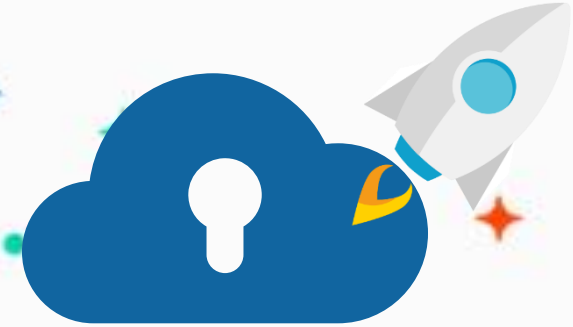


edu.zmrobo.com

Lesson 2. Smart Cash Register

LECTURER:

Lesson Objective

Learning Objectives

1. Learn the knowledge of smart cashier.
2. In-depth understanding of QR codes.

Possible Difficulties

1. The telescopic power of the drawer.
2. Procedures for amount accumulation.



Background Information



Background Information



In 1948, graduate students Bernard Silver and Joseph Woodland overheard the president of a local supermarket chain imploring the dean to invent a way to automatically record sales at the checkout. The dean thinks this is whimsical and difficult to achieve. But they are determined to give it a try and believe it will lead them to a bright future.

Background Information

Character	Code Symbol	Character	Code Symbol	Character	Code Symbol	Character	Code Symbol
A	. —	B	— . . .	C	— . — .	D	— . .
E	.	F	. . — .	G	— — .	H	. . . .
I	. .	J	. — — —	K	— . —	L	. — . .
M	— —	N	— .	O	— — —	P	. — — .
Q	— — . —	R	. — .	S	. . .	T	—
U	. . —	V	. . . —	W	. — —	X	— . . —
Y	— . — —	Z	— — . .				

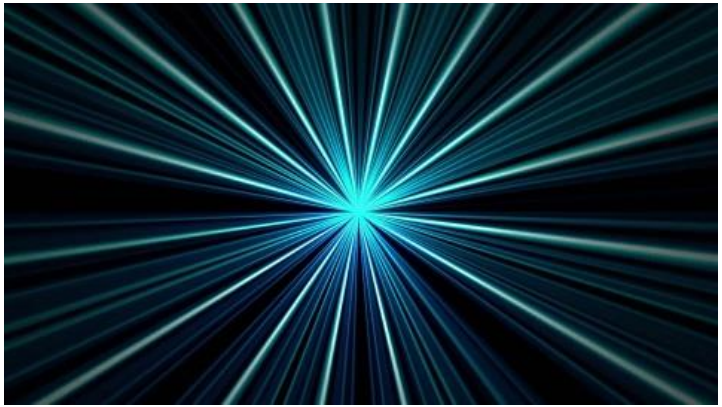
After experimenting with UV-lit ink-drawn graphics and a blind-spot system, Bernard Silver decided to use the Morse code symbology, in which the dotted lines in Morse code were arranged into stripes of varying thickness. It was this idea that later became the most basic idea of various bar codes.

Background Information



In 1951, the two decided to conduct an experiment in the operation of a barcode reader. They designed a table-sized machine, wrapped it in black cloth to block the light from outside, and installed a large 500-watt light bulb inside. Because only the light is strong enough, the light emitted from the barcode can be perceived by the receiver. Unfortunately, the heat generated by the 500-watt light bulb was too hot after being concentrated, and the paper used to read the barcode was burned. After some improvements, the prototype of the barcode system finally came out.

Background Information



In the 1960s, the advent of lasers and the computing level of computers were finally able to meet the requirements of barcode systems for reading, accessing and processing barcode information. A laser beam of a thousandth of a watt can easily produce the same amount of concentrated light as a giant 500-watt light bulb.

Background Information



On June 26, 1974, the first bar code scanner was installed in the Marsh Supermarket in Troy, Ohio. The entire scanning system consisted of four scanners, one at each of the four checkout counters, which were then connected to a simple counting computer in the store office. The first item to be scanned was a 10-pack of Wrigley's gum. The pack of gum is still on display today in the Smithsonian Institution's Museum of American History.



