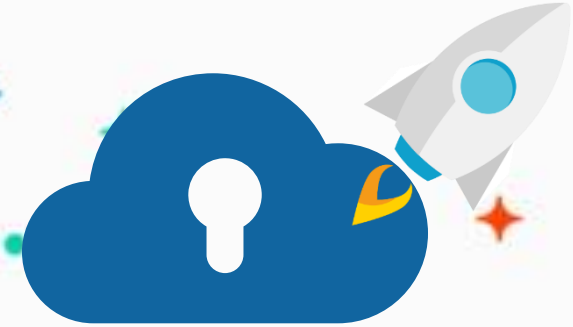

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Lesson 6. Direction Indicator

LECTURER:

Lesson Objective

Learning Objectives

1. Learn about the animation of the dot matrix screen.
2. Learn about the Gesture Recognition.

Possible Difficulties

1. Draw the animation pattern of the dot matrix screen.
2. Control animation with gestures.



Background Information



Background Information



After it is completed and opened to traffic, the road will bear the wear and impact of the wheels, be eroded by heavy rain, flood, sandstorm, ice and snow, sun, ice melt, and man-made damage, as well as some defects left over from the construction, which will lead to the deterioration of the quality of the road.

Therefore, after the highway is completed and opened to traffic, maintenance and repair measures must be taken, and continuous updating and improvement must be carried out.

Background Information



In order to keep the road in good condition, prevent its quality from deteriorating, and provide good service to road users, it is necessary to maintain the road regularly.

Background Information



Road maintenance must repair the damaged parts in time, otherwise it will lead to increased investment in repair projects, shorten the service life of the road, and cause losses to road users.

Background Information



When repairing roads, care must be taken to carry out emergency services and rush repairs to keep the roads clear. During maintenance, roads need to be temporarily closed to avoid accidents or interference from other vehicles. In addition to closing, it is also necessary to use eye-catching warning lights to inform vehicles in advance to switch lanes in time.



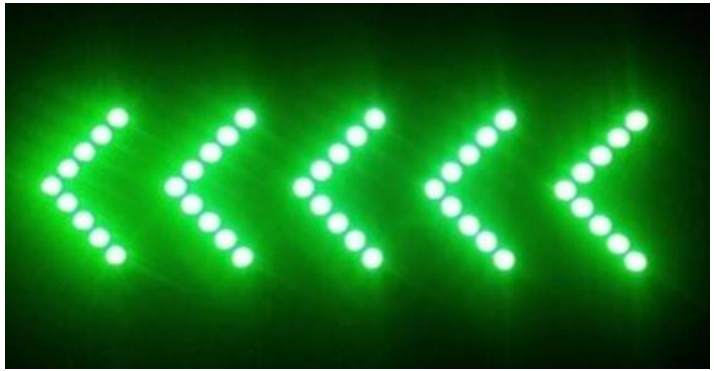
Knowledge Introduction

Knowledge Introduction



The dot matrix screen can be used to make prompt direction lights. Here we don't need to use the principle of visual persistence to make animations, but to light up the LED lights. This form of lighting up the LED lights to achieve animation effects is called LED animation.

Knowledge Introduction

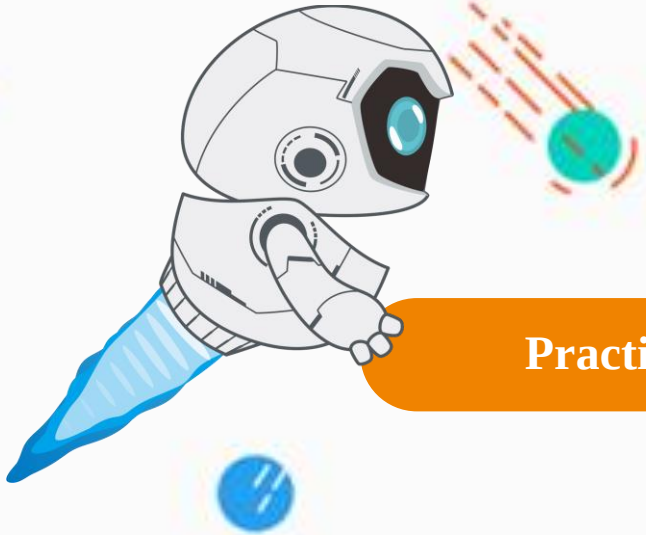


Different from ordinary animation, LED only has two states of on or off, that is, 0 and 1, so it is easier to make LED animation.

