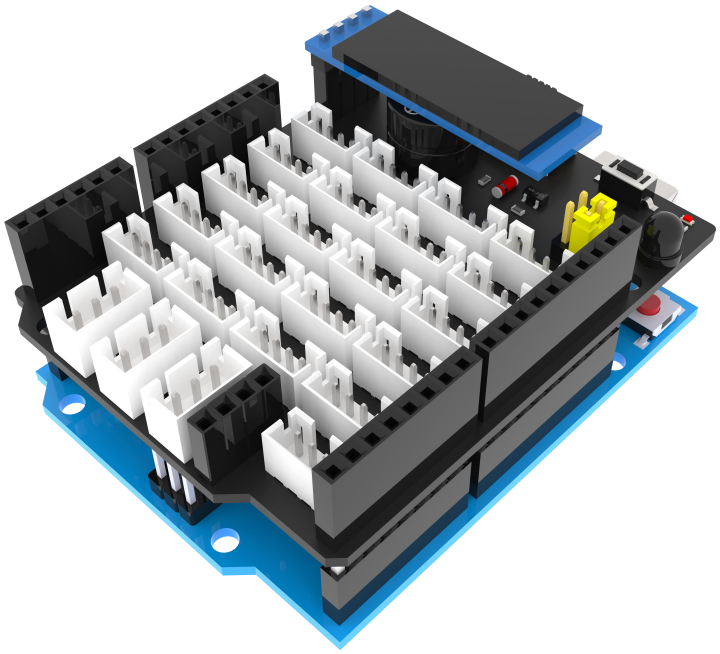
Experimental content: OLED basic display: displaying strings and numbers, geometric and dynamic patterns, animated characters and micro-pattern animations

Experiment preparation: UNO board *1, sensor expansion board *1, USB data cable *1, 0.91 inch OLED *1

Experimental wiring:

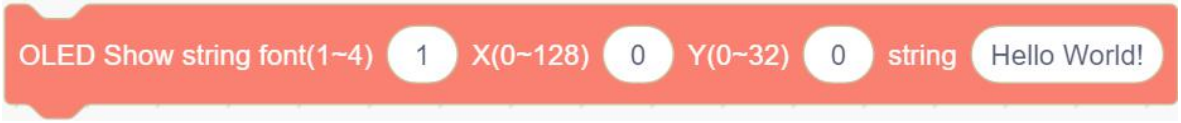
OLED pin is inserted into the silkscreen on the sensor expansion board (SDA, SCL, VCC, GND)



Experimental steps:

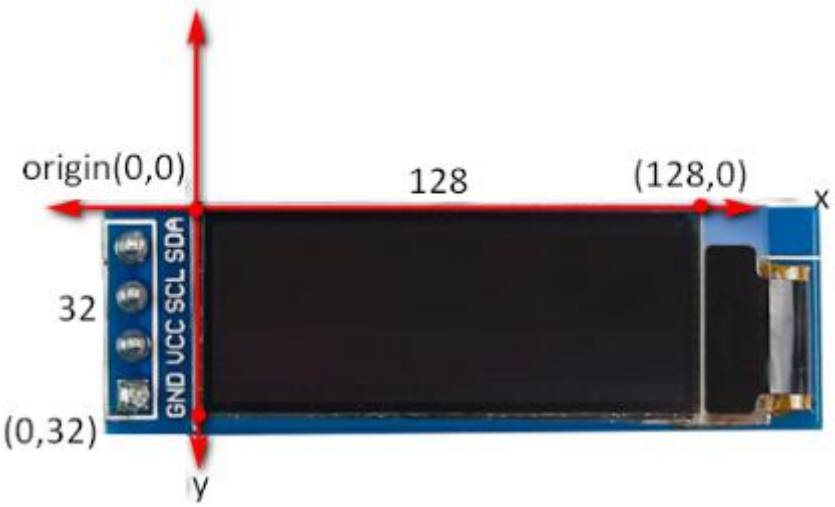
1. Select the following building blocks in the [Plugkit].

2.OLED display strings



The first parameter is the font size (1 ~ 4). You can view the display as 4 lines. If you set font size to 1, it can display 4 lines, if you set font size to 2, it can display 2 lines, and if you set font size 4 , it can only display 1 line.

