

## Lesson 5: Worksheet 5.1 - Play tones

In this activity, you need to write a program to make Edison play a musical note and learn how Edison plays sounds in a program.

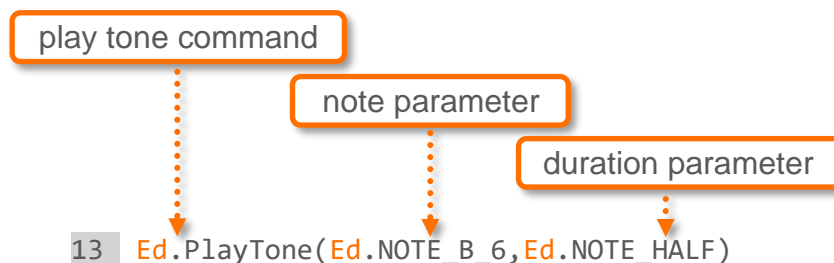
You can play individual musical notes through Edison's small speaker using the `Ed.PlayTone()` function in `EdPy`.

The `Ed.PlayTone()` function takes two input parameters: the note and the duration. The note determines what note to play and the duration determines the given length of time the note should be played.

This list includes the possible parameter values:

<i>note</i>		<i>duration</i>	
Parameter input options	Plays musical note	Parameter input options	Plays note for
Ed.NOTE_A_6	low A	Ed.NOTE_SIXTEENTH	125 milliseconds
Ed.NOTE_A_SHARP_6	low A sharp	Ed.NOTE_EIGHTH	250 milliseconds
Ed.NOTE_B_6	low B	Ed.NOTE_QUARTER	500 milliseconds
Ed.NOTE_C_7	C	Ed.NOTE_HALF	1,000 milliseconds
Ed.NOTE_C_SHARP_7	C sharp	Ed.NOTE_WHOLE	2,000 milliseconds
Ed.NOTE_D_7	D		
Ed.NOTE_D_SHARP_7	D sharp		
Ed.NOTE_E_7	E		
Ed.NOTE_F_7	F		
Ed.NOTE_F_SHARP_7	F sharp		
Ed.NOTE_G_7	G		
Ed.NOTE_G_SHARP_7	G sharp		
Ed.NOTE_A_7	A		
Ed.NOTE_A_SHARP_7	A sharp		
Ed.NOTE_B_7	B		
Ed.NOTE_C_8	high C		
Ed.NOTE_REST	rest		

Let's take a closer look at the play tone function in a program:



Using the parameter values tables as a reference, can you work out what the program will do?

This program will play a low B note for a duration of 1 second.

**Your turn:****Task 1:** Play a note

Write the following program:

```

1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.CM
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12
13 Ed.PlayTone(Ed.NOTE_A_SHARP_7,Ed.NOTE_HALF)
14

```

Download and test the program to see what it sounds like.

**Task 2:** Play a note, then drive? Or play a note while driving?

When Edison plays sounds, it does this in the background. This means that as soon as Edison starts playing the sound, the program will move onto the next line of code. The sound will keep playing 'in the background' while Edison continues on with the program.

If you want Edison to wait for the sound to finish, you need to use the `Ed.ReadMusicEnd()` function in a 'while' loop.

Write the following program:

```

1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.CM
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12 Ed.PlayTone(Ed.NOTE_C_8, Ed.NOTE_WHOLE)
13 while Ed.ReadMusicEnd()==Ed.MUSIC_NOT_FINISHED:
14     pass
15 Ed.Drive(Ed.FORWARD, Ed.SPEED_6, 5)
16

```

Download and test the program.

1. Describe what happened when you ran this program.
2. Look at line 13 and 14 of the program. Remember that expressions compare the left side to the right side of the notation in the expression. What is this loop doing?

Write the following program:

```
1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.CM
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12 Ed.PlayTone(Ed.NOTE_C_8, Ed.NOTE_WHOLE)
13 Ed.Drive(Ed.FORWARD, Ed.SPEED_6, 5)
14
```

Download and test the program.

3. Describe what happened when you ran this program.
4. Why did this program behave differently than the last program?