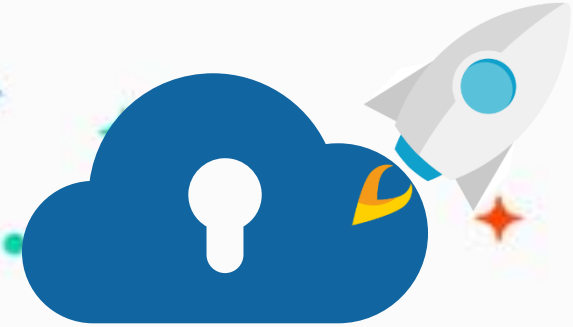

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Lesson 9. Intelligent Passing Light

LECTURER:

Lesson Objective

Learning Objectives

1. Learn about the common traffic system.
2. Learn about the method of judging the containment relationship in the list.

Possible Difficulties

1. It is forbidden to pass the QR code that has not been entered.
2. The inclusion relationship of the list.



Background Information



Background Information



Also known as scan to pay, a QR code payment is currently the most convenient mode of transportation. Passengers only need to simply show the code to pay the fare and take public transportation. Similarly, there is also a convenient payment method for driving on the highway, namely ETC.

Background Information



Electronic Toll Collection (ETC) is one of the service functions of the intelligent transportation system, which is especially suitable for use in highways or bridge-tunnel environments with heavy traffic. The expressway toll office has a channel for ETC tolls. As long as the car owner installs the induction card on the front windshield of the vehicle and pre-stores the fee, there is no need to pay the toll manually when passing the toll station, and there is no need to stop. The high-speed toll will be automatically deducted from the card, which can realize automatic toll collection.



Knowledge Introduction

Knowledge Introduction

In addition to ETC's inductive payment, the current more advanced technology is license plate payment, which only needs the site to recognize the car's license plate to make payment. However, this payment method has certain disadvantages, that is, the cost of the fake license plate car will be recorded on the account of the real car owner, so this technology has not been applied on the highway for the time being.

Knowledge Introduction



Although license plate payment has some defects, it still cannot change its convenience. In many fields such as parking, refueling, and car washing, payment by license plate is still the first choice in people's minds.

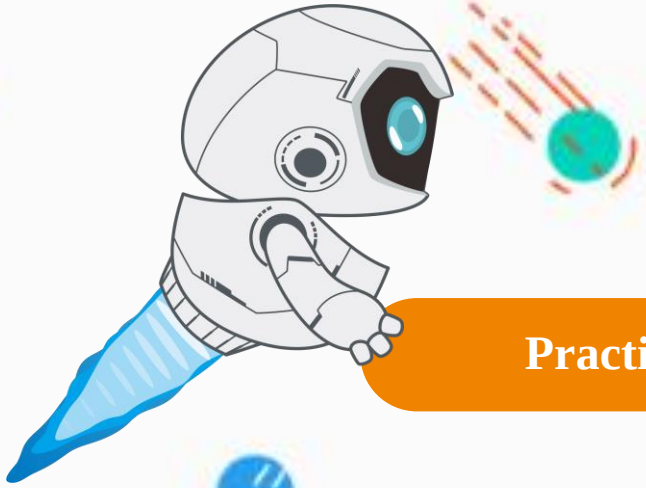
Unconscious Pay is an advanced form of license plate payment, which realizes convenient payment through the binding of the license plate number with the bank wallet. I believe that in the near future, we will have an easier, more convenient, and safer payment method.

Knowledge Introduction



ETC technology or payment by license plate has its advantages. With the advancement of technology, it may be possible to directly recognize the driver's face in the future to complete the payment.

Today, we will make a passing light, which will show that passing is allowed when the QR code that is allowed to pass is scanned, and it will be forbidden to pass if the unregistered QR code is scanned.



