Q-scout Series Course

Section 14：
《Search for Treasure》

Curriculum objectives

Knowledge and skills (Technical)

1. Learn the usage of ultrasonic sensor and line tracking sensor combined together in a project.

2. Learn the uses and applications of multi-conditional logical statements.

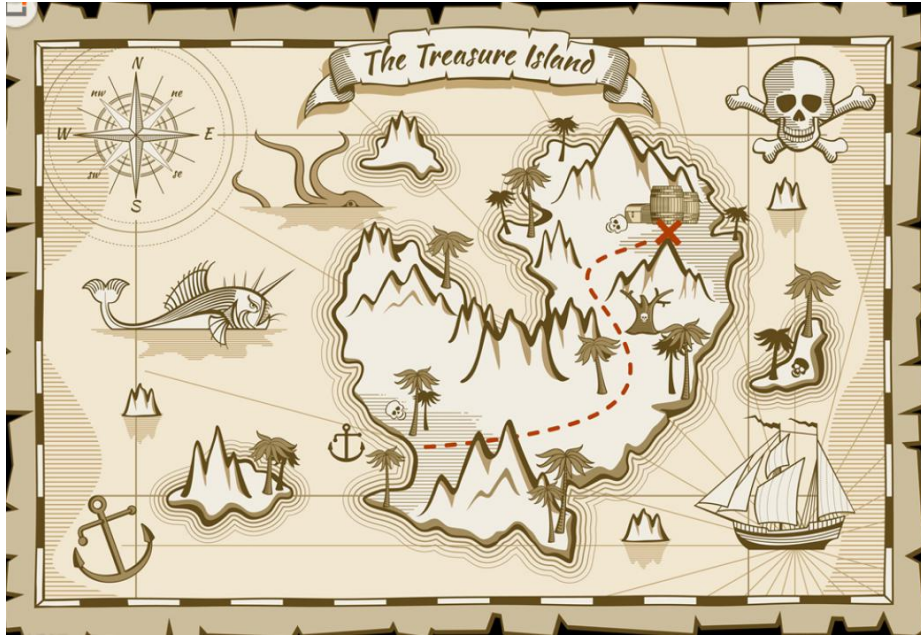3. Learn to how to program "searching for treasure".

Knowledge and skills (Cognitive)

1. The island exploration process helps students to improve their problem solving ability and enhance their critical thinking skill.

2. The exercise of sharing one's exploration experience helps students to improve their knowledge sharing skills.

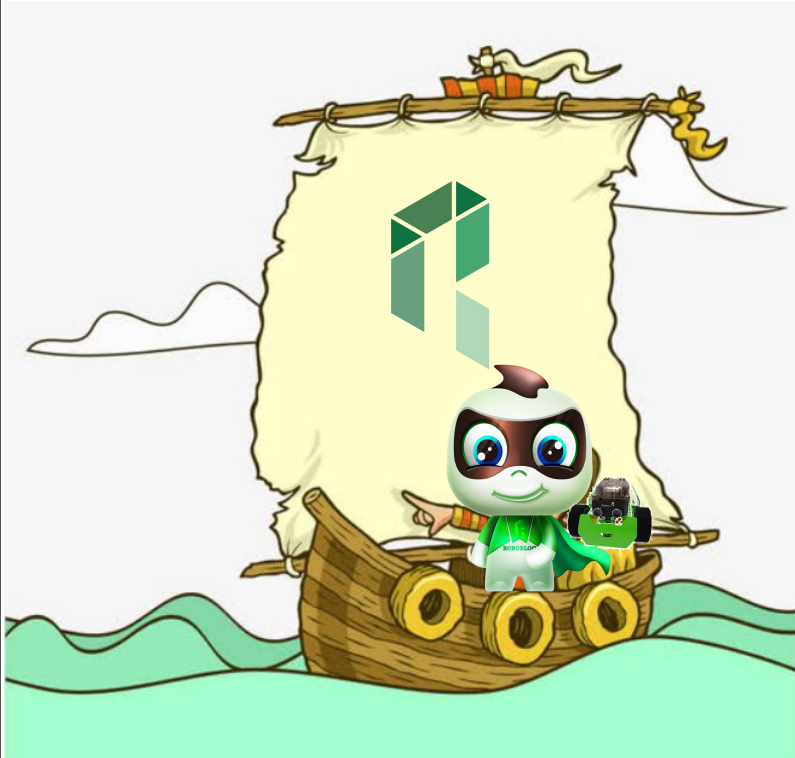**Knowledge and skills (Emotional attitude and values)**

