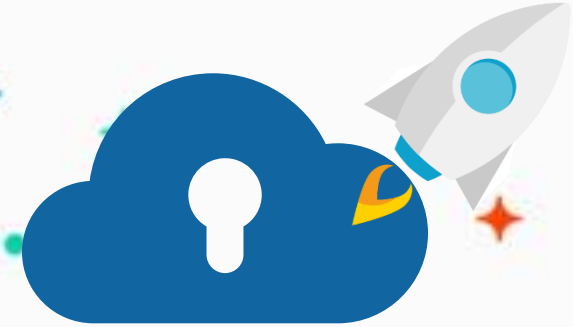

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Lesson 27. Smart Flashlight

LECTURER:

Lesson Objective

Learning Objectives

1. In-depth understanding of the Intelligent Eye sensor.
2. Control the lighting effect of the Intelligent Eye through variables.

Possible Difficulties

1. Set the variable addition and subtraction.
2. Different types of lighting effects.

Background Information





Context Import



The development of mobile lighting tools can be traced back to the early stage of the development of human society - primitive society. Since humans learned to drill wood to make fire, mobile lighting has experienced the development process from fire, oil, candles to flashlights. Mobile lighting tools have experienced countless changes, from torches, oil lamps, candles, kerosene lamps to incandescent bulb flashlights, xenon bulb flashlights, and to a wide range of LED flashlights.

Context Import



Oil lamps were the easiest lighting tools to use at that time. At this stage, in addition to using oil lamps, human beings also tried their best to find other lighting tools.

Around the 3rd century BC, someone made candles out of beeswax. In the 18th century, candles made of paraffin wax appeared, and mass production began with machines.

Context Import



The British invented the gas lamp more than a hundred years ago, which made the human lighting method take a big step forward. Movable lighting tools such as torches, candles, oil lamps, and gas lamps are not separated from the fire, and are all illuminated by the light emitted by the burning of substances. At the end of the 19th century, Edison invented the electric light, which has rewritten the history of human lighting since then, and mankind has entered the era of electric lighting.



Knowledge Introduction

New Knowledge

Modern civilization should indeed thank the American inventor Thomas Edison for making the first white lamp with commercial value and bringing light to mankind.

Likewise, Conrad Hubert deserves the same respect for inventing the flashlight more than a hundred years ago so that we can shine wherever we are.

New Knowledge

When Hubert came home from get off work, a friend proudly showed him a glittery planter. It turned out that he installed a battery and a small light bulb in the flowerpot. As soon as the switch is turned on, the bulb illuminates the flowers and looks dazzling. Hubert was fascinated, and the incident was a revelation to him. He sometimes walks in the dark at night, and it is very inconvenient for him to step up and down. Not long ago, he had to carry a heavy oil lamp to the dark basement to find things. He thought, wouldn't it be practical and convenient if he could use an electric light to illuminate his body? So, Hubert put the battery and light bulb in a tube, and the result was the first mobile flashlight.

New Knowledge

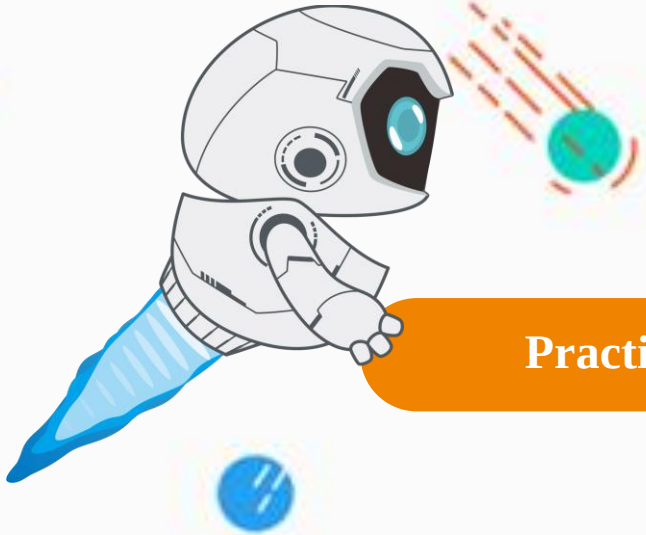


The flashlight is a hand-held electronic lighting tool. A typical flashlight has a battery-operated bulb and focusing reflector, and has a handle-style housing for hand-held use. Although a fairly simple design, it was not invented until the late 19th century because it had to combine the invention of the battery with the light bulb.