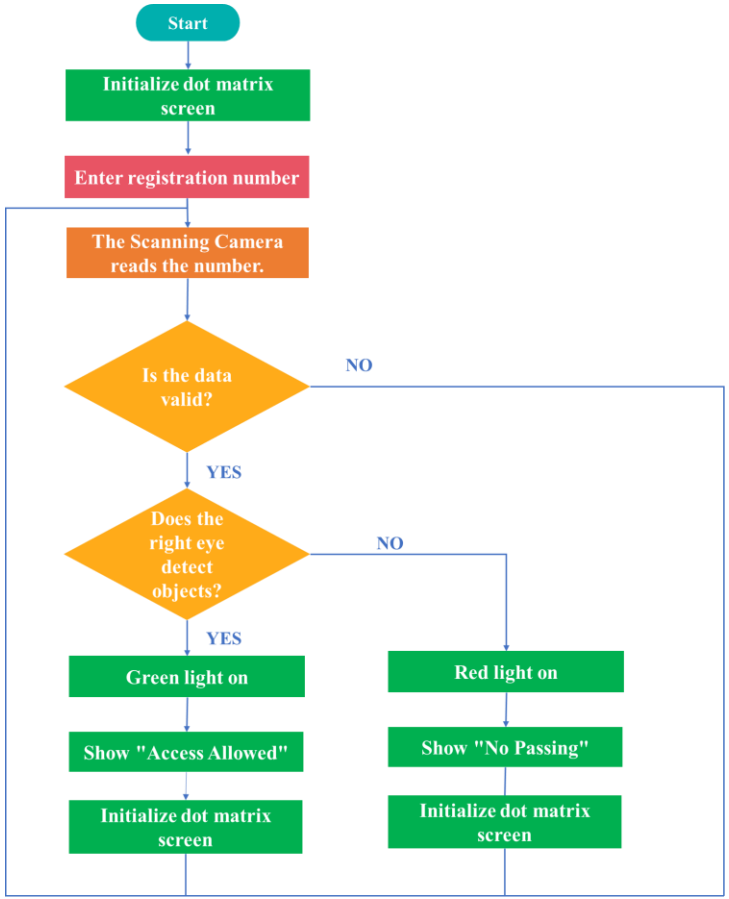
Practice

New Knowledge



Build a passing light according to the building manual. When different QR code traffic lights are scanned, the passing light will perform corresponding actions.

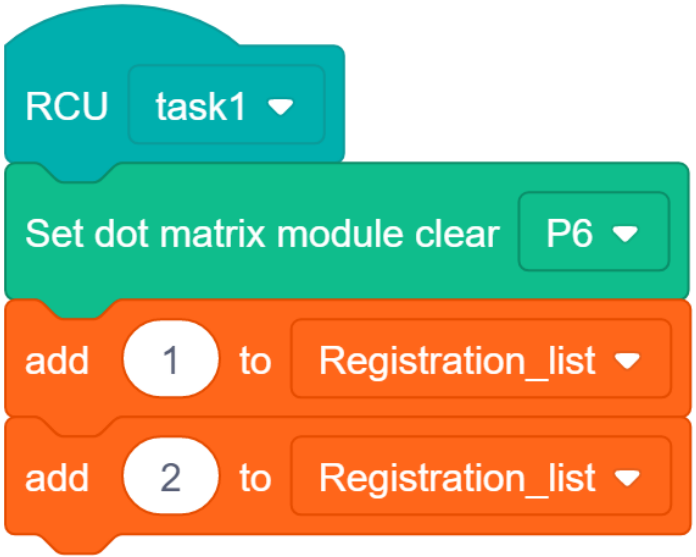
Practice | Flow Chart



After scanning the code, check whether the value has been registered in the list. If it is, the green light will be on to indicate “Access Allowed", otherwise the red light will be on to indicate “No Passing".

Judging whether the data has been registered is the key to the program. It can be understood that the registered number is allowed to pass, and the unregistered number is not allowed to pass.