1. The exercise of island exploration stimulates students spirit of accepting tough challenges.

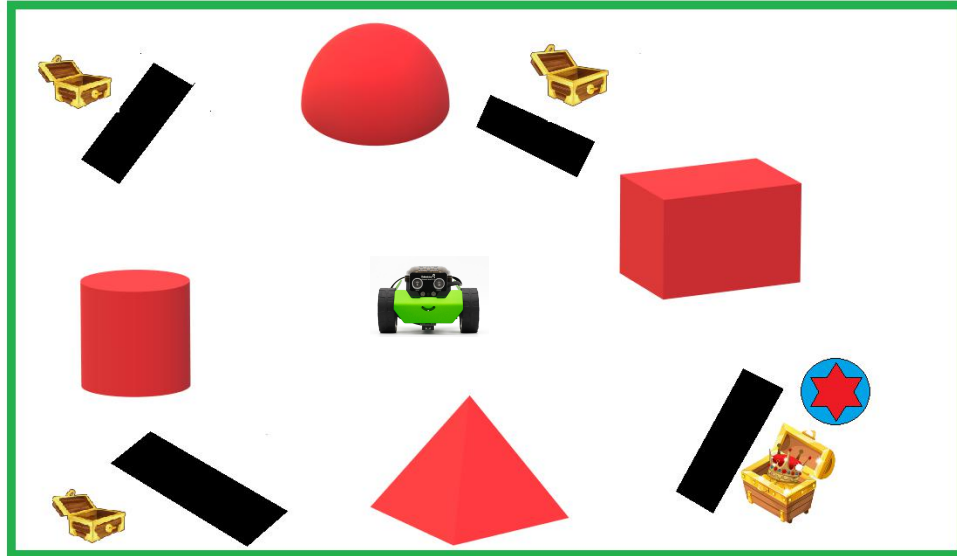Robobloq

Curriculum introduction

During our island exploration exercise, we found a glass bottle with parchment rolls in the cave. We opened the bottle curiously and found that the parchment paper has some details about island adventure, and information about a mysterious treasure chest hidden on the island.

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We decided to deploy our Q-scout and let's explore the Island in the search of that hidden treasure box, by using the details from parchment paper.

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Curriculum introduction

According to the information on the parchment paper, there is enough evidence about the presence of 3 empty and one full and real treasure chests. The parchment paper also reveals enough details of the probable location of all the treasure chests.

All things considered, on a difficult terrain of the island, we must plan our exploration exercise cautiously.

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Task analysis

Finally, the task of searching the treasure box was decided to be done by Q-scout, because there were many trees and rocks on the island, and there was a black area near the treasure box. Based on these information, we helped the Q-scout to write a program to explore the treasure box.

