

Content of Windows PowerShell Jingle Bells.ps1 (Site 1)

```
$notes = write-output `
4A4 4A4 2A4      4A4 4A4 2A4      4A4 4C4 4F3 8G3      1A4 `
4Bb4 4Bb4 4Bb4 8Bb4 4Bb4 4A4 4A4 8A4 8A4 4A4 4G3 4G3 4A4 2G3 2C4 `
4A4 4A4 2A4      4A4 4A4 2A4      4A4 4C4 4F3 4G3 1A4      4Bb4 4Bb4 4Bb4 4Bb4 `
4Bb4 4A4 4A4 8A4 8A4 4C4 4C4 4Bb4 4G3 1F3 4C3 4A4 4G3 4F3 2C3 8C3 8C3 `
4C3 4A4 4G3 4F3 1D3 4D3 4Bb4 4A4 4G3 '1E3' 4C4 4C4 4Bb4 4G3 `
1A4 4C3 4A4 4G3 4F3 1C3 4C3 4A4 4G3 4F3 1D3 `
4D3 4Bb3 4A4 4G3 4C4 4C4 4C4 8C4 8C4 4D4 4C4 4Bb4 4G3 4F3 2C4 4A4 4A4 2A4 `
4A4 4A4 2A4 4A4 4C4 4C3 8G3 1A4 4Bb4 4Bb4 4Bb4 8Bb4 4Bb4 4A4 4A4 8A4 8A4 `
4A4 4G3 4G3 4A4 2G3 2C4 4A4 4A4 2A4 4A4 4A4 2A4 4A4 4C4 4F3 8G3 `
1A4 4Bb4 4Bb4 4Bb4 4Bb4 4Bb4 4Bb4 4A4 4A4 8A4 8A4 4C4 4C4 4Bb4 4G3 1F3

function Play([int] $freq, [int] $duration)
{
    [console]::Beep($freq, $duration);
}

#
# Note is given by fn=f0 * (a)^n
# a is the twelfth root of 2
# n is the number of half steps from f0, positive or negative.
# f0 used here is A4 at 440 Hz
#
$f0 = 440;
$a = [math]::pow(2,(1/12)); # Twelfth root of 2
function GetNoteFreq([string]$note)
{
    # n is the number of half steps from the fixed note.
    $note -match '([A-G#]{1,2})([d+])' | out-null
    $octave = ([int] $matches[2]) - 4;
    $n = $octave * 12 + ( GetHalfStepsFromA $matches[1] );
    $freq = $f0 * [math]::Pow($a, $n);

    return $freq;
}

function GetHalfStepsFromA([string] $note)
{
    switch($note)
    {
        'A' { 0 }
        'A#' { 1 }
        'Bb' { 1 }
        'B' { 2 }
        'C' { 3 }
        'C#' { 4 }
        'Db' { 4 }
        'D' { 5 }
        'D#' { 6 }
        'Eb' { 6 }
        'E' { 7 }
        'F' { 8 }
        'F#' { 9 }
        'Gb' { 9 }
        'G' { 10 }
        'G#' { 11 }
        'Ab' { 11 }
    }
}

$StandardDuration = 1000;
foreach($note in $notes)
{
    $note -match '([d],.+)' | out-null
    $duration = $StandardDuration / ([int] $matches[1]);
    $playNote = $matches[2];
    $freq = GetNoteFreq $playNote;

    write-host $playNote;
    Play $freq $duration
    start-sleep -milli 50
}
```