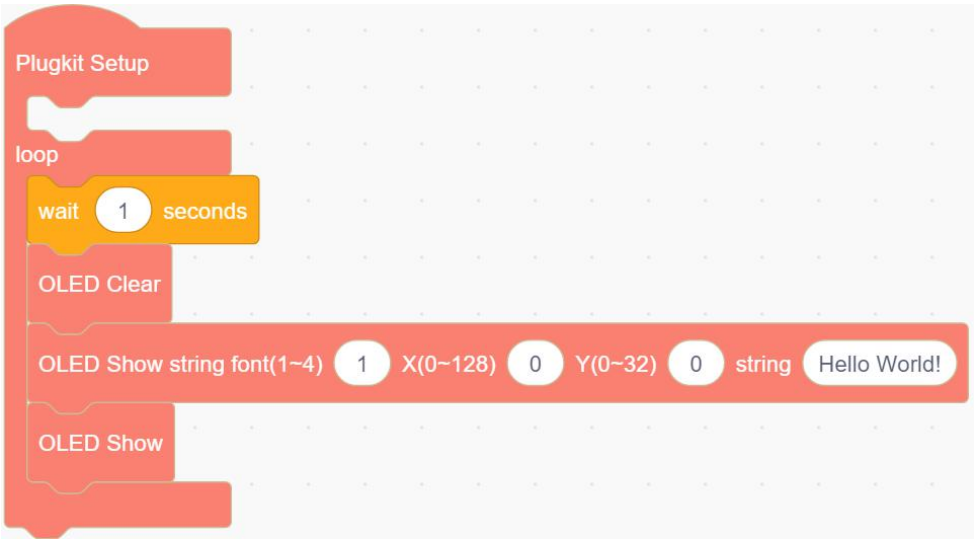
The second and third parameters are the starting positions X and Y. The upper left corner of the OLED display can be regarded as the coordinate origin (0,0), the lower left corner is (0,32), and the upper right corner is (128,0). As shown in the figure, the range of the abscissa x is from 0 to 128, and the range of the ordinate y is from 0 to 32.



The last parameter is the position of the input string. The number of characters that can be displayed for different font sizes is shown in the table below. When the font size is greater than 4, the display will be incomplete, so we set the font size to 1-4.

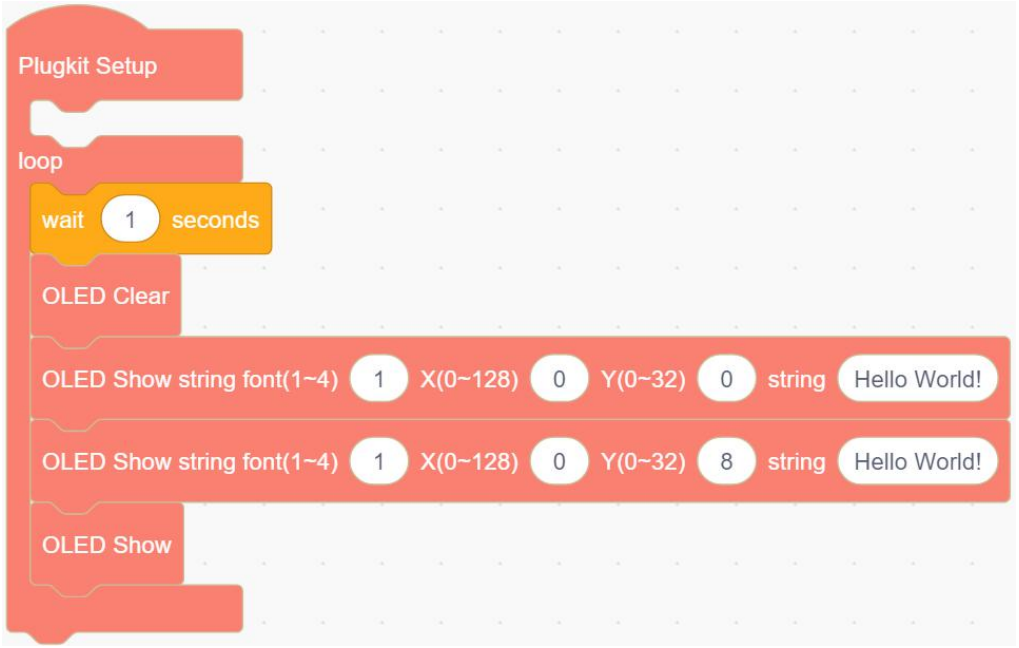
Size of font	Number of characters displayed on one line
1	21
2	10
3	7
4	5

Add the OLED display string and the "OLED clear", "OLED show", and "wait for 1 seconds" blocks and put them to the loop block.



