

Echo Locator - NXT

Suggested Time

90 minutes

Challenge

In this activity, use an NXT equipped with either a proximity sensor, a light sensor, or a motor to develop an echo locator. Similar to a bat with a sonar echolocator, this uses ultrasonic waves, light, or rotations to measure distance, with sound used as feedback.



Age

15 - 18

Topics

Programming

Subjects

Technology

Programming Themes

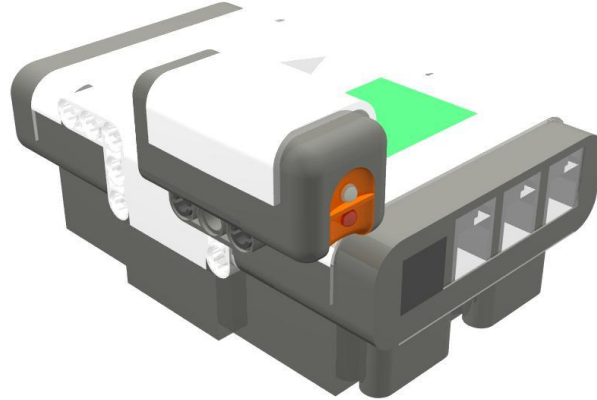
Containers, Jumps / Lands, Play Any Note

Materials

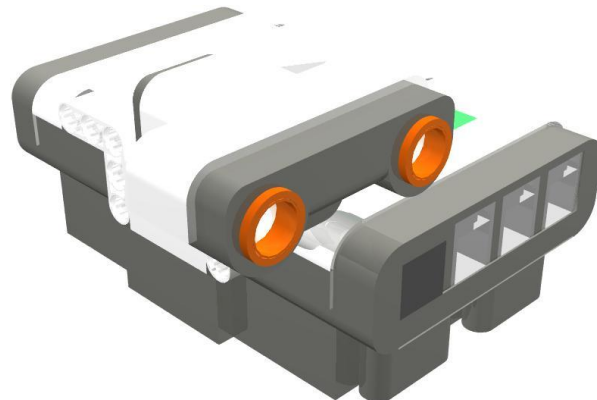
- NXT
- Light Sensor
- Proximity Sensor
- Motor

***Building
Instructions***

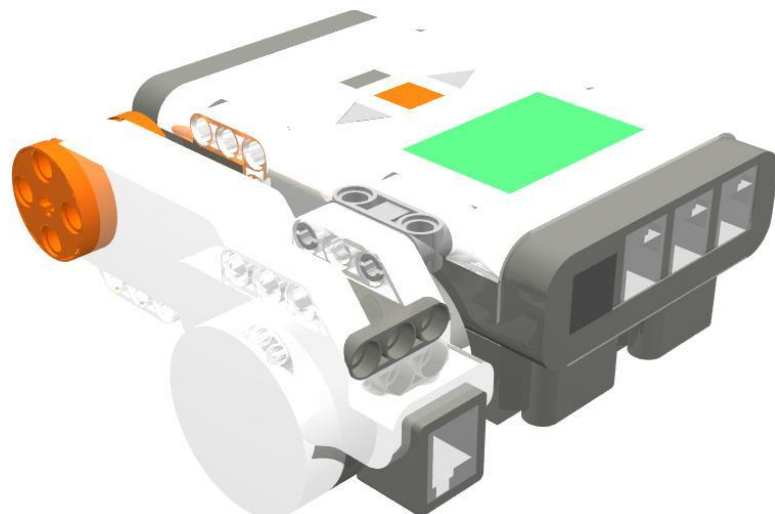
1. Follow either step 2, 3, or 4.
2. Attach a light sensor to the NXT and wire to an NXT input.



3. Attach a proximity sensor to the NXT and wire to an NXT input.

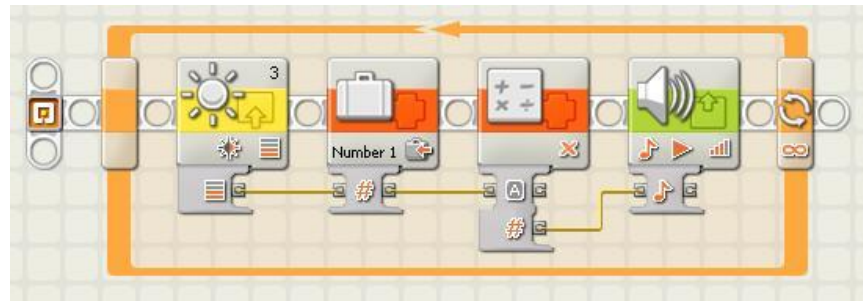


4. Attach a motor to the NXT and wire to an NXT output.

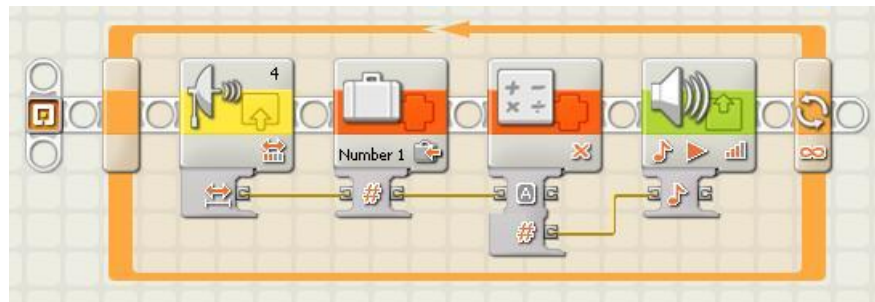


Programming Instructions

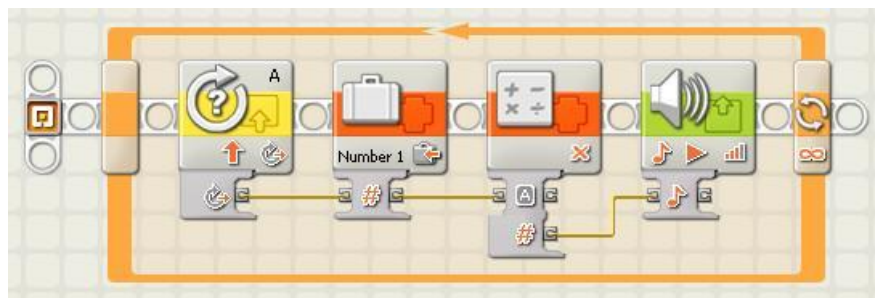
1. Choose your programming instructions based on the sensor you chose in the building instructions.
2. **Light Sensor Programming Instructions:** Using the LEGO NXT Software, write a program that allows your light sensor value to be multiplied in order to determine pitch.



3. **Proximity Sensor Programming Instructions:** Using LEGO NXT Software, write a program that allows your proximity sensor value to be multiplied in order to determine pitch.



4. **Rotation Sensor (Motor) Programming Instructions:** Using LEGO NXT Software, write a program that allows your rotation value to be multiplied in order to determine pitch.



Programming Hints: The light, proximity, or rotation value will need to be multiplied by a factor to create a frequency humans can hear. Start with a multiplier of 100 and experiment to see how other values affect the pitch.