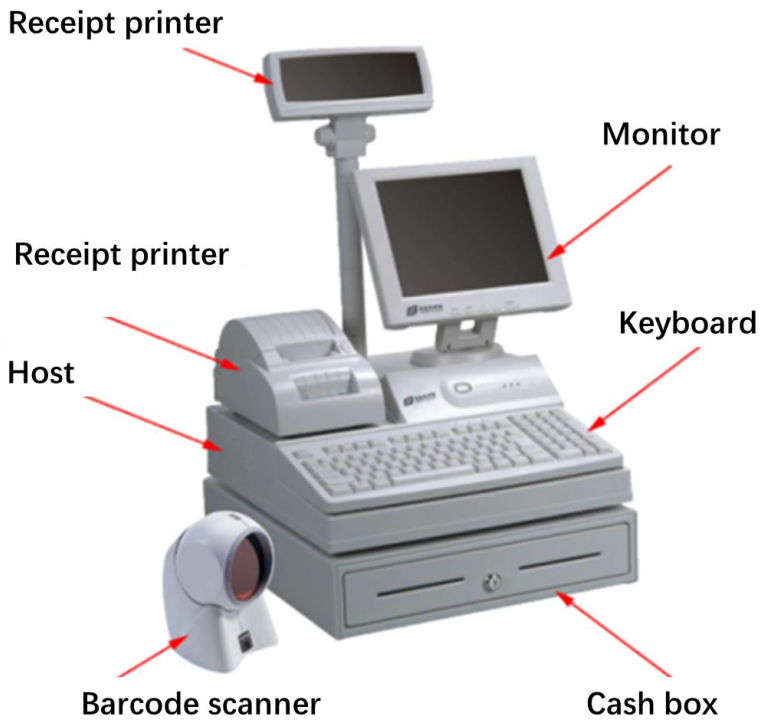
Knowledge Introduction

Knowledge Introduction

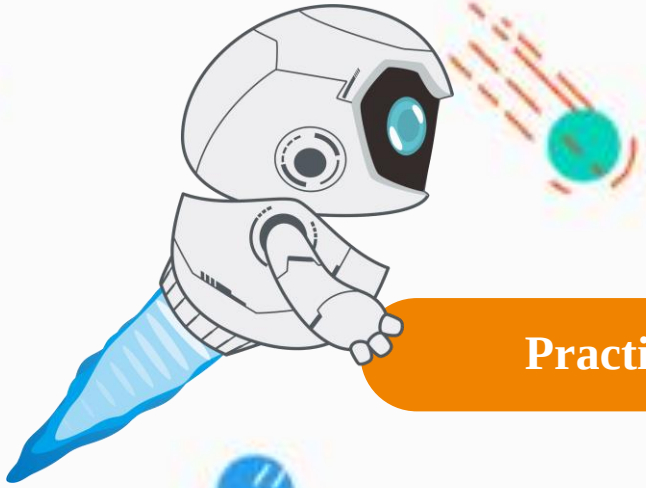


Everyone has the experience of shopping in a store. After the cash register scans the QR code of the product with a QR code scanner, the cash register can calculate the total price by itself. During the settlement, the cash register drawer will pop up to facilitate the store staff to store banknotes.

Knowledge Introduction

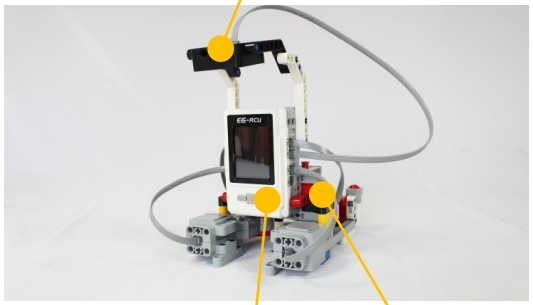


Today, we will use the QR code scanning camera to make a cash register. This cash register has the function of displaying unit price and total price, and can also pop out and retract the drawer when cashing.