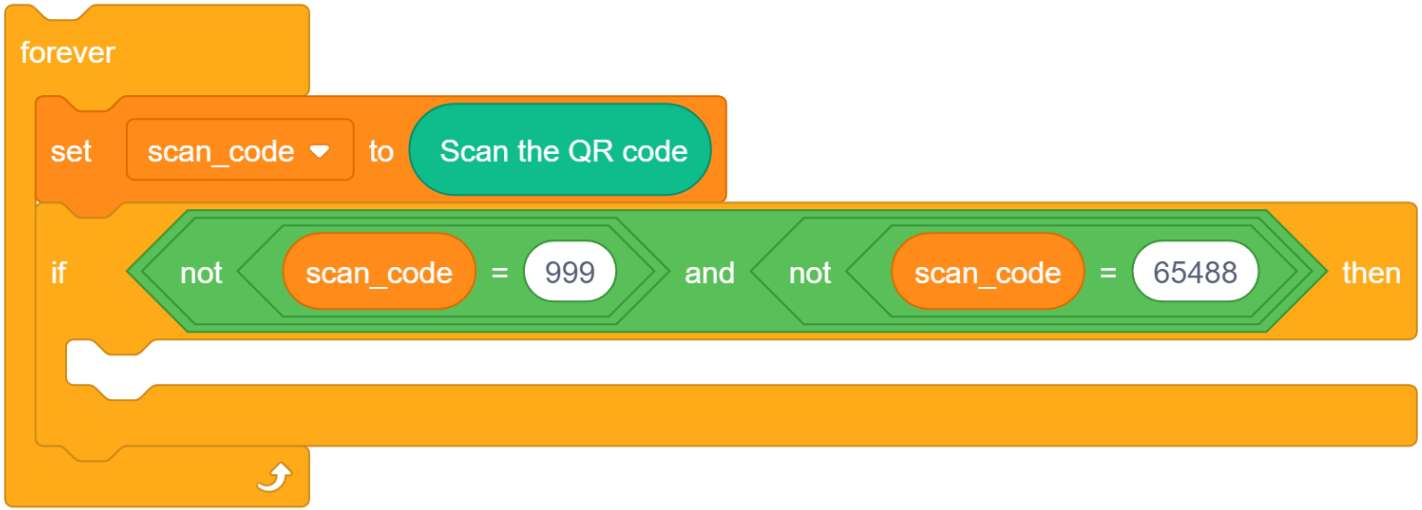
Practice | Programming



Initial settings

Initialize the dot matrix screen and add the numbers 1 and 2 to the list.

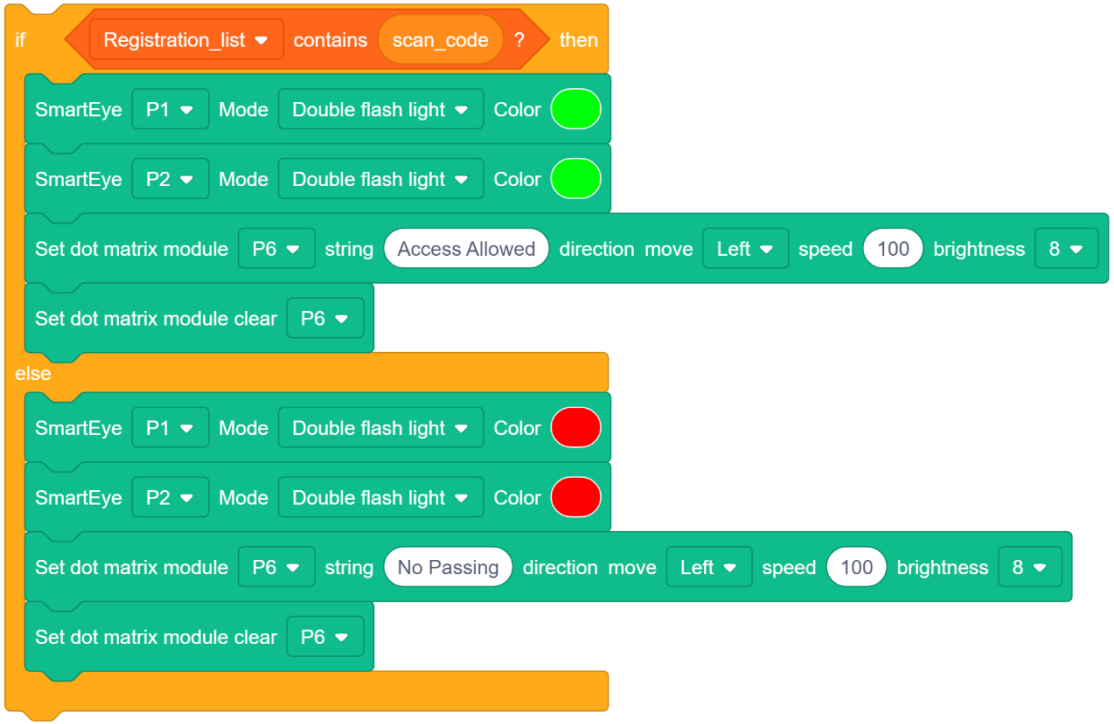
Practice | Programming



Judge value

Judging whether the scanned code value is valid, excluding two invalid data of 999 and 65488.

