



Q-scout Series Course

Section 3:
《Little musician》

Curriculum objectives

Knowledge and skills (Technical)

1. Learning Q-Scout sound module and lighting module.
2. Know the basic music score, knowing do, re, mi, fa, sol, la, si.
3. Write a simple piece of program to play a music through music mode.

Knowledge and skills (Cognitive)

1. Getting the basic knowledge of music will stimulate their interest in music.
2. Cultivating students' creativity and by letting them write a piece of program for playing a music.

Knowledge and skills (Emotional attitude and values)

1. Students are able to cultivate their interest in science and technology by combining these two fields with music, developing a musical sense to make technology more interesting.

Curriculum introduction

Last time when Q-scout complete the mission successfully, it has become our good friend and we all believed its bravery. During previous celebration time, Q-scout suddenly played a music which let us also believe that our Q-scout can sing as well.



Curriculum introduction

Q-Scout, who is able to sing, stimulate our interest in further exploration of its features and properties. As we observe, when there is change in the playing tone, the change in the color of light also takes place. Now, how did it change the tone? For discover this question, we decided to explore the Q-Scout's music.

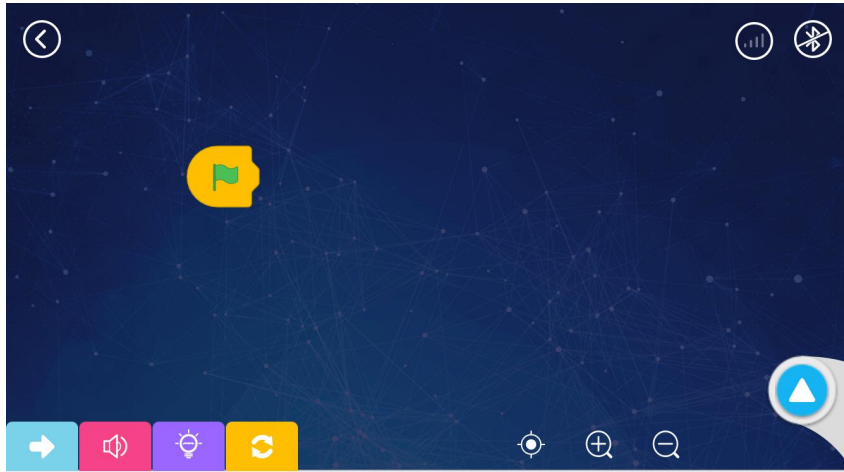


Task analysis

It turned On the speaker/buzzer fitted on the Q-Scout's main control board, that produces sound, at the same time, the mainboard allows controlling of the tone of the sound by the program so that a piece of music can be played, while the installation of the lighting device can also control the glowing color of light. Now, the question is how to write a piece of code for the Q-Scout to play a music tone?

1. Based on our basic understanding of the tone, write a piece of music that you are familiar with.
2. Add lighting effect on the basis of music to make Q-Scout more dazzling and cool.

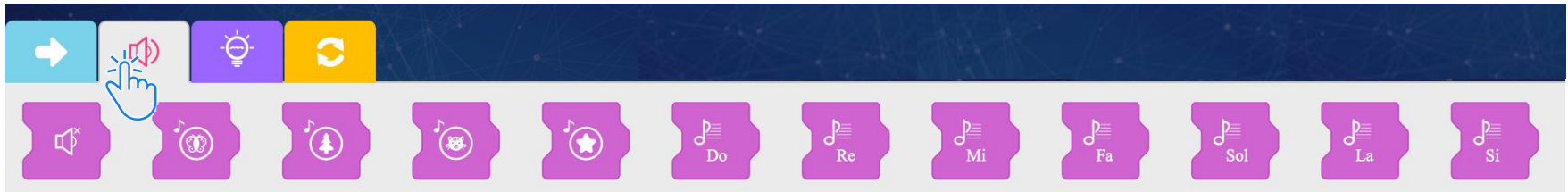
Knowledge explanation



Let's learn the sound module:

After you open the module in the programming software, click on the module of sound, we can see the sound off icon, the existing music icon, and the tone icon.