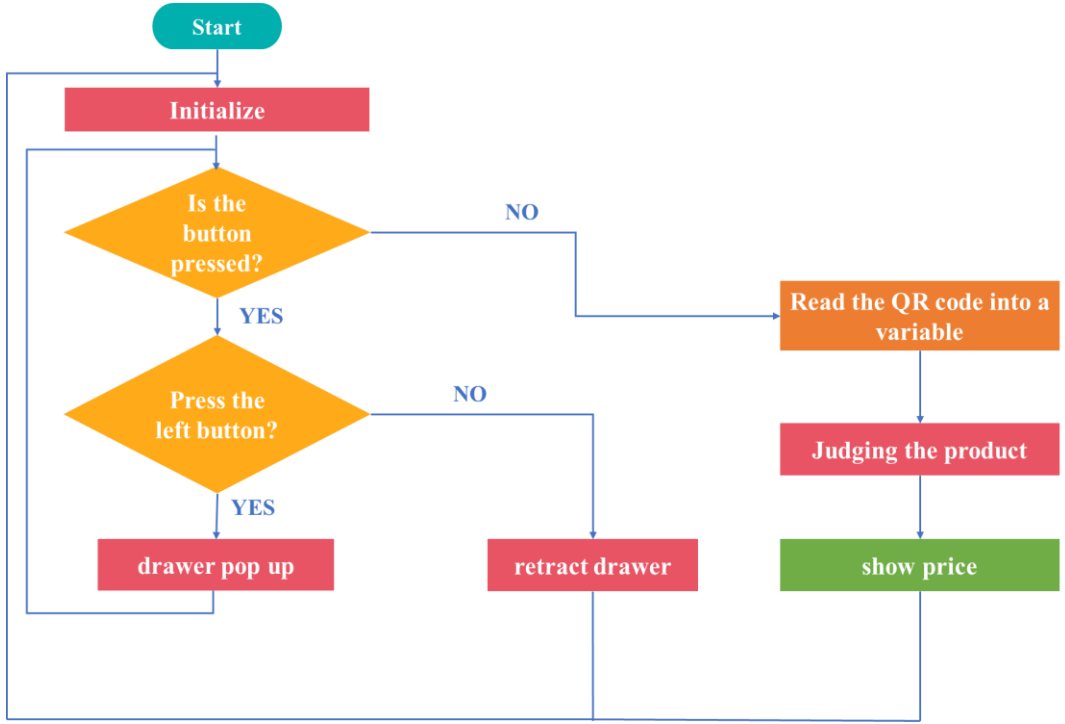
Practice

New Knowledge



Build a cash register according to the construction manual to realize the function of cash collection after scanning the QR code.