1. Use the ultrasonic sensor of Q-scout to avoid obstacles such as trees and rocks on the island.

2. Use the line tracking sensor to identify the black area near the treasure box, and sense the sound wave getting reflected back from treasure chest as the Q-scout reaches near to the treasure chest.
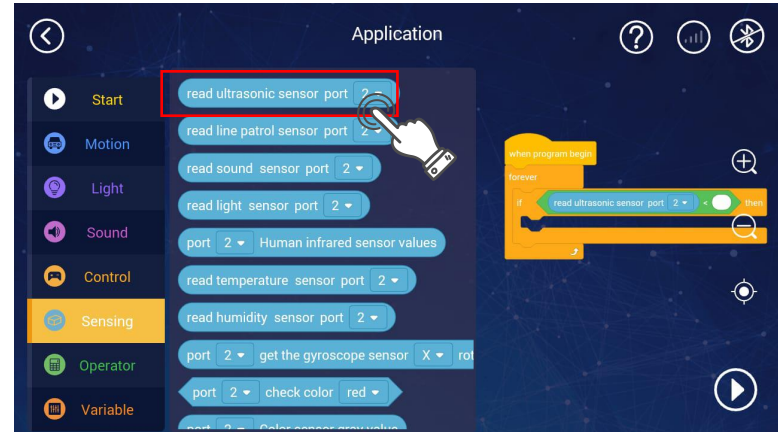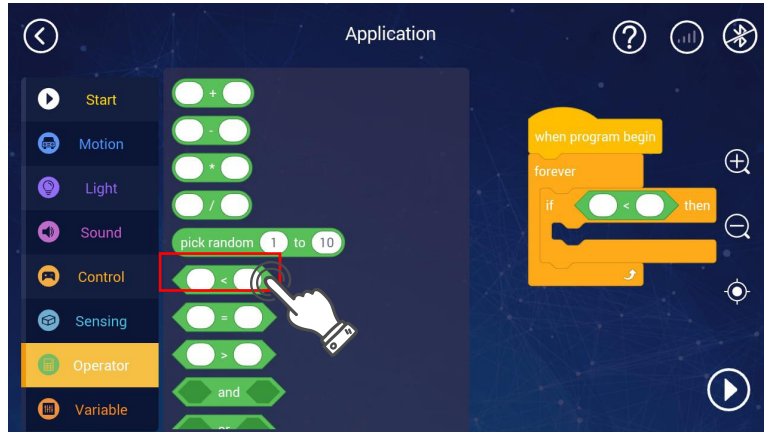
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Hands-on practice

In the process of island exploration, Q -scout avoids obstacles by turning away from, when they detect obstacles within the specified distance set in the program by the ultrasonic sensors.
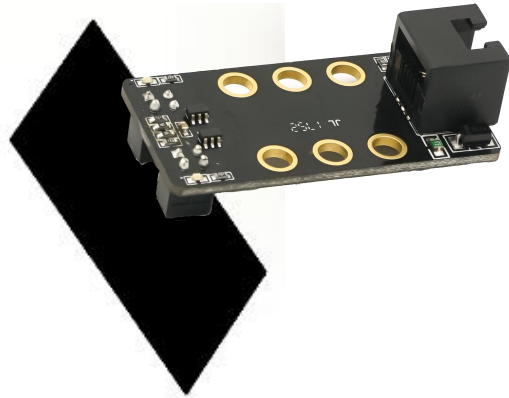
Hands-on practice

In the programming area

1.From the operators module, drag Icon，put it into the conditional judgment statement icon.