Knowledge Introduction



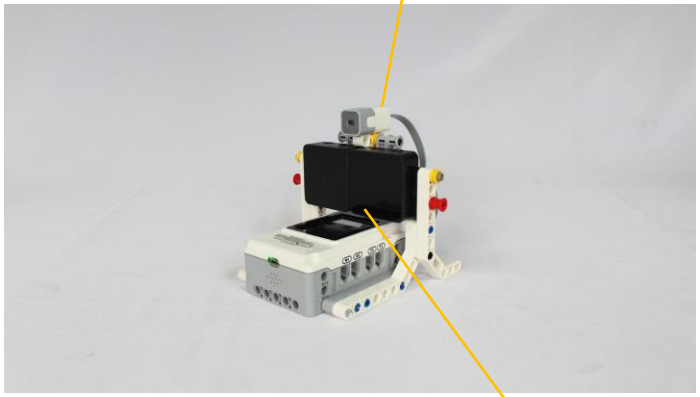
The easiest thing to do on most LED displays is to output text. The principle of LED output text is to output the font of the text (a series of binary numbers 0, 1) on the LED display screen, so as to control the on and off of each LED light, and then display English letters or Chinese characters.



Practice

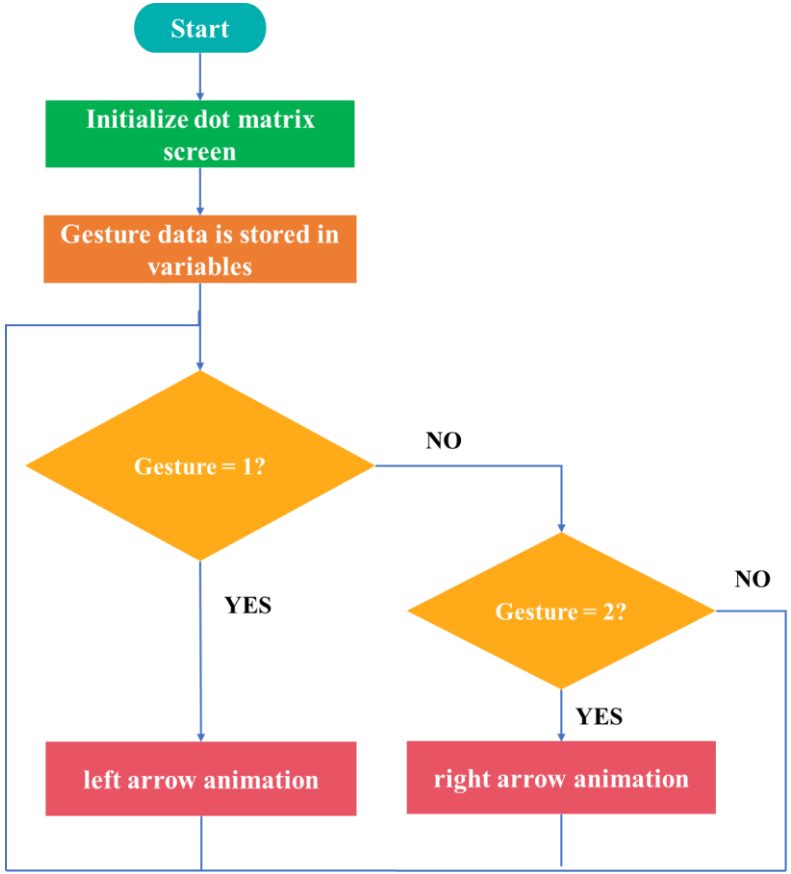


New Knowledge



According to the building manual, build a direction indicator light to realize the function of prompting lane change.