New Knowledge

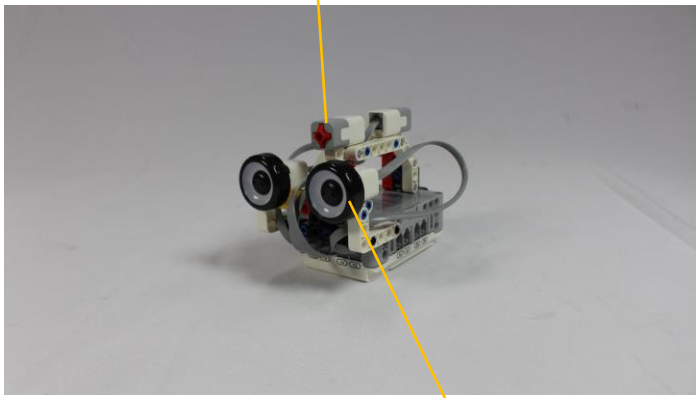


Today, flashlights have many functions besides simple lighting. Some can adjust the brightness of the light, some can flash reminders, and some can change color or adjust the lighting area. But even if the flashlight has so many functions, it may not meet your requirements, so today we use the Intelligent Eye to make a multi-functional flashlight.



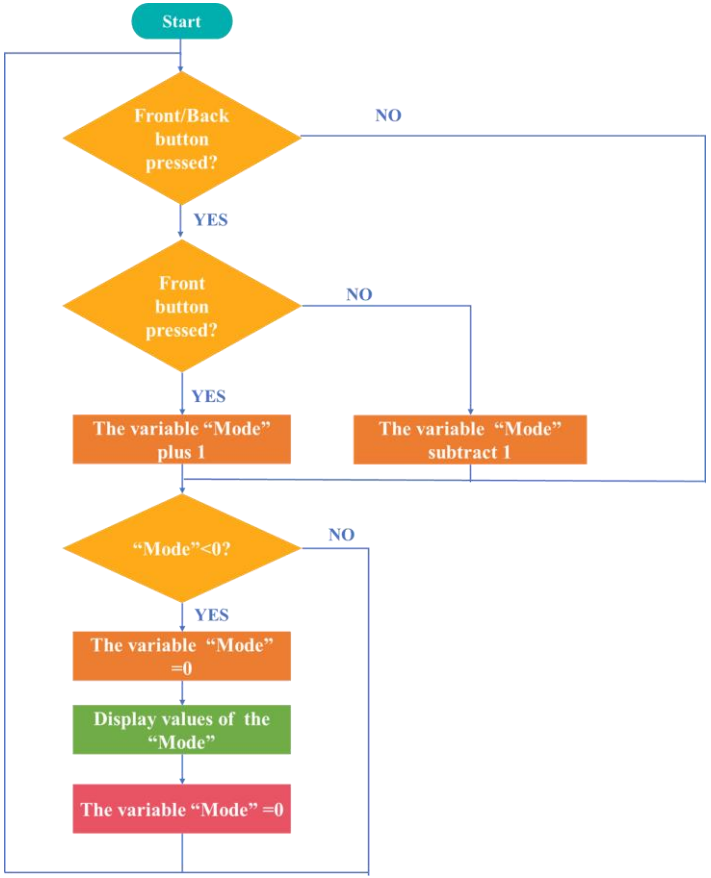
Practice

New Knowledge



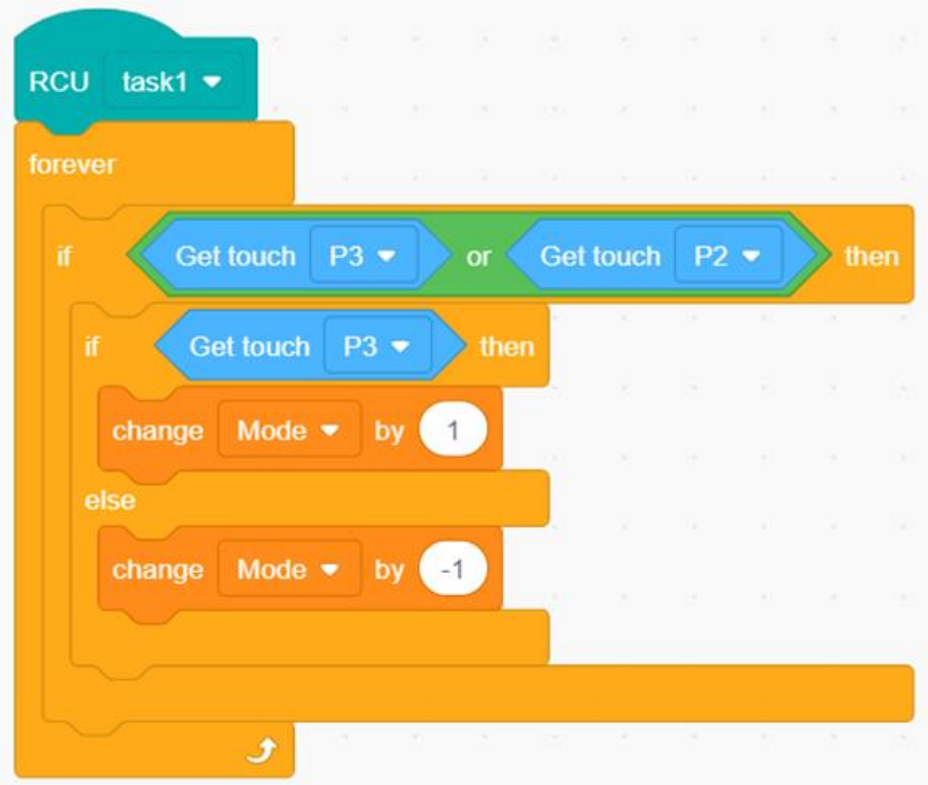