Practice | Programming



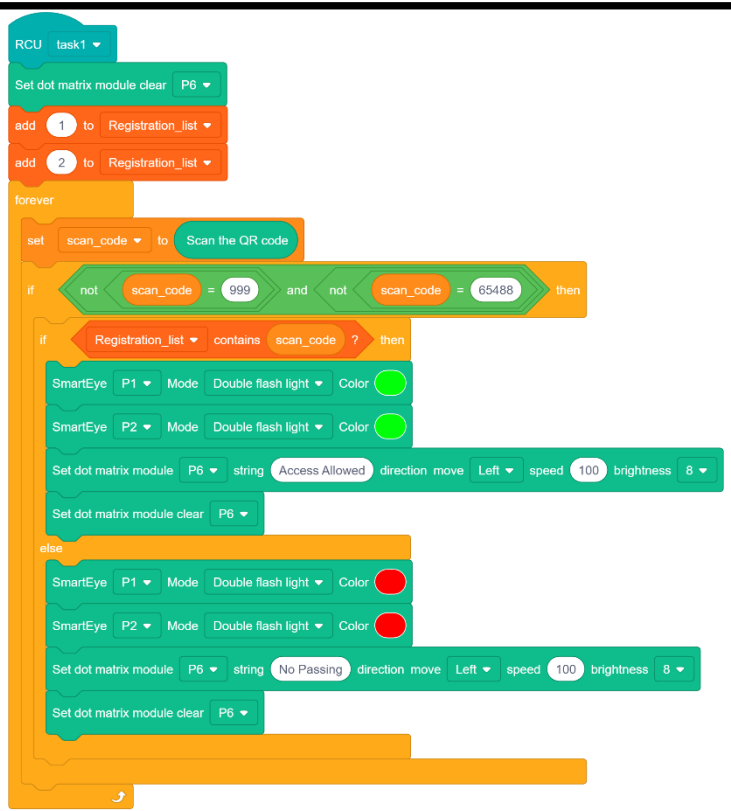
Judge whether to include

Judge whether the variable value is included in the list, if yes, allow access, if not, prohibit access.

Access Allowed: the green light is on and shows the text **“Access Allowed”.**

No Passing: red light and show the text **“No Passing”.**

Practice | Programming

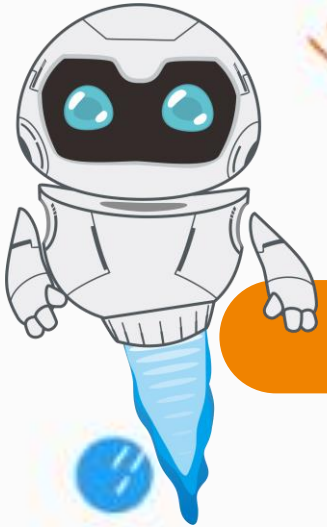


Integrate the program

Integrate the entire program according to the flowchart.

Practice | Programming





Results

Program Optimization

In this lesson, we learned how to realize the prompt function of passing and prohibiting passing. After scanning the QR code, only the registered QR code is allowed to pass.

Next, add a gate structure.

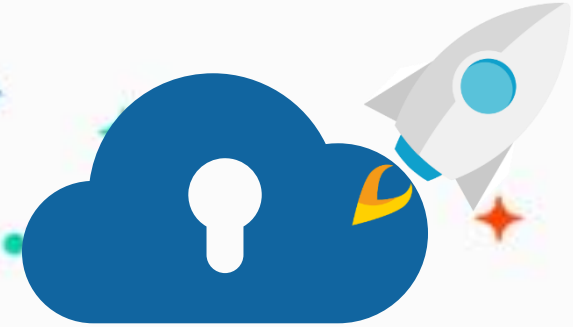
Requirements: Open the gate when passing is allowed, and close the gate when passing is not allowed.

Further Reading



Throughout the ages, people have to pay tolls if they want to get to another city on a road repaired by the three types of public, commercial, and private transportation systems. At that time, the transportation methods available were land transportation and water transportation.

Take the Kaiyuan period of the Tang Dynasty as an example. At that time, the ninth-rank officials, who were equivalent to the current grassroots cadres, had a monthly salary of 3,817 renminbi and a daily income of about 127 renminbi. Two people carry 100 catties of things and walk 100 miles, and each person can get 50 Wen. Taking 50 miles a day, the daily income is 25 Wen, which can buy 2 buckets of rice (about 25 catties). not tall. It is cheaper if you go by water.



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Thanks!

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