Learning Series

SpongeBob



This is a building-block programming robotics kit. The kit

is equipped with various sensors such as sound sensitivity, color, touch, photoelectric, lantern, ultrasonic, camera and a wealth of building blocks. Students can use their imagination to build a variety of building block robots, and use graphical programming software to program the robot and experience the joy of hands-on creation.

Learning Target

01

Knowledge goal

Get to know the hardware and software.

02

Ability goal

Understand the concept of the program, the simple operation of hardware and software.

03

Emotional attitudes and values

Familiar with the basic operation of hardware and software, cultivate standardized practice.

Learning Target

01

Learning focus

Master the basic operations of RCU.

02

Learning difficulties

Understand the concept of programming and perform software operations.

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Course Introduction



Course Introduction



There is also a need for brain-like devices to allow robots to think and other devices to assist the robot in completing tasks.

Good classmates, we have already learned a lot of structural knowledge in the first two stages. From this stage, we have entered a new stage of learning. So what constitutes a robot, what do we need in addition to the building block material? Is it only the building block material that our robot can move and obey our orders?

Course Introduction



SpongeBob

Meet SpongeBob

The robot in this lesson is called SpongeBob SquarePants, and its shape is very similar to the cartoon image of SpongeBob SquarePants.In addition, the "master" as its most important part is also the focus of our lesson.

Let's learn together.

Teaching New Knowledge

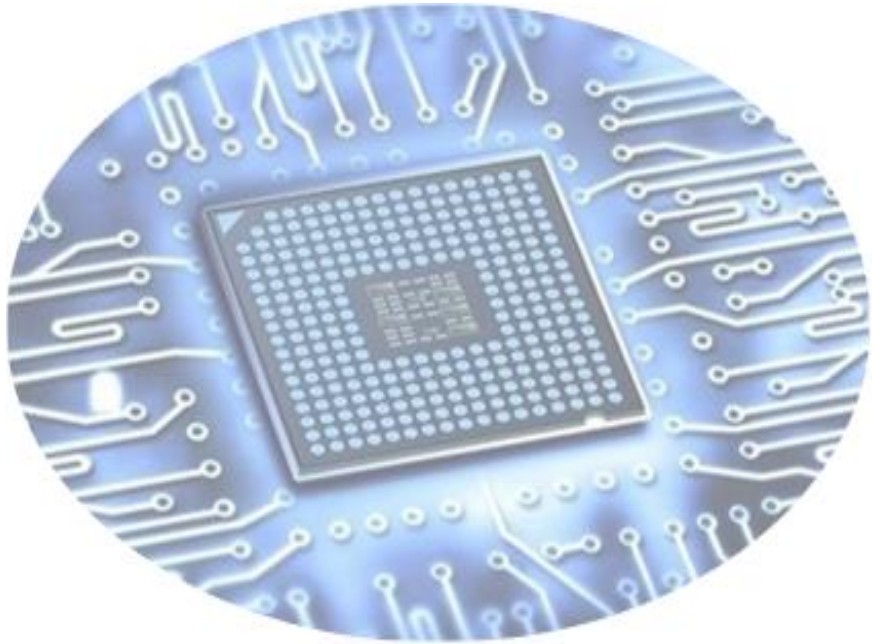


Teaching New Knowledge

Hardware: (English name Hardware) refers to the general name of various physical devices composed of electronic, mechanical and optoelectronic components in the robot system. These physical devices form an organic whole to provide a material basis for the operation of the robot software according to the requirements of the system structure.

In short, the function of the hardware is to input and store programs and data, and to execute programs to process the data into a usable form.