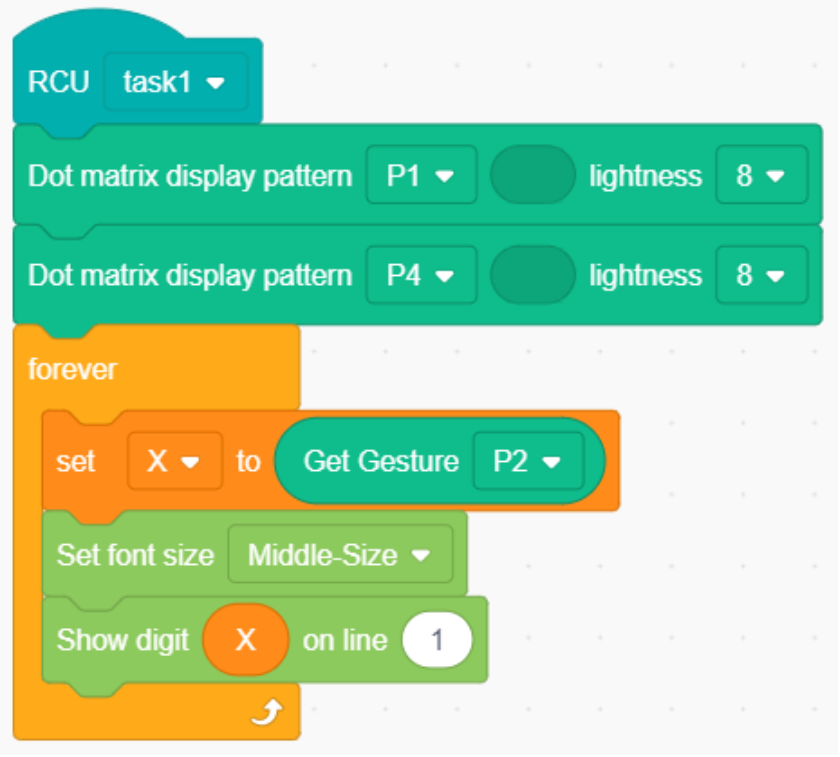
Practice | Flow Chart



When the left and right gestures are detected, the dot matrix screen will light up the animation in the corresponding direction.

When other gestures are detected, the dot matrix screen does not play animation and an initial screen is also required after the animation is played.