Assemble a smart flashlight according to the building manual to realize the effect of switching the light of the flashlight by pressing the button.

Practice | Programming



Switch the lighting effect of the smart lamp through two touch sensors, and there are different lights corresponding to different modes.

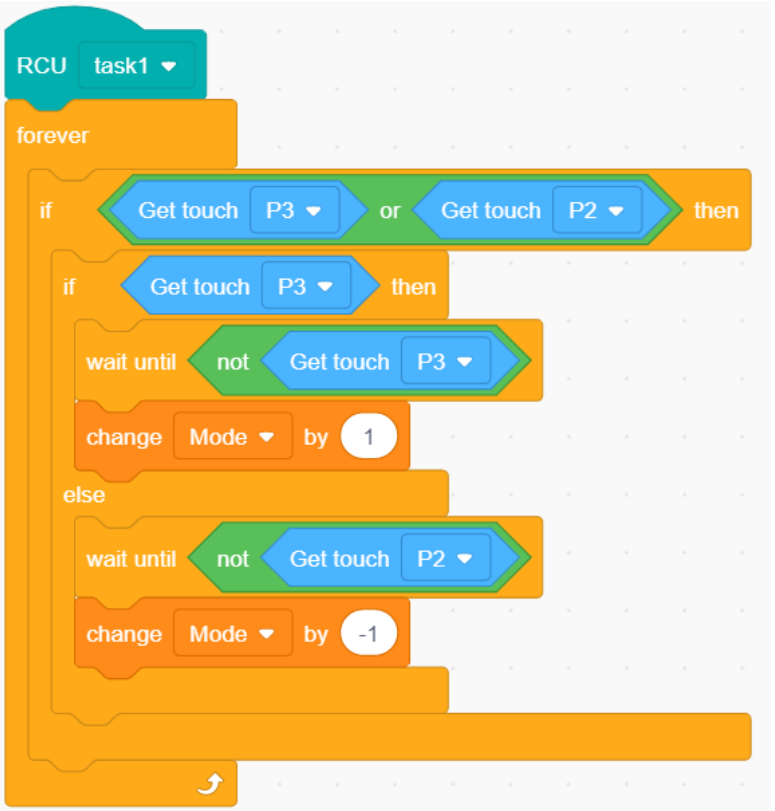
Press the button to increase/decrease the variable, which will cause the variable value to be very uncontrollable, and the judgment of releasing the button must be added.