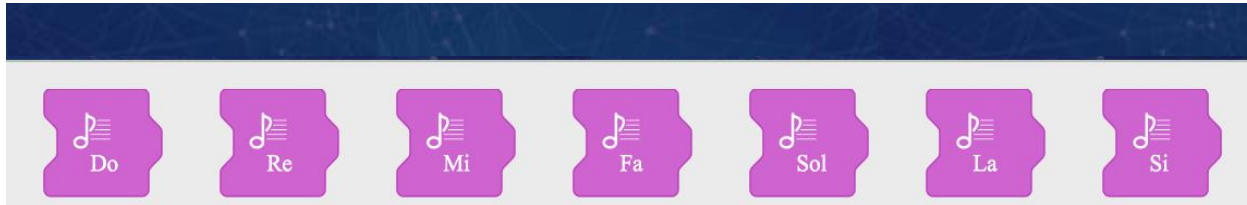
Select an existing music to play. Test yourself, and listed what songs are they?



Knowledge explanation

Know music brief spectrum

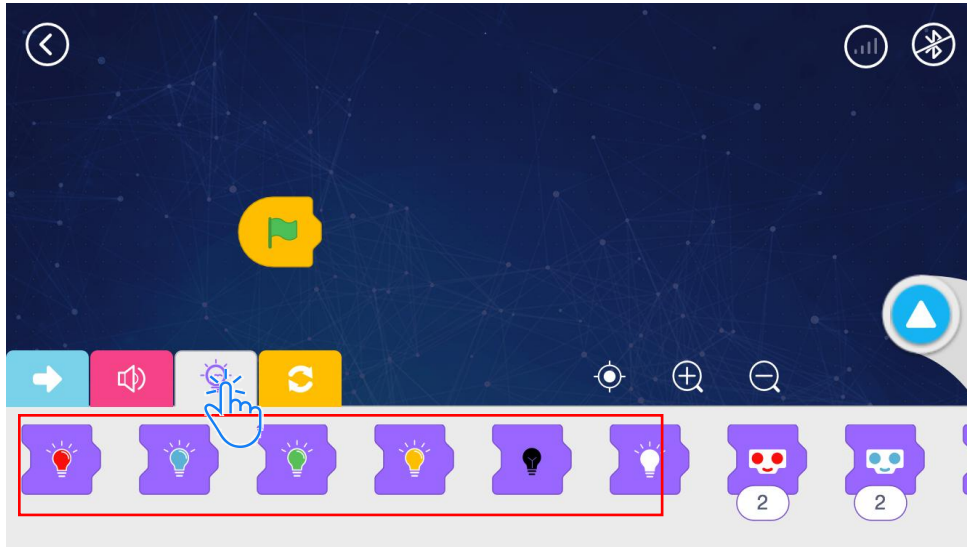
A simple notation using 1 2 3 4 5 6 7 represent the seven basic sound level on the musical scale, and the pronunciation is do, re, mi, fa, sol, la, si, caesura represented by 0. Try to connect musical scale orderly in your program, listen to the variation in the tones



Knowledge explanation

Let's learn the light module:

After opening the mobile phone programming software, click on the lighting module, we can see different color icons there, which represents the light's color.



Hands-on practice

According to music spectrum, a piece of program for the song
“happy new year” has been mentioned below:

Happy New Year

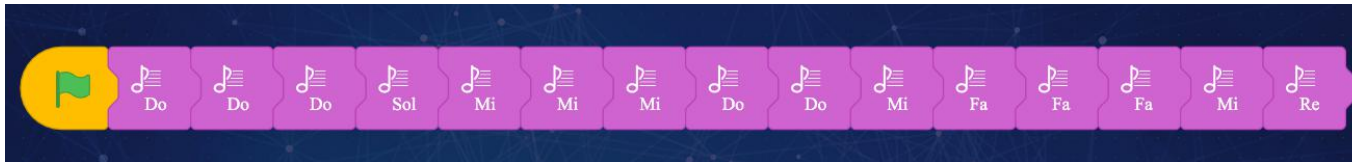
1 = C $\frac{3}{4}$

1 1 1 5 | 3 3 3 1 | 1 3 5 5 |

4 3 2 - | 2 3 4 4 | 3 2 3 1 |

1 3 2 5 | 7 2 1 - :||

Thinking: how to extend the
time of changing two
phonetic symbols?



