Ambulance

Time required: 60 minutes

Please read all the directions carefully before beginning the assignment.

- Comment your code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

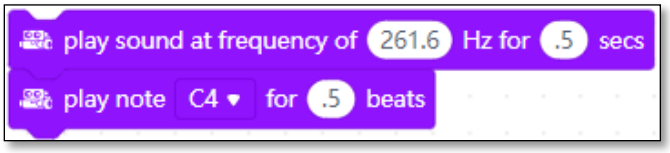
Understanding

frequency of sound, code blocks

Ambulance Sounds

Ambulance sound effects consist of two tones, a high frequency sound of 950Hz and low frequency sound of 700Hz. The high frequency sound lasts for 0.6 second and the low frequency sound 0.4 seconds. The high and low frequency sounds are played alternatively. Double click to enter either the frequency for the note, or the milliseconds for the sound. There are 1000 milliseconds in a second.

Use of the Tone Playing Block



For this project, the tone within the tone-playing block is the sound frequency in Hz. You can double click a note value to enter the frequency value for the buzzer. For example, the frequency of C4 is 261.6Hz, so both of these blocks are equivalent.

The rhythm within a tone-playing block is the duration of a sound in beats or seconds. Each beat is 1 second, or 1000 milliseconds. You can double click the beat value to enter a duration in milliseconds.

Code Blocks

A Block is a chunk of modular code that can be reused in the program without having to write the code again and again. You can break your code into several blocks, rather than one big, long program.

Requirements

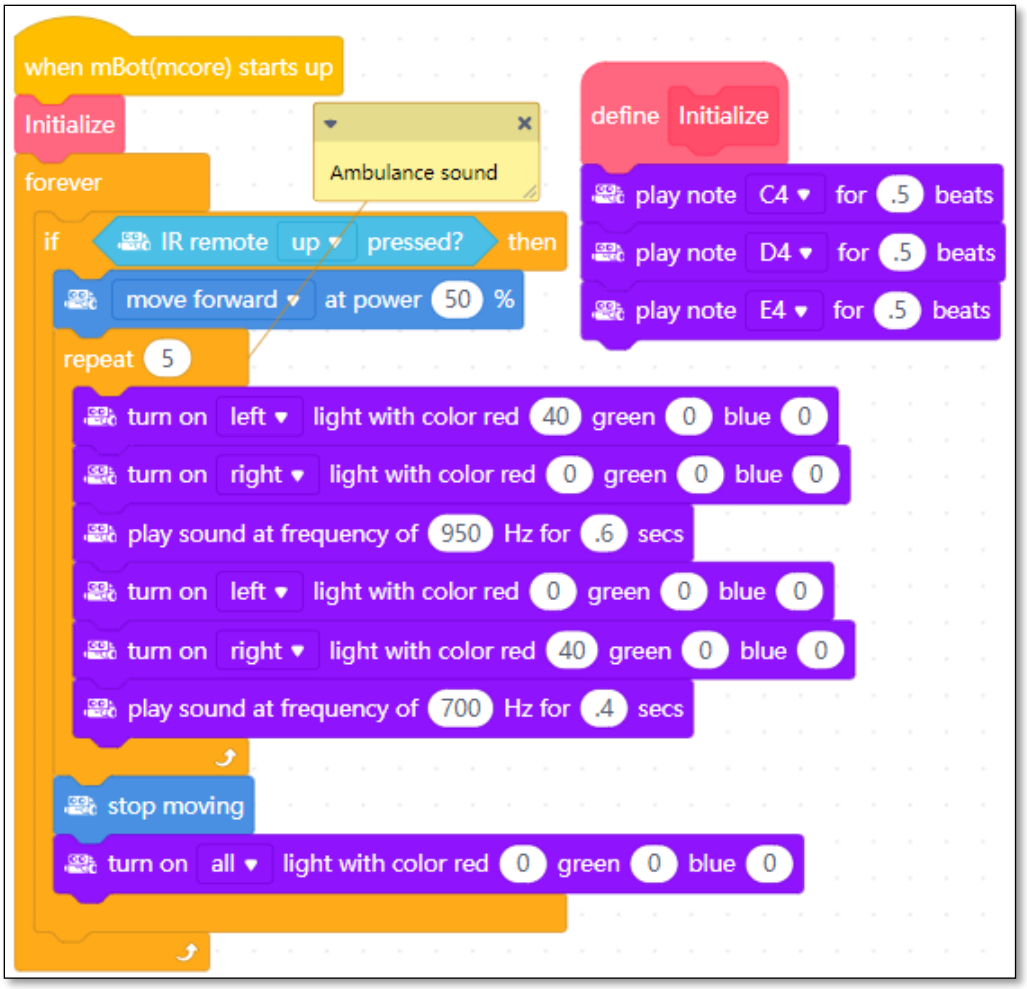
- The program will run when you press the up arrow on the IR remote.
- The program will play the ambulance sound 5 times while moving forward, then wait until the remote button is pressed again.

Tutorial Assignment

We are going to create an Initialize block to let the world know when the mBot is ready for action.

1. Start mBlock. Save the program as **Ambulance**.
2. Go to **My Blocks**, Click **Make a Block**.
3. Name the Block **Initialize**. Click **OK**.
4. This places **define Initialize** on the programming area.

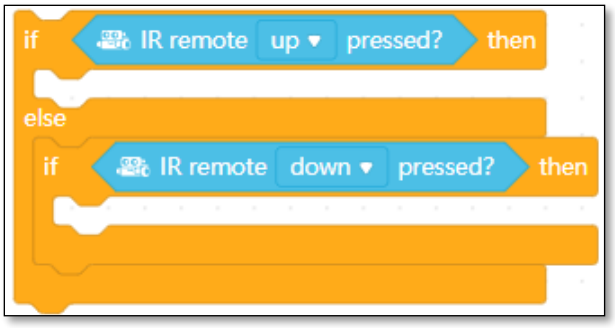
5. Go to **My Blocks**, **drag Initialize** as shown in the program.
6. Complete and test the program as shown.



Assignment

Start with your tutorial project and add the following.

1. Create your own Initialize block to introduce your mBot to the world, be creative!
2. In the Ambulance program, replace the **if then** block with an **if then else** block. Put an **if then** block in the else part of the **if then else** block. They should stack as shown below.



1. The program will keep checking each condition until one of them is true, then execute the interior code block.
2. Right Click on the code in the first if then block: choose **duplicate**.
3. Drag the copy of the code block to the second **if then** block.
4. Assign the down arrow to the **if** condition.
5. Change the code in the second block to run the mBot backwards when the down arrow on the remote is pressed.

Assignment Submission

- **All students** → Attach finished programs to the assignment in Blackboard.
- **In class assignment submission** → Demonstrate in person.
- **Online submission** → A link to a YouTube video recording showing the assignment placed in the submission area in BlackBoard.