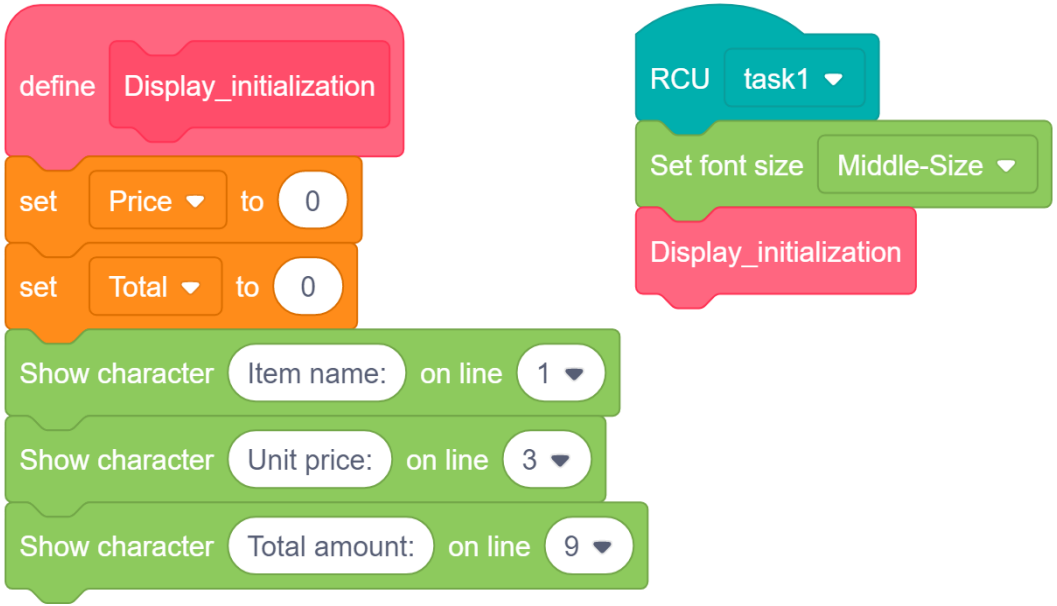
Practice | Flow Chart



After scanning the QR code, the corresponding product and price are displayed, and the total price is automatically calculated. Press the button to pop up the drawer, press another button to retract the drawer and clear the last product record.

Commodity judgment should be judged according to the value of the variable, what kind of commodity is scanned. This requires us to write the product information into the program in advance.

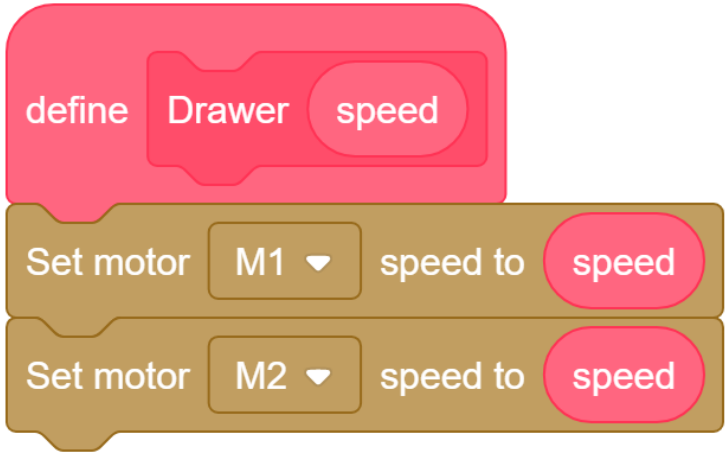
Practice | Programming



Initial program

Display the desired text and set the variable to 0.