Experimental phenomena: The first line of the OLED shows “Hello World!” .

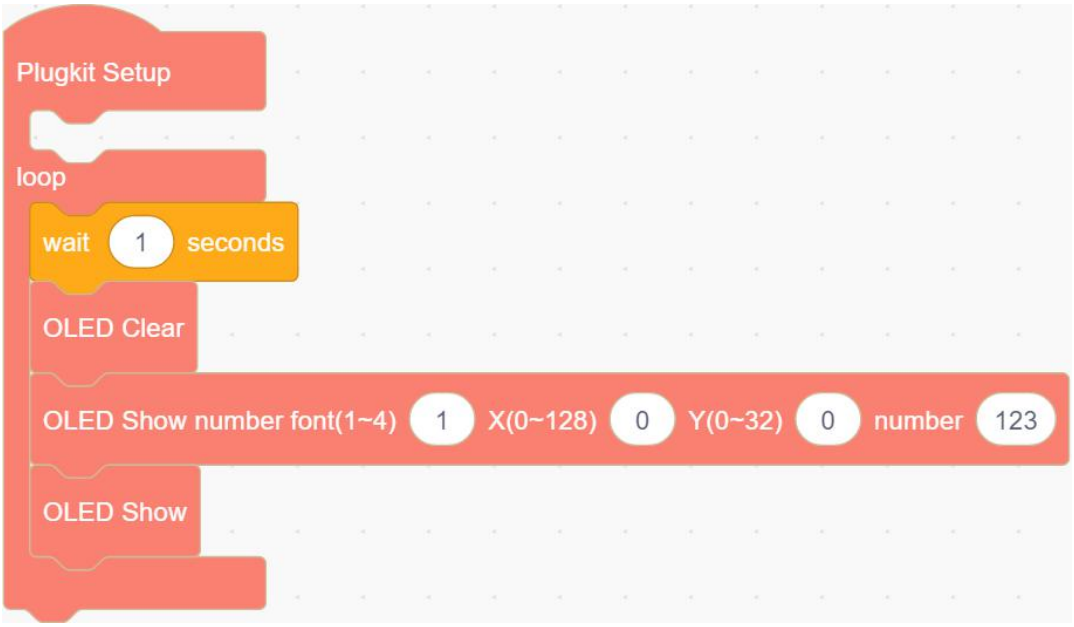
Note: The OLED display string block needs to be added with an OLED clear block in front of it, and the OLED show block needs to be added at the back. Because OLED will display the Yahboom logo when it is initialized. Before we can display our own string, we must clear the screen. The function of wait for 1 seconds blocks is to prevent the OLED display from shifting too quickly.



Experimental phenomena: The same character is also displayed on the second line of the OLED. The OLED can be viewed as four lines. If the font size is 1, four lines can be displayed. Therefore, the vertical coordinate y of each line is different by 8, so the coordinates of second line is (0, 8), and so on. If you want to display the third line, the starting coordinate of the third line is (0, 16). The fourth line is (0, 24).

3.OLED display number

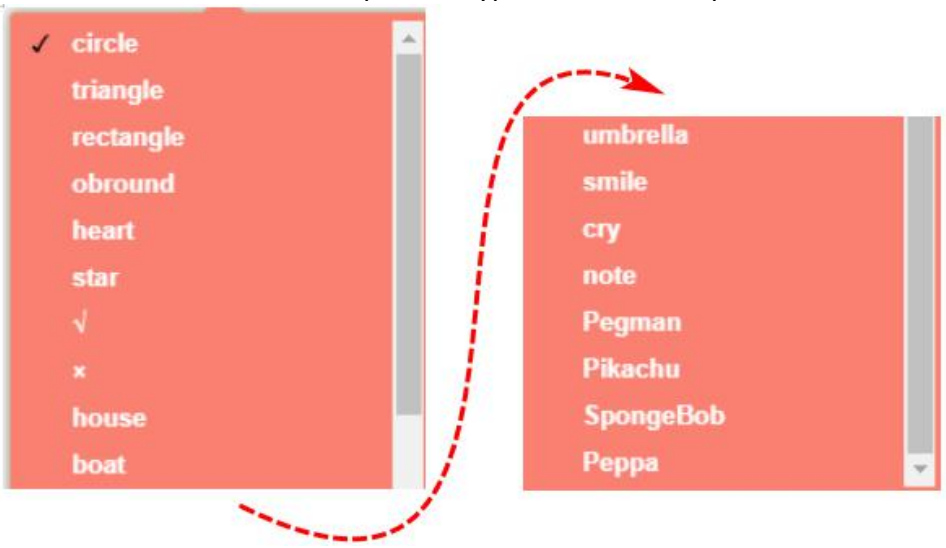
The first parameter, the second and third parameters are the same as the display string block
The last parameter is the input number