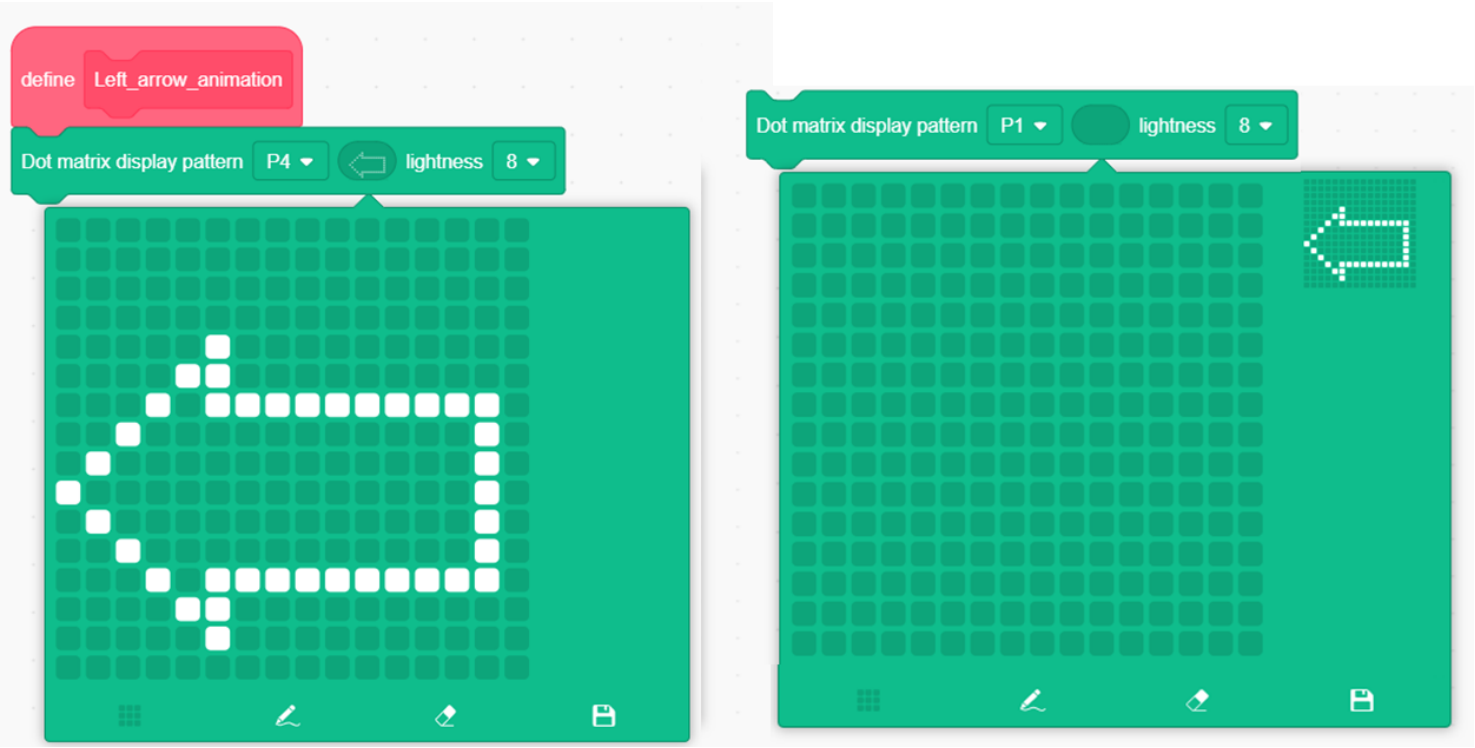
Practice | Programming



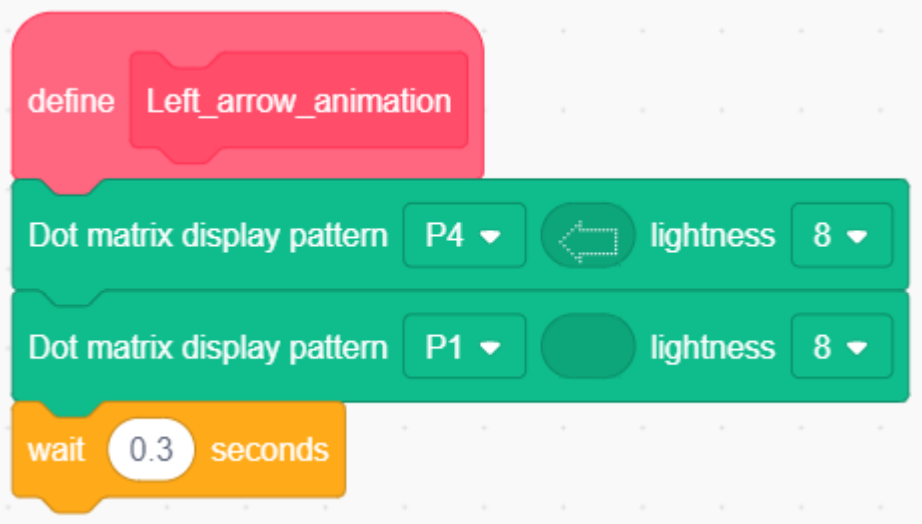
Initial settings

After initializing the dot matrix screen, read the gesture recognition sensor data and display the value.