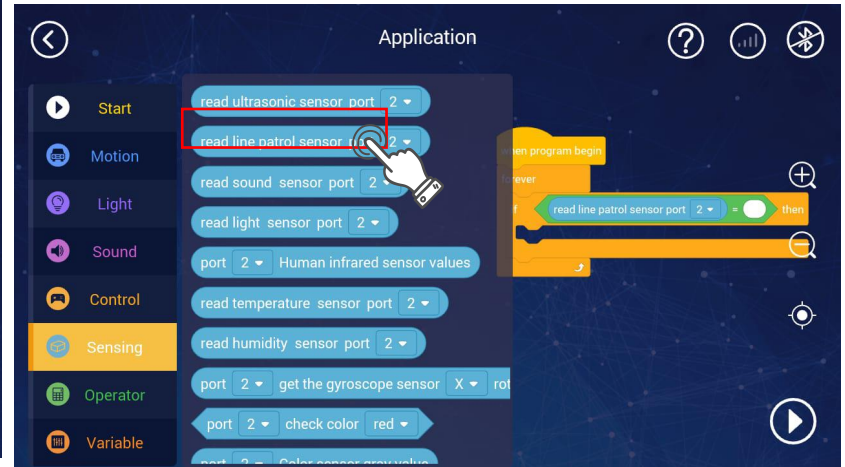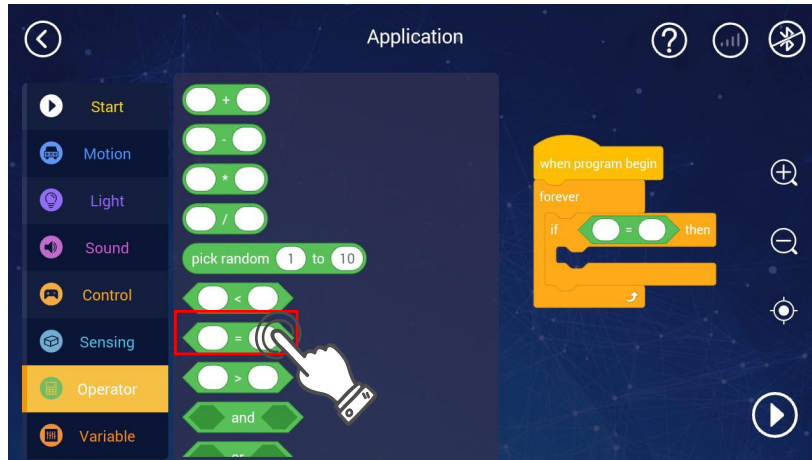2.In the sensor module, drag ultrasonic sensor into the operator icon.
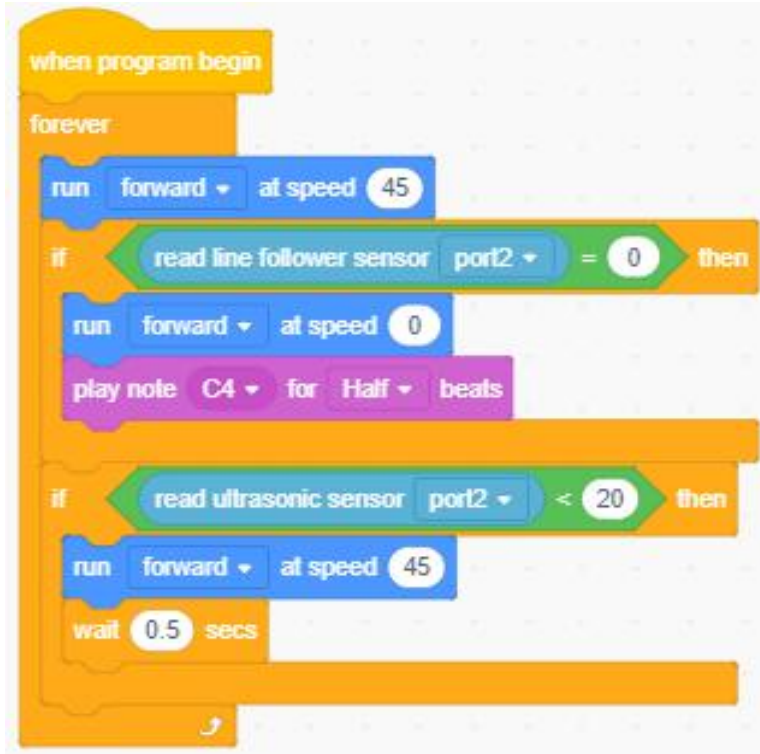
When both of the line tracking sensors (using their left and right receiving tubes) return the four values 0, 1, 2, and 3 then it is transmitted to the main board of the Q-scout. Now, the motherboard of Q-scout returns 0 which indicates that both of the line tracking sensors have sensed the black line, it means that the Q-scout has reached near the treasure chest.

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Knowledge explanation

1. Now, enter the line tracking sensor's returned value to the left side of "equal" operator icon
2. According to returned number, set Q-scout's movement condition.

Hands-on practice

Finally, upload the program to the Q-scout, and to see, whether it can find the mysterious treasure box or not.

Extends

Thanks to the joint efforts of two sensors, Q-scout and that parchment roll with all the details of exploration written by the explorer and clues from his life experience about those treasure chests.

Now, it's your turn to share your impressive exploration journey and talk about your own experience during the island treasure chest hunt.

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Conclusion and reflection

1. If we missed the right track or process during the exploration, what methods can help us to identify the direction?

2. During the treasure hunting exercise of Q-scout, what skills can it use to quickly find the real treasure chest?

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Company: Robobloq Co., Ltd
Address: Room 208, Building B53, Zhongchuang Industrial park, Liuxian Avenue, Taoyuan Street, Nanshan District of Shenzhen
E-mail:hello@robobloq.com
Telephone: + 86-0755 -26926929
Website: http://www.robobloq.com