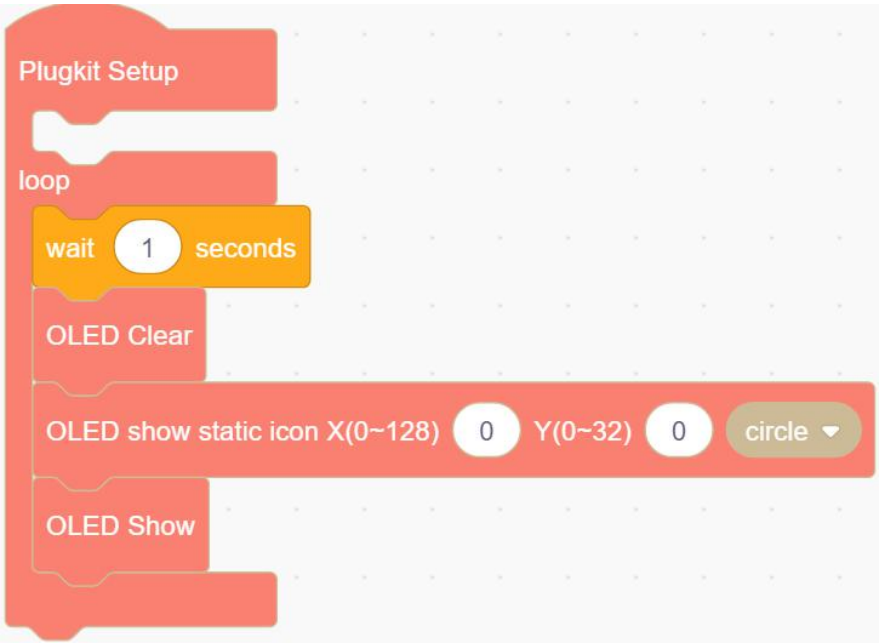
Experimental phenomena: The first line of the OLED display shows the number 123. Since the type of the output number we defined is unsigned long, we can enter up to 10 numbers

4.OLED display static pattern

The first and second parameters are the starting positions x and y
The last parameter is the choice of static pattern type. There are 18 patterns to choice.



There are 18 static pattern options

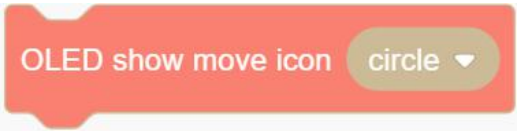


Experimental phenomena: The OLED display uses (0,0) as the center and displays a quarter circle with a radius of 15. If you need to display a complete circle, you need to modify the center to (15,15). Note: when selecting a circular pattern, X and Y are the coordinates of the center of the circle. Other pattern coordinates are defined in the following table

Pattern	Coordinate(X,Y)
circle	center
Triangle	undefined (fixed position)
rectangle	the upper left corner

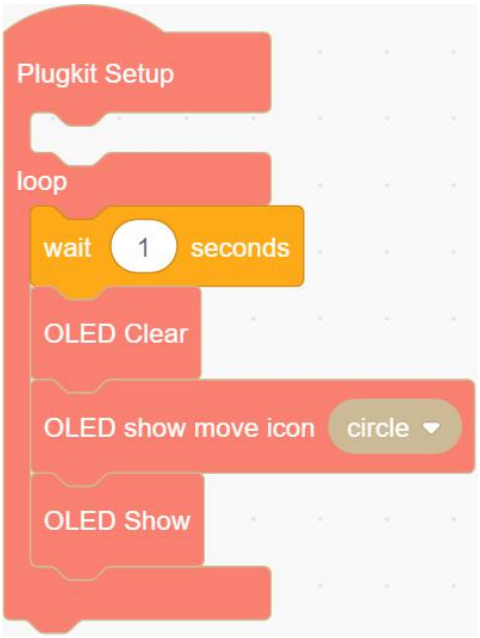
	coordinate
Round rectangle	the upper left corner coordinate
Others	starting coordinates

5.OLED display dynamic fill pattern



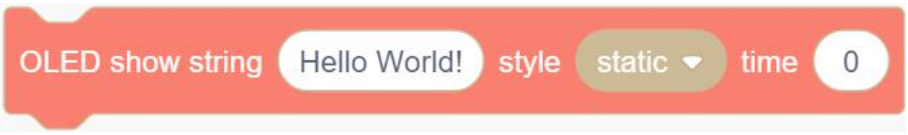
Only one parameter is the type of dynamic pattern selection. There are six types of dynamic pattern selection.

