

Pet Car Alarm: Challenge #1

Goals:

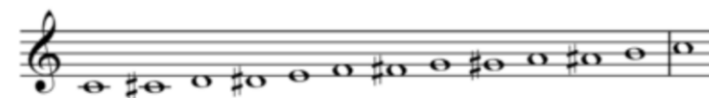
In the Pet Car Alarm project, you will create a system that detects if the pet is in the car and measure the temperature. The car will sound a warning with flashing lights and roll down the windows if your pet could be in danger.

1. Use the SET SOUND command to play various notes.
2. Use a For loop to repeat code.

In this challenge, you will use the TI-Innovator to create various notes by playing different frequencies. You will use these skills when sounding the alarm in your Pet Car Alarm.

Background:

Did you know that all musical tones are the result of various frequencies? The middle C note on a piano has a frequency of 261.64 Hz. The C one octave higher is 523.28 Hz while one octave lower is 130.82 Hz. There are 12 notes in a octave. Each note can be calculated by taking the frequency of the previous note and multiplying by the $\sqrt[12]{2}$. Therefore, the note directly above middle C would be $261.64 \times \sqrt[12]{2} = 277.198\text{Hz}$.



B is the note directly below C. What frequency would produce a B? _____

Command	Example	Behavior
Wait <number>	Wait 3	Pauses the program for a specified number of seconds. In this case 3 seconds.
For <counter variable>,<start value>,<end value>,<step value> <statements> EndFor	For n,1,10 DispAt 3,n EndFor	Runs For loop 10 times, starting at 1 and ending at 10. Executes the statement in the block each time, displays the value for the counter variable on row 3.
SET <type><number>	Send "SET SOUND 261.64 TIME 1"	Plays a 261.64 Hz frequency for 1 second
	F:= 261.64 Send "SET SOUND eval(F*2) TIME 1"	Sets the variable F to 261.64. eval() evaluates the value of the F*2 then plays the frequency for 1 second. If you use a variable for the frequency you must use eval().



Challenge: Pet Car Alarm

TI-NSPIRE CX

TI-INNOVATOR™ STEM PROJECT

STUDENT ACTIVITY

Challenge:

Use the Send “Set Sound” command to determine:

the lowest frequency you can set and still hear it_____

the highest frequency you can set_____

Challenge: Write a program that will play two sounds for 1 second each in a For loop that repeats five times.

e.g. Send “SET SOUND 220”

Extension: Write a program that will play through an entire octave. Can you use a loop with math so you don’t have to use 12 different “SET SOUND” commands?