Hands-on practice

Add dazzling light to the music blocks to the already written program, and let the music be played with an appropriate lighting effect.



Note: the program is not a complete program, more tones will be needed for students to further improve their creative thinking, and those tones will be added to the exist song icon to let music more wonderful.



Hands-on practice

Let me tell you a secret, actually, the style of playing my music not only have the style written by program, but also have the style of playing by finger.



Roboblog

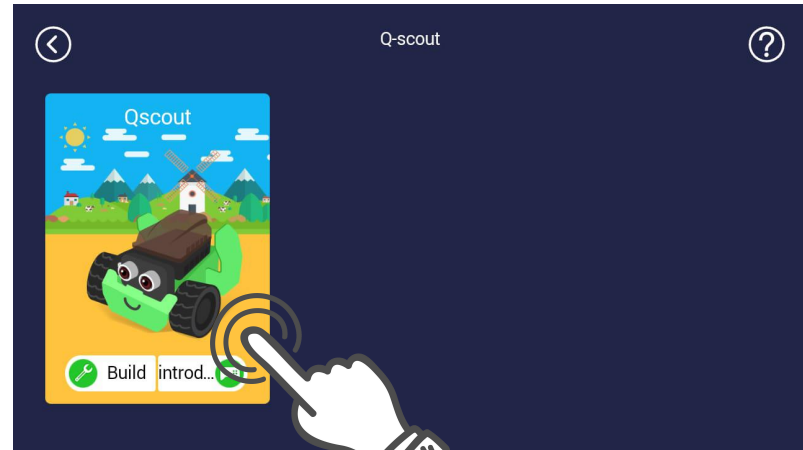


Hands-on practice

In the interface of mobile phone, ① choose the icon of Q-scout square matrix ② choose the body of Q-scout



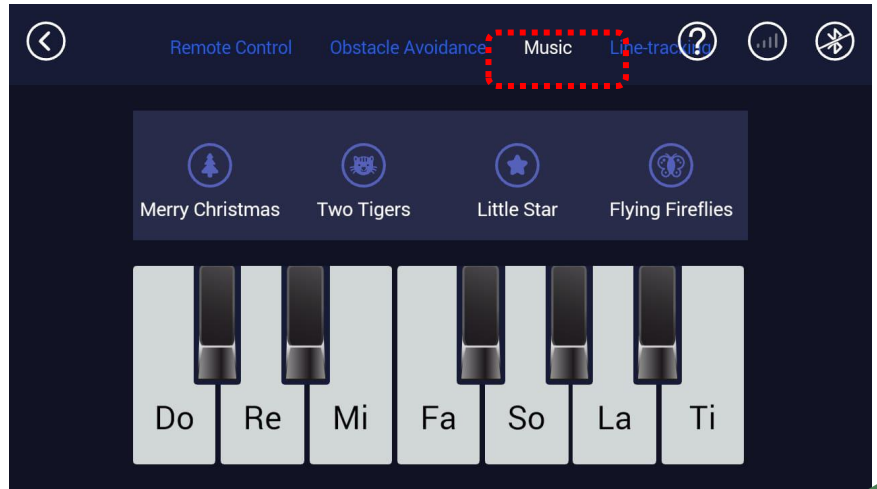
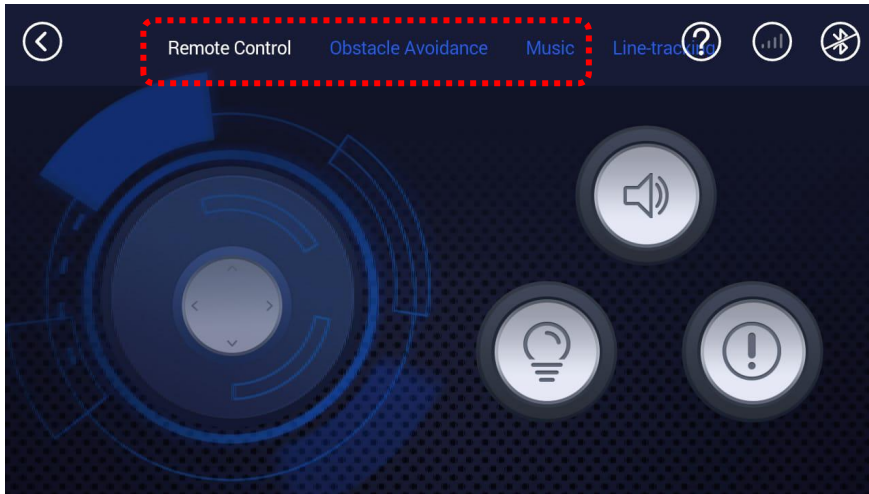
①