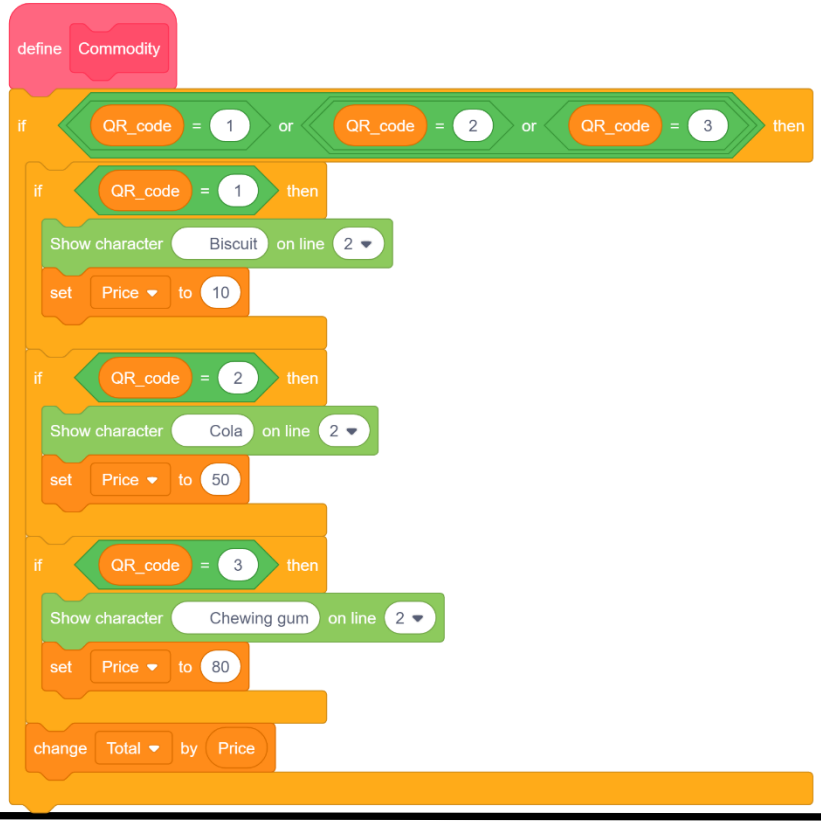
Practice | Programming



The function of the drawer

Use self-made building blocks to make a drawer function, and control the speed of the motor with the speed parameter.

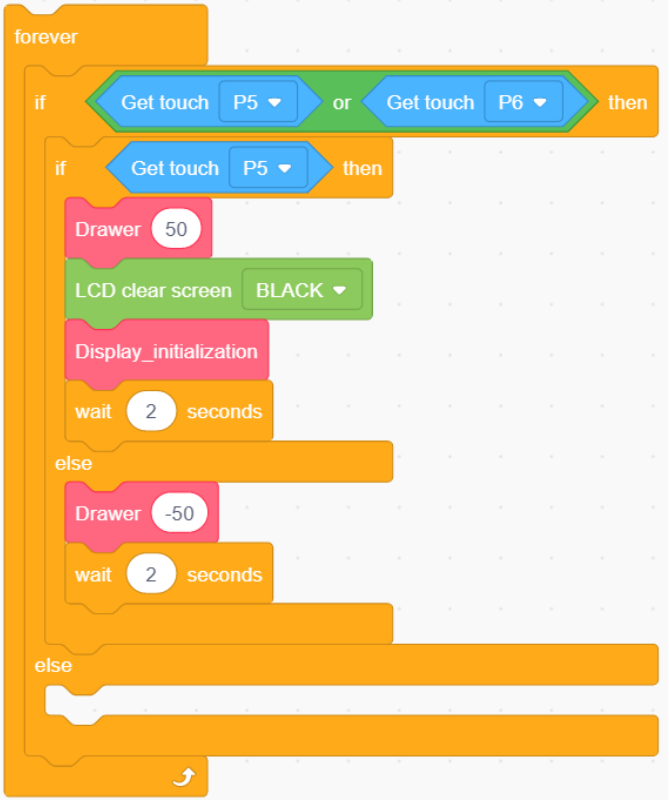
Practice | Programming



The function of the commodity

Use a self-made block module to make commodity functions. Different QR code values correspond to different commodities and prices, and the prices are accumulated after identification.

Practice | Programming

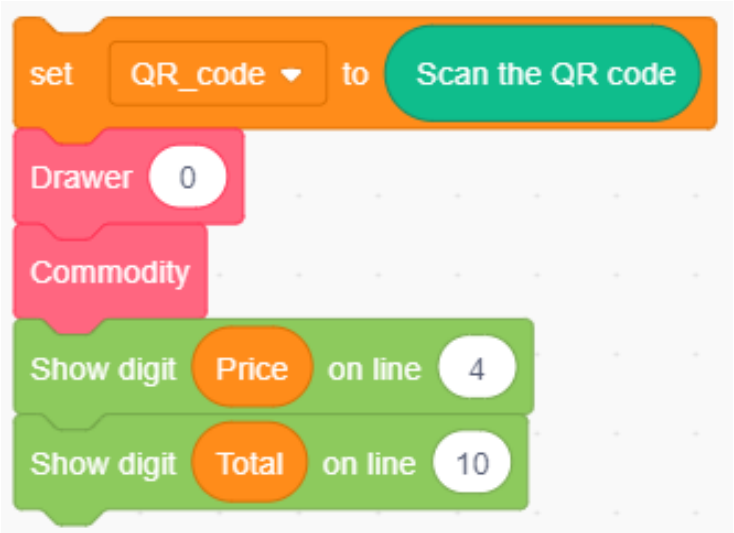


Judgment of pressing the button

Any button is pressed for the cash register state, and the two buttons are responsible for popping up the drawer and retracting the drawer respectively.