There are six dynamic effects



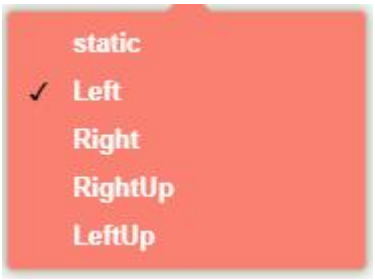
Experimental phenomena: OLED display shows dynamic fill pattern

6. OLED display string effect



The first parameter is the position of the input string. The default is “Hello World!” font size 1 and starting position (10,0).

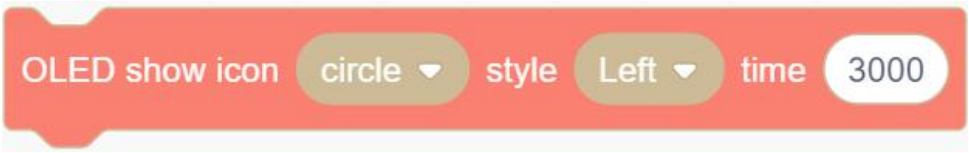
The second parameter is the effect selection. There are a total of five effects, which are initialized to static (no effect), and you need to choose them by yourself.
The last parameter is the scroll time (the duration of the effect), the unit is ms, as shown in the figure set to 3000ms = 3s.



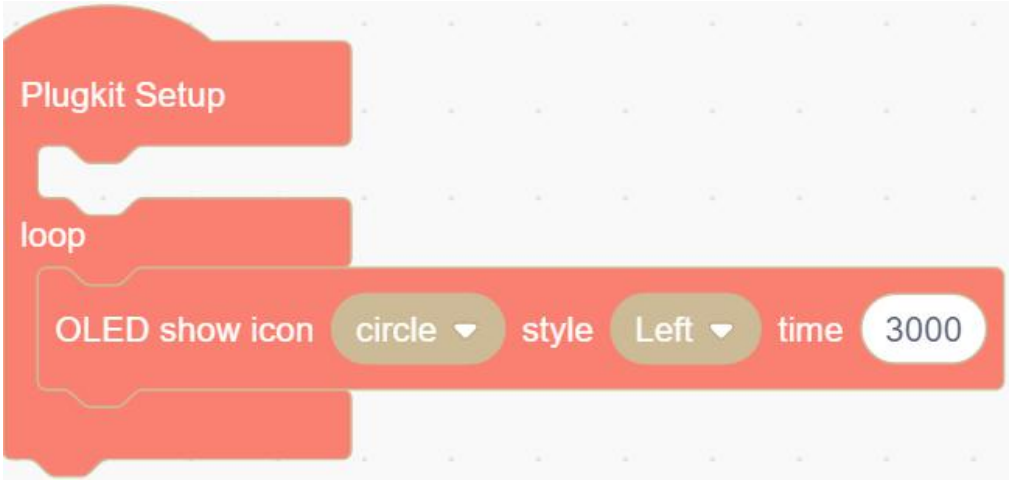
There are five scroll effects

Experimental phenomena: The OLED display the string “Hello World!” and scroll to the left for 3s.
Note: This block didn’t need to be added with an OLED clear block. If the OLED string block is run in the loop, the effect will still exist after uploading other programs, and it needs to be restarted for normally use.

7. OLED display pattern effect



Similar to the OLED display string effect, only the first parameter is different, the other parameters are the same.
The first parameter is the static pattern selection
The second parameter is the effect selection.
The last parameter is the scroll time



Experimental phenomena: The OLED display pattern is circular, the default center position is at (15,15), the radius is 15, and scroll to the left for 3s.

Note: This block didn't need to be added with an OLED clear block. If the OLED string block is run in the loop, the effect will still exist after uploading other programs, and it needs to be restarted for normally use.