Judgement of pressing buttons

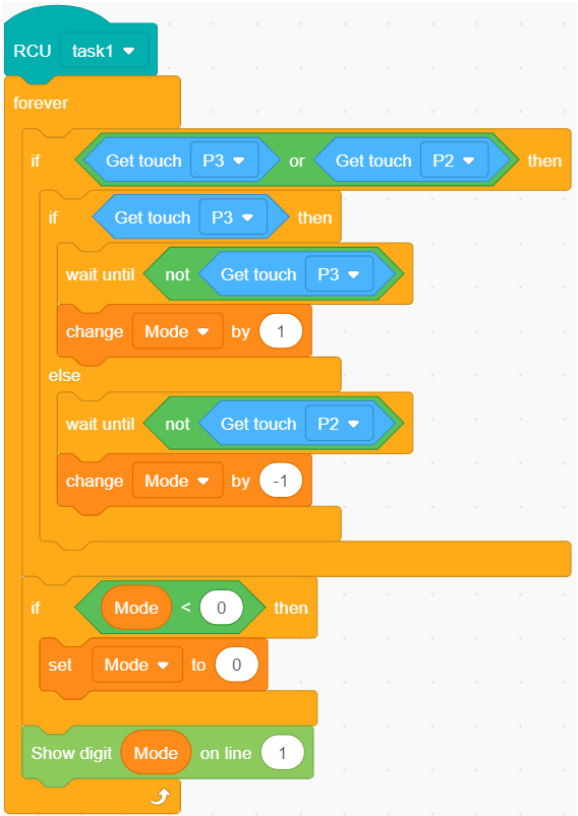
When the forward touch sensor is pressed, the variable is incremented by 1, and when the backward touch sensor is pressed, the variable is decremented by 1.

Practice | Programming



Judgement of pressing buttons

Add the statement of waiting for the release of the touch sensor.



Limit variables and display

Limit the variable to a minimum value of 0 and display the value of the variable.

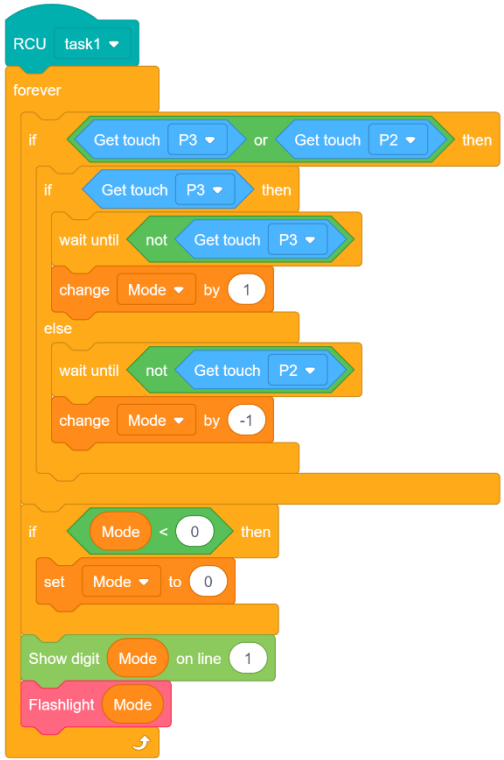
Practice | Programming

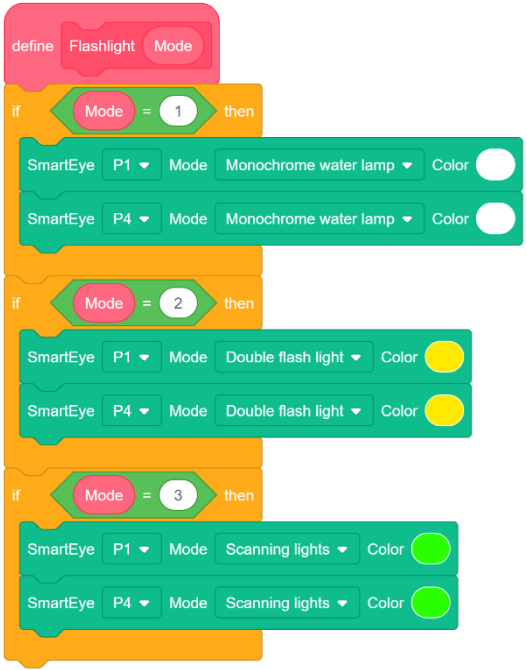


The function of the flashlight

Different models light up different patterns of lights.