②

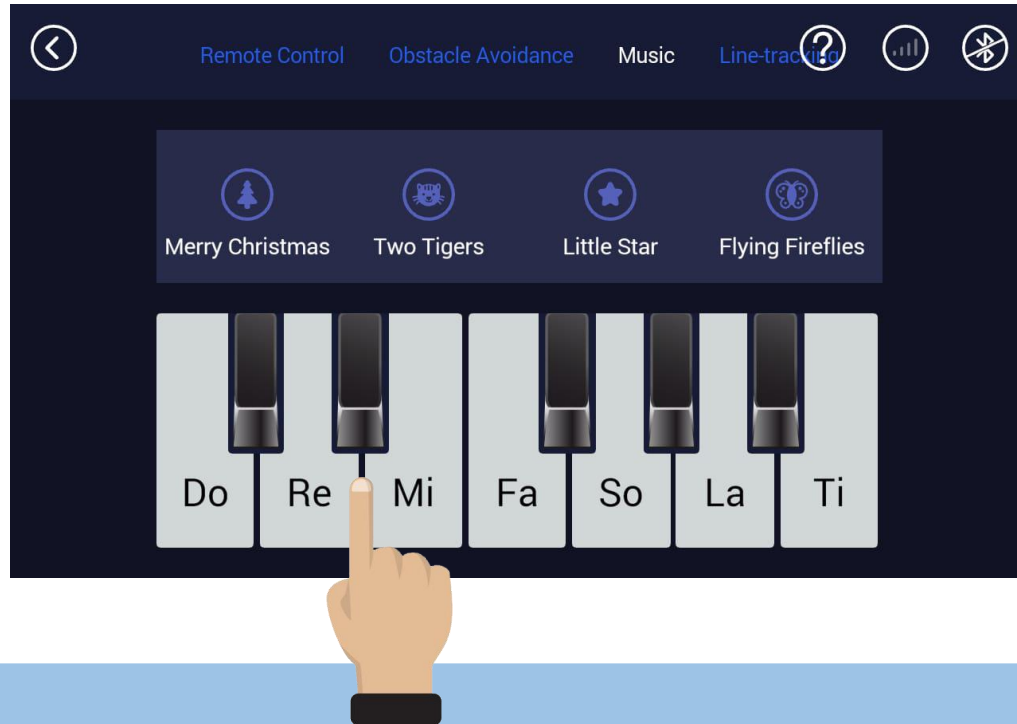
Hands-on practice

There are four patterns of control model in Q-scout, there are remote control model, obstacle avoidance model, music model and line following model. Choose the music model, that we discussed about above.



Hands-on practice

Music model comes with Christmas song, two yigers and other songs. You can touch the black and white button with your finger to start playing your favorite music.



Extends

Piano is a kind of musical instrument, is composed of the keys and metal strings sound board. The player makes a sound by pressing the keys on the keyboard, pulling the felt mallet inside the piano, and then striking the steel string.

A guitar is a plucked instrument with 6 strings. By plucking the strings, the players vibrate to make a sound, and by pressing different positions, they pluck different strings to produce different timbre.



Conclusion and reflection

Can your Q-scout play a complete music in basic programming model? Do you have any observation?



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