Practice | Programming



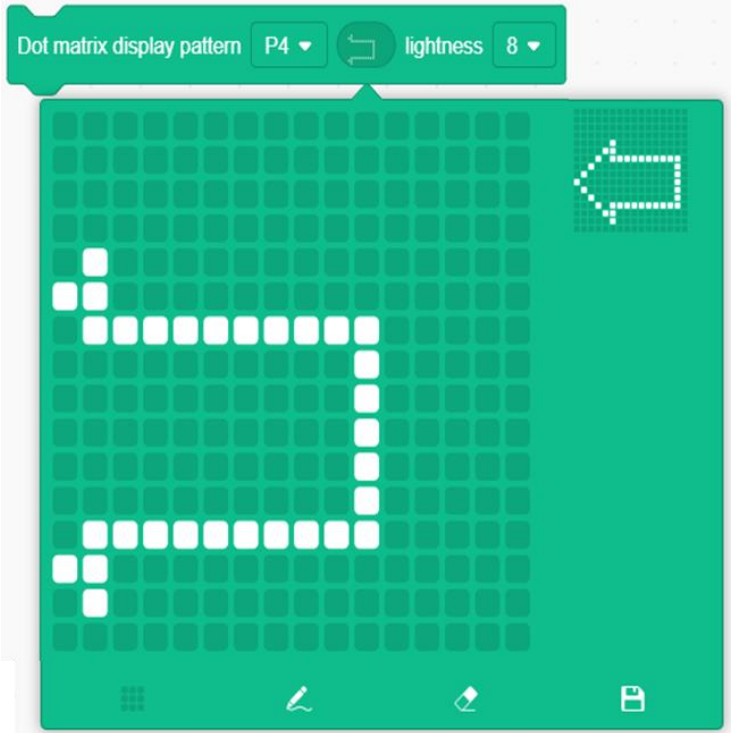
Practice | Programming

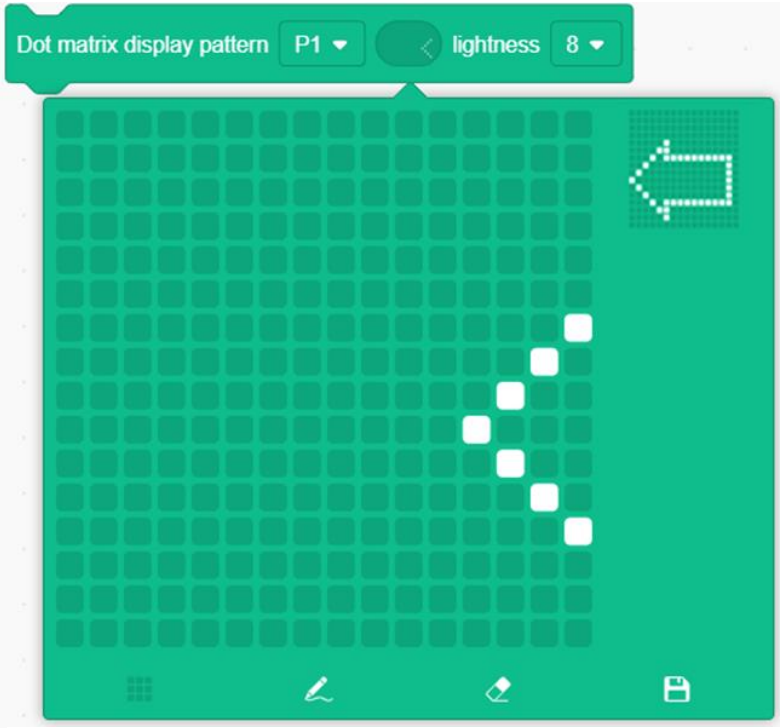


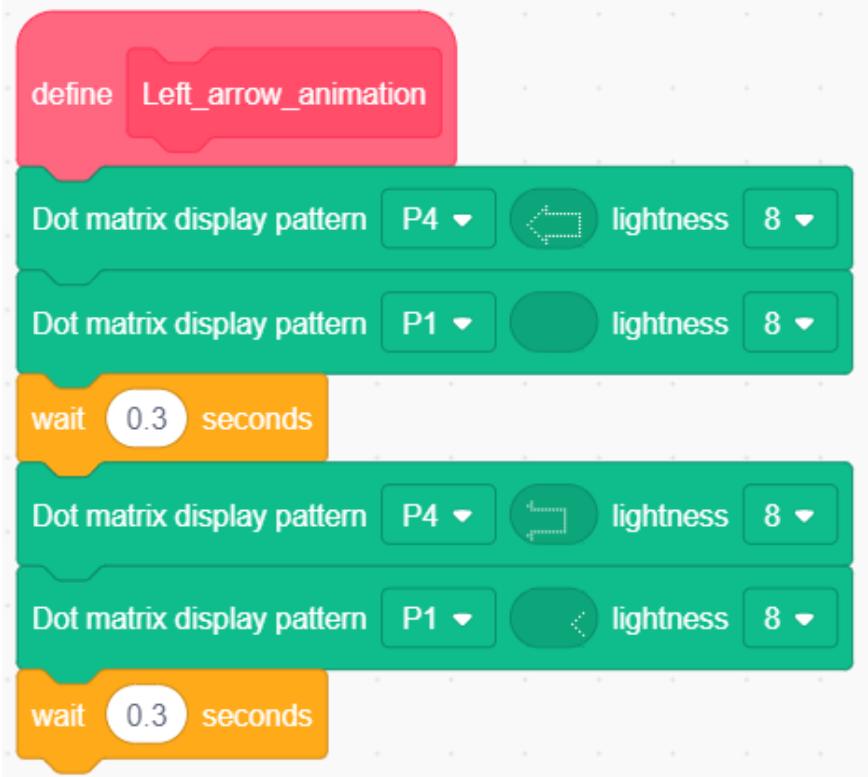
Function - left arrow animation

Define the first screen of the left arrow function, wait for 0.3 seconds, and then go to the next screen.

Practice | Programming

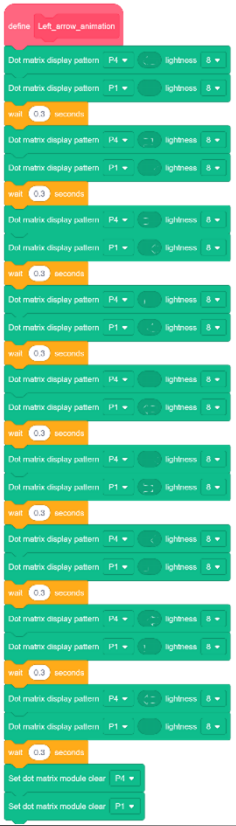






Function - left arrow animation

In the second screen defining the function of the left arrow, compared with the first screen, the arrow part (first 4 columns) of the P4 dot matrix screen is moved to the P1 dot matrix screen.



Function - left arrow animation

Define the function of the left arrow, which is the same as in the previous two steps. Each small step moves the 4-column pattern in the previous step from the P4 dot matrix screen to the P1 dot matrix screen until the arrow is completely moved to P1 and arranged in the reverse order, so that the full arrow returns to P4, and finally clears the screen.

Practice | Programming

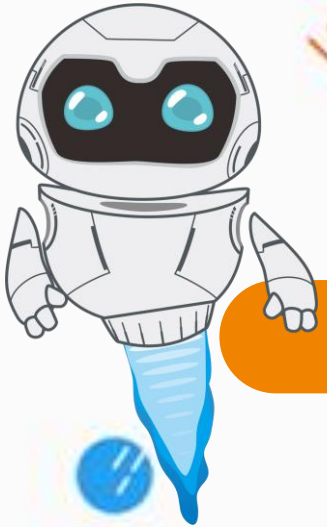