Practice | Programming

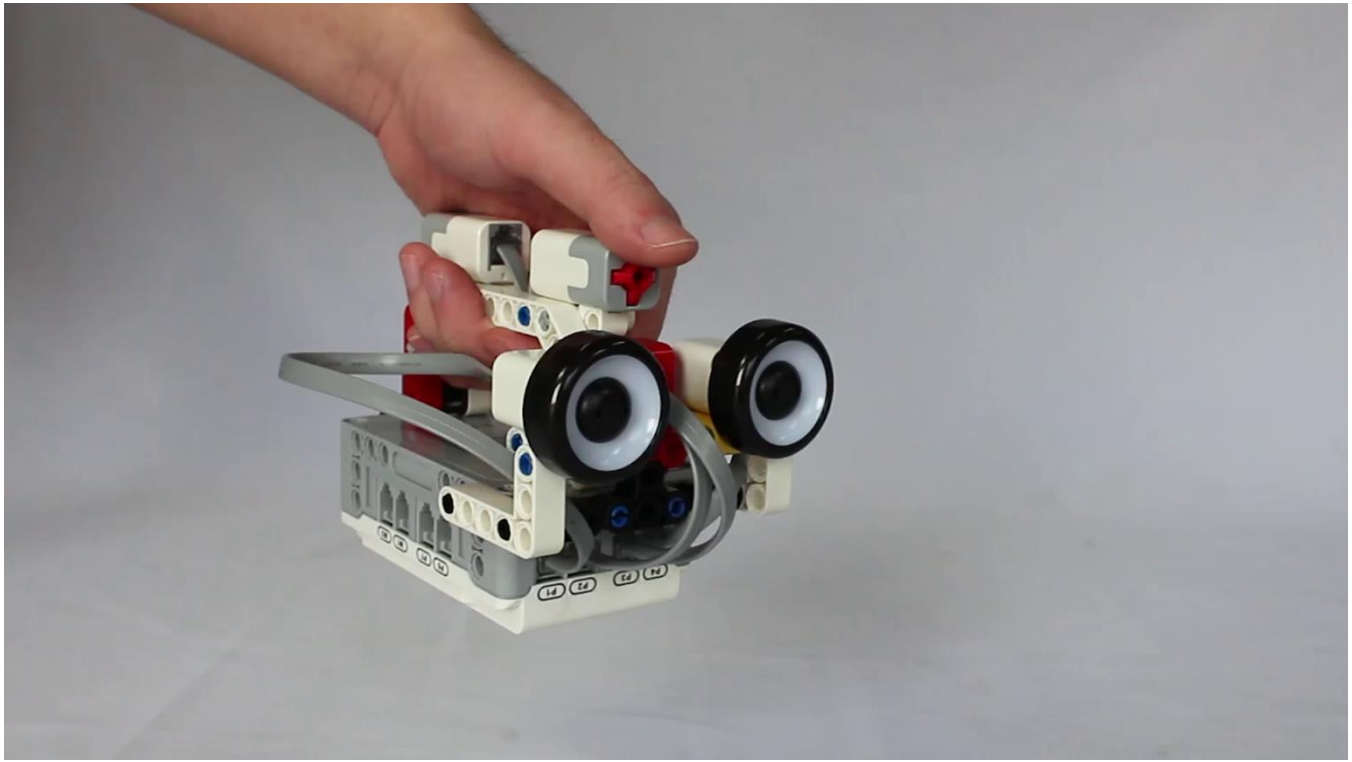


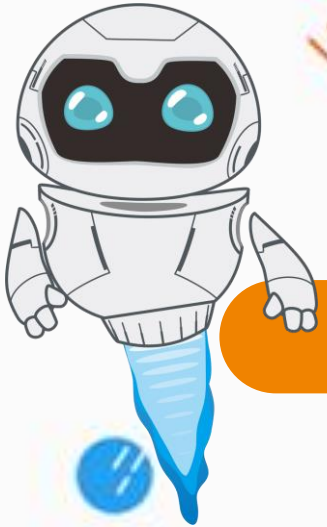


Integrate programs

Integrate the program according to the program flowchart.

Practice | Programming





Results



Program Optimization

This lesson realizes the function of switching the light mode of the flashlight by pressing the button. Under different variable values, there are corresponding light modes.

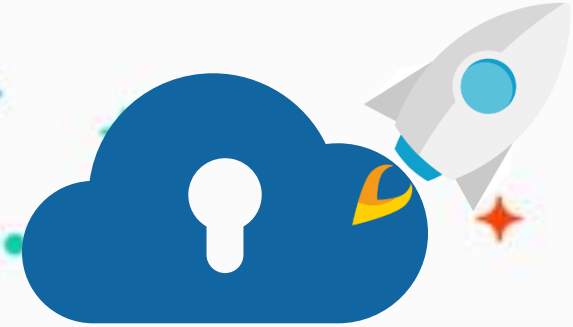
Next, modify the program to limit the value of the variable to not exceed the type of pattern.

Requirement: The maximum value of the variable value is the same as the number of patterns you set.

Further Reading



At present, our common new flashlight is the fourth generation flashlight, which has a built-in open programmable intelligent control chip, and can customize the lighting mode through special software. Combining traditional flashlight dimming technology with IT technology, built-in open programmable intelligent control chip, users can customize personalized lighting modes through special software.



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Thanks!

LECTURER: