Robotics Learning Series

Nocturnal beetle



Developed by Joinmax, this programmable building-block robot kit includes sound-sensitivity, color, touch, photoelectric, ultrasonic and camera sensors, colored lights, and modular parts. Students can design varied robots and use graphical programming software for hands-on creation.

Learning Target

01

Knowledge goal

Understand the knowledge of variables and how to use and apply the knowledge.

02

Ability goal

Learn to measure light values and understand thresholds.

03

Emotional attitudes and values

Learn to think in essence.

Learning Target

01

Learning focus

Familiar with light value measurement, preliminary learning of new function and subroutine.

02

Learning difficulties

According to the surrounding light value and combined with the practical use of reasonable programming.

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Course Introduction



Course Introduction



Do you know when beetles like to be active?

Beetles are the general name of Coleoptera insects, belonging to the subclass Ptera and holomorphosis. Outside the body has a hard shell, the front wing is horny, thick and hard, the rear wing is membranous, such as beetle, longicorn, weevil, etc.. Most species belong to worldwide distribution, and many species are important pests of agriculture and forestry crops, which are closely related to economic interests of human beings. General beetles have phototaxis, is more sensitive to light, the light has a certain appeal.

Course Introduction



Nocturnal beetle

Know nocturnal beetles

The robot in this lesson is called the nocturnal beetle. The key is how to set the phototaxis of the beetle. In this unit we use the light sensing capability of the color sensor to make it a veritable light-loving robot. Here we learn together.

Teaching New Knowledge



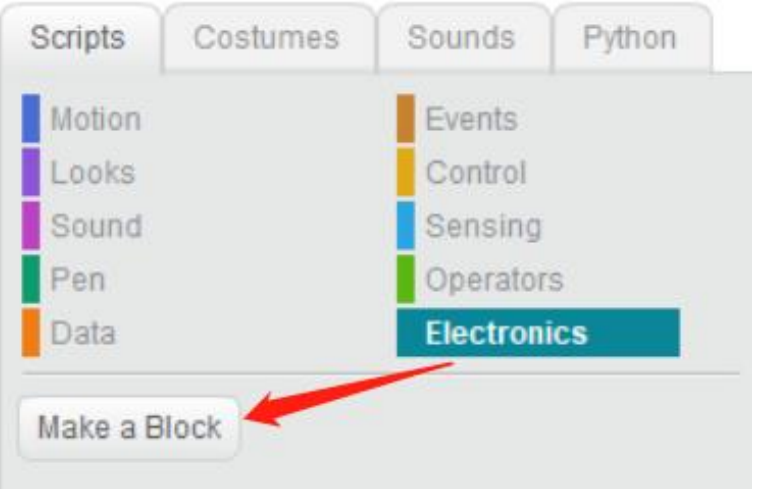
Teaching New Knowledge

Threshold: in order to detect peripheral environment light intensity, we can use the built-in test - value refers to the port of photoelectric light current detect the intensity of light, the threshold is that we set a threshold value of reference to it. At the time of use, the greater the intensity of light, the light value, the greater the intensity of light is smaller, the smaller values of light.



Teaching New Knowledge

In fact we each program is composed of each module, and each module is composed of each code, in fact, a complete independent program we can turn it into a subroutine, above modules can be combined into a new module, we call it the subroutine, subroutines can be preserved separately and calls to other programming interface to use.



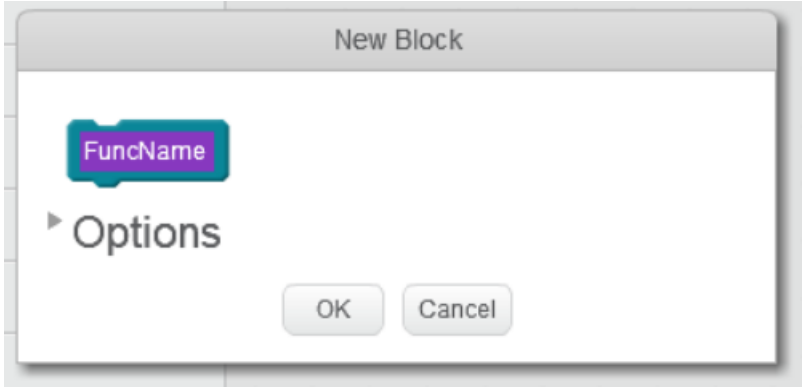
Teaching New Knowledge

In fact we each program is composed of each module, and each module is composed of each code, in fact, a complete independent program we can turn it into a subroutine, above modules can be combined into a new module, we call it the subroutine, subroutines can be preserved separately and calls to other programming interface to use.

Click on the new function, we start to make the new function module:

Teaching New Knowledge

Step 1:



Name this module
FuncName: the name of the function

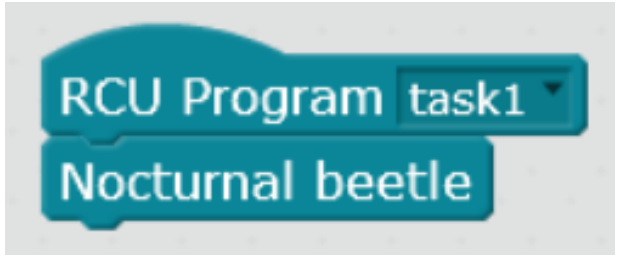
Step 2:

The complete functional module is put together with the new function, as shown in the figure on the right.



Teaching New Knowledge

Step 3:

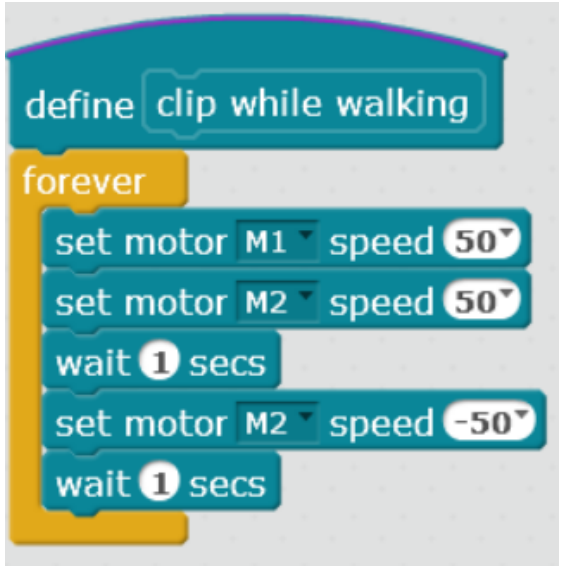


Then we can directly use the newly made module later.

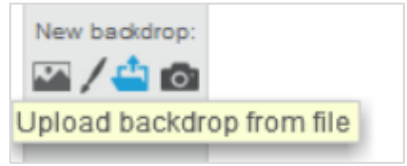
Step 4:

Save the subroutine and import it to other programs for use - right-click on the character and choose to **save to local file**.





When importing a new function, click **Upload backdrop from file** in New backdrop .



Design Assembly



Design Assembly



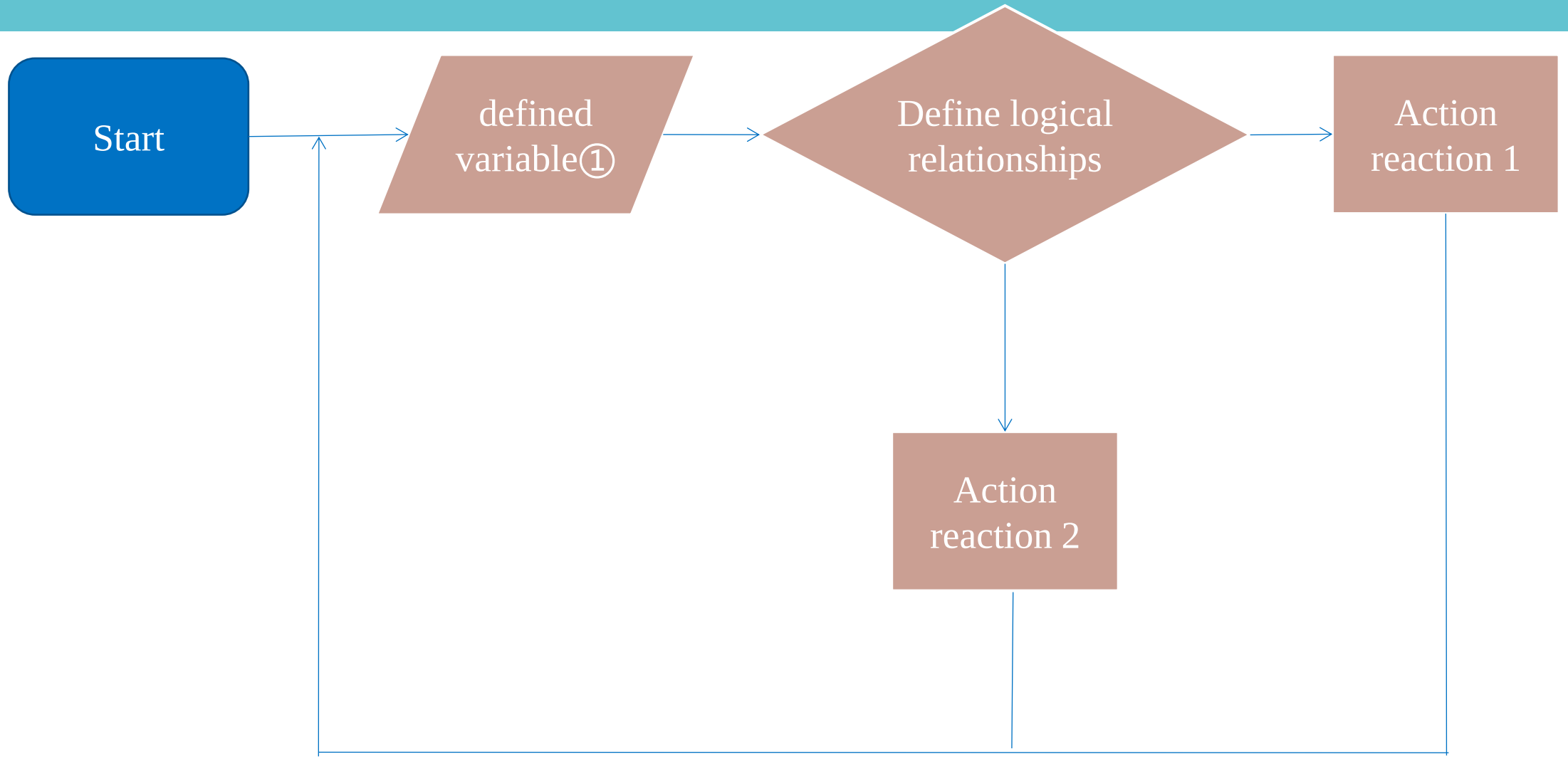
Assembly requirements

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

Programming and Debugging



Programming and Debugging



Programming and Debugging



1. Complete its program debugging according to the beetle structure and makes its phototaxis performance realized.

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 do today's robots use?

Question 3

What else can you do to make beetles more "active"?

Thank you for watching