Integrate the program

Integrate the entire program according to the flowchart, and make the right arrow animation according to the previous method. The program of the right arrow animation can be realized by exchanging the display port after copying the program of the left arrow animation.

Practice | Programming





Results

Program Optimization

This lesson realizes the function of displaying LED animation in the corresponding direction by recognizing the gesture direction.

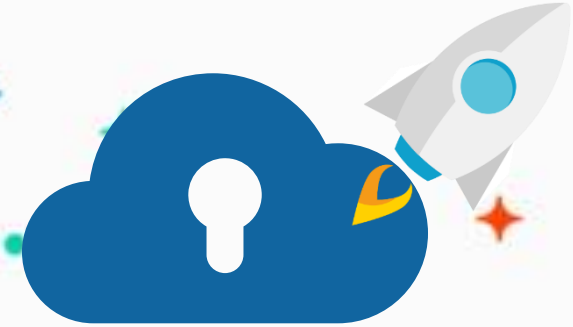
Next, modify the program to add up and down arrow animations.

Requirements: When waving up and waving down are recognized, play the corresponding animation.

Further Reading

Canton Tower's LED hanging net advertising screen measures 6783㎡, with a screen size of 133m x 51m for lighting display and commercial advertisement. It enhances the city's image, attracting tourists and driving urban development.





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Thanks!

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