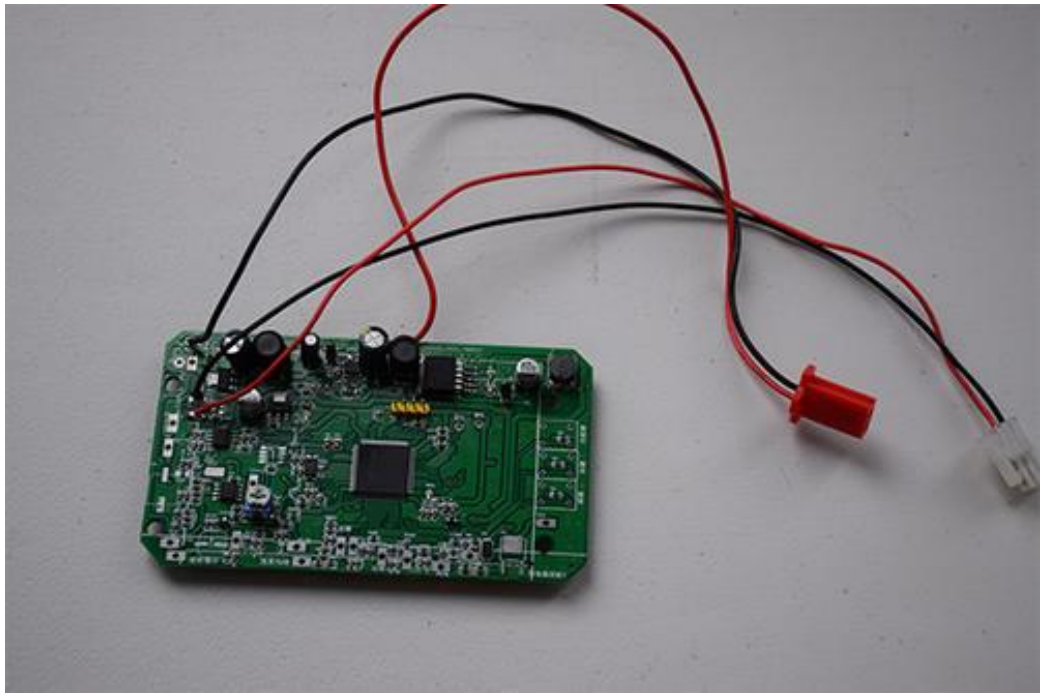
It also contains controllers, memory, input devices, output devices, etc.



Teaching New Knowledge

Controller: (Control Unit) is the control center of the entire robot system. It directs the various parts of the robot to work in coordination, ensuring that the robot operates and processes in an orderly manner according to the pre-defined goals and procedures.

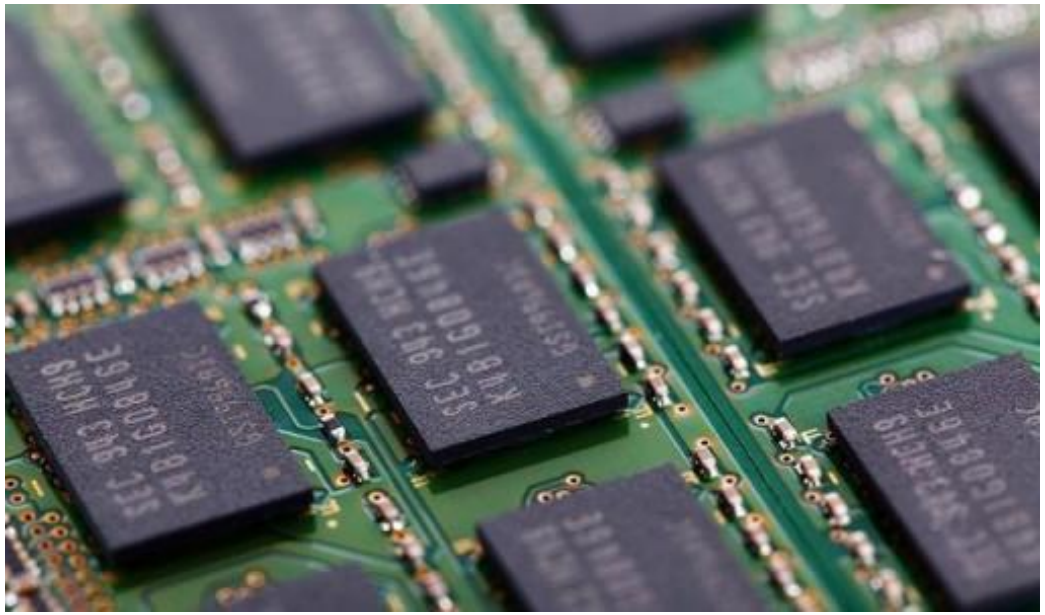
The controller fetches instructions one by one from the memory, analyzes what operation is specified by each instruction, and stores the required data, and then sends control signals to other parts of the robot according to the analysis result, and uniformly commands the entire robot to complete the operations specified by the instructions.



Teaching New Knowledge

Memory is a memory device in a robot system that stores programs and data.

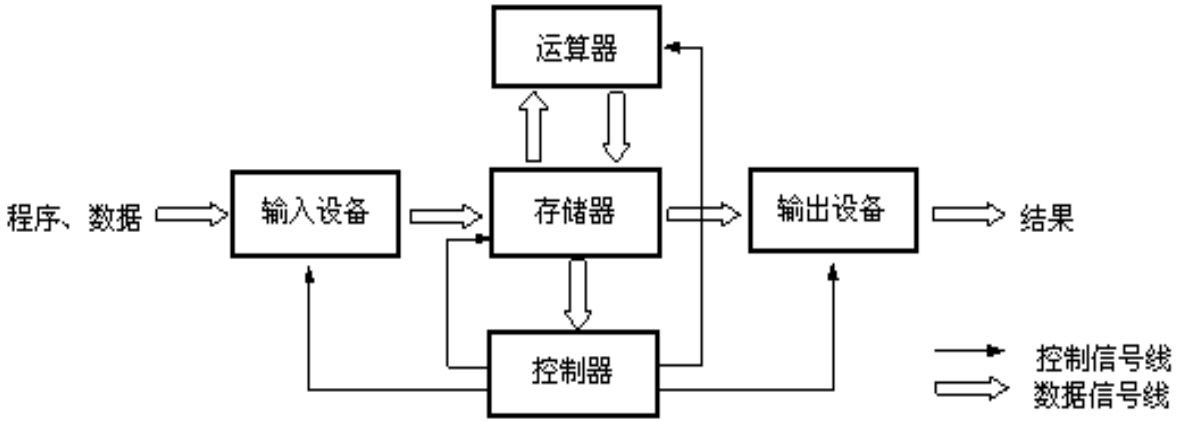
All information in the robot, including the raw data entered, the robot program, the intermediate run results, and the final run results are stored in memory.It stores and retrieves information based on the location specified by the controller.With the memory, the robot has a memory function to ensure normal operation.



Teaching New Knowledge

Input device: (Intput Device) A device that inputs data and information to a robot.It is a bridge between robots and users or other devices.The input device is one of the main devices for information exchange between the user and the robot system.

Output Device: (Output Device) is the terminal device of the robot, which is used to receive output display, print, sound, control peripheral device operation, etc. of the robot data.It also displays various calculation result data or information in the form of numbers, characters, images, sounds, and the like.



Teaching New Knowledge

Software: A collection of computer data instructions organized in a specific order.

Software is not just a computer program that can run on a computer (where the computer is a generalized computer), and the documentation associated with those computer programs is generally considered part of the software.Simply put, software is a collection of programs plus documents.



Teaching New Knowledge

Software features

1, invisible, no physical form, can only understand the function, characteristics, and quality through the operating conditions

2. The software infiltrates a lot of mental labor. The logical thinking, Intelligence activities and technical level of people are the key to software products.

3, the software does not age and wear like hardware, but there are defect maintenance and technical updates

4. The development and operation of software must depend on the specific computer system environment. There is a dependency on the hardware. In order to reduce the dependency, the software is proposed to be portable.

5, the software is reusable, the software is developed and easily copied, resulting in multiple copies



Task Practice



Task Practice



Assembly requirements

1. stable structure
2. focus is right
3. shape match

Checking Effect



Test Effect



Review the learning content and deepen your impression.

Question 1

What is the name of the robot made today?

Question 2

What hardware does the robot use today?

Question 3

What is software?

Test Effect



Homework

1. Please ask the students to call the program of the SpongeBob robot and run it!
2. Organize the divergent imagination, according to the storyline, try to design the life scene of the SpongeBob in the story and interactive demonstration according to the scene!

Thank you for watching !

BE STEM READY