When the button is not pressed, it is in the state of scanning the code, responsible for scanning the code and calculating the price.

Practice | Programming

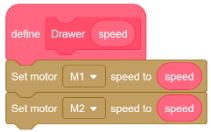


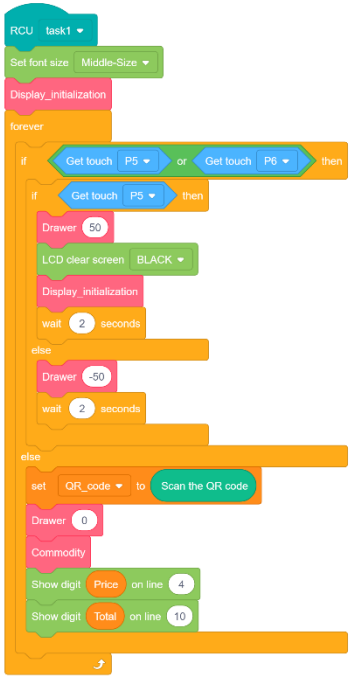
Scanning status

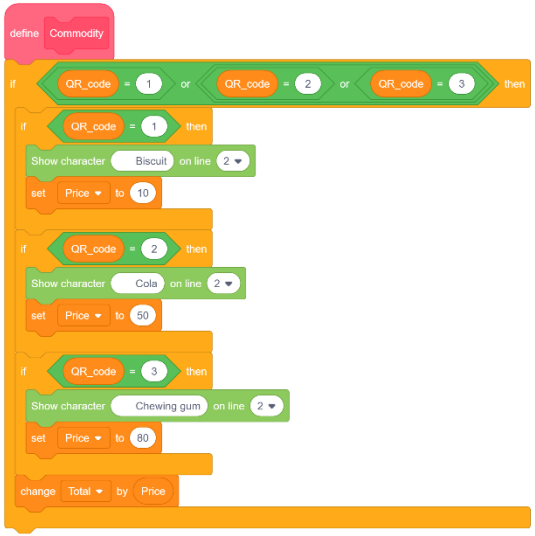
Assign the value of the camera to the variable, stop the rotation of the drawer at the same time, and display the corresponding price and total after product judgment.

Practice | Programming





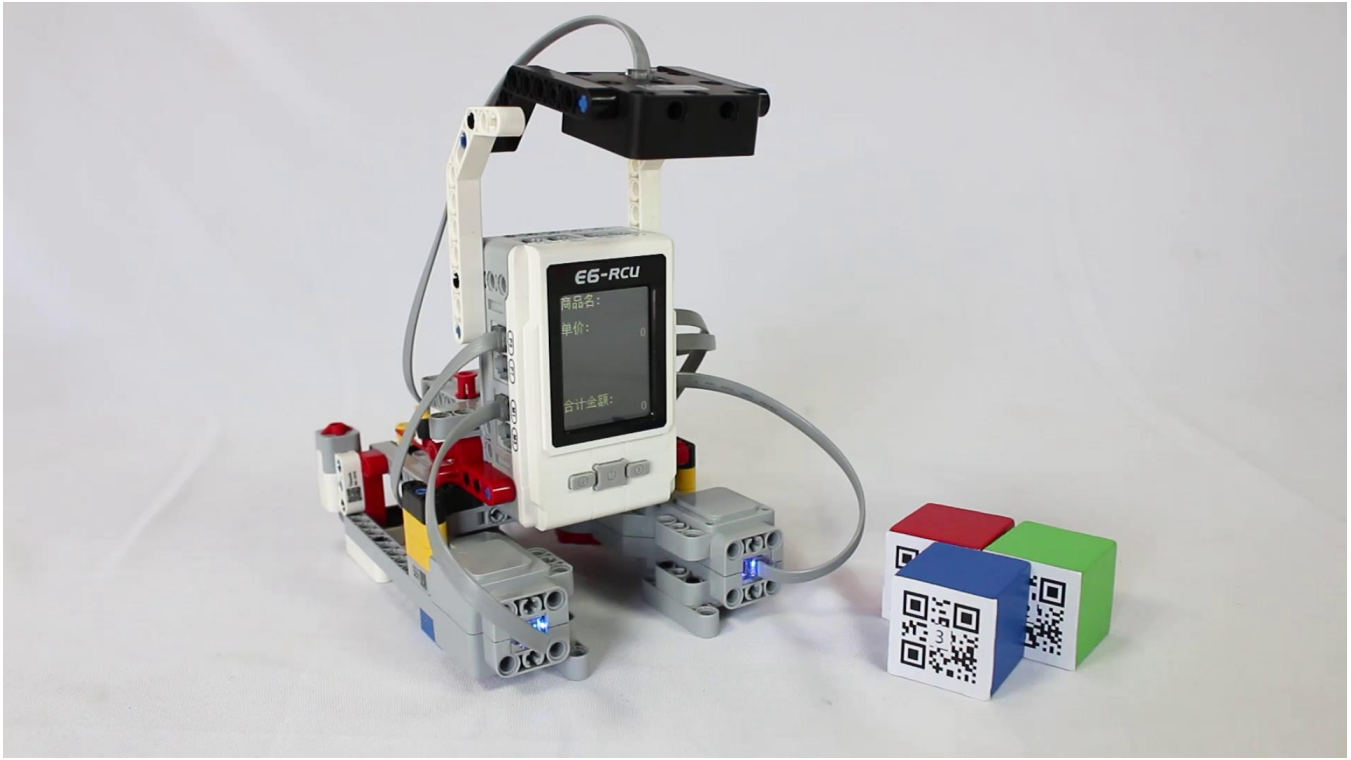


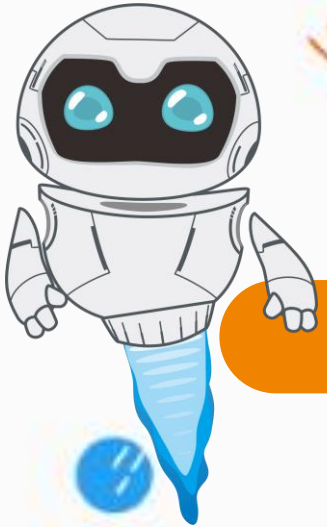


Integrate the program

According to the flowchart, integrate each segment of the program.

Practice | Programming





Results

Program Optimization

This class realizes the function of simulating the cash register, and completes the function of scanning the code to read the name and price of the goods and the pop-up drawer of the cash register.

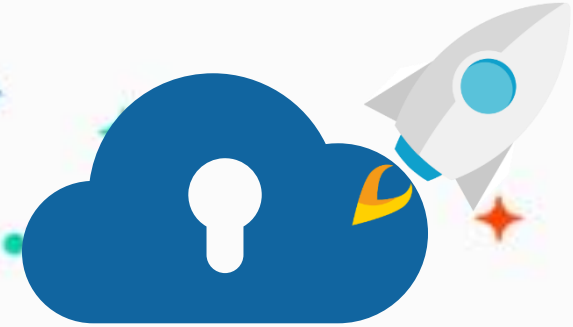
Next, modify the program to add more products to enrich your cash register.

Requirements: Make the code-scanning cash register able to scan barcodes such as 4, 5, and 6 and display the corresponding products.

Further Reading



"Cashless payment" refers to payment options other than cash payment. As mobile payment becomes more and more popular, people carry less cash in their daily life. You only need to show the QR code with the bank or other institutions with payment qualifications to conduct transactions.



edu.zmrobo.com

Thanks!

LECTURER: