```
'---------------Title--------------

' File......1 TSA Music'10.pbp
' Started....1/25/10
' Microcontroller used:  Microchip Technology 16F88
'                        microchip.com
' PicBasic Pro Code: micro-Engineering Labs, Inc.
'                    melabs.com

'--------Program Desciption--------

' TSA Music Production Program 2010: Track 1

'---------Revision History---------

' 2/1/10 Changed VAR to CON
' 2/11/10 Program Finalized

'-----------Initialization---------

    DEFINE OSC 20           ' Sets microcontroller operating frequency
                            ' to 20 MHz.

    TRISB = %11111000       ' Sets up pins RB0 - 3 of PORTB as an output

    PORTB = %00000000       ' Sets all pins on PORTB to low (0V).



' The variable "x" represents the eighth note. The length of time that the
' eighth note (x) is played is deteremined by the value set at 200.
' A quarter note is two times an eighth note or 2x.

    x VAR WORD

' These are the constants that we used to declare the frequencies as notes.
' For example shg represents Super High G which has a frequency of 1568 Hz.

    shg CON  1568
    shef CON 1244
    shc CON  1046
    shbf CON 932
    shaf CON 830
    hg CON   784
    hf CON   698
    hef CON  622
    hd CON   587
    hc CON   523
    hbf CON  466
    haf CON  415
    g CON    392
    f CON    349
    ef CON   311
    d CON    293
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    c CON    261
    bf CON   233
    af CON   208
    lg CON   196
    lf CON   174
    lef CON  155
    ld CON   146
    lc CON   130
    lbf CON  116
    laf CON  103
    slg CON  98
    slf CON  87
    slef CON 78
    sld CON  73
    slc CON  65

'-------------Main Code------------

    x = 200             ' An eighth note (x) will be 200 ms long.

  PAUSE 1000            ' Pause 1000 ms before starting generating tones

' line1

  FREQOUT 1, x, g       ' We use FREQOUT to generate a tone.  1 represents
                        ' output pin RB1 on the Pic16F88. "x" symbolizes
the
                        ' eighth note. "g" is defined as the frequecy 392
Hz.

  FREQOUT 1, x, f
  FREQOUT 1, x, g
  FREQOUT 1, x, f
  FREQOUT 1, x, ef
  FREQOUT 1, x, c
  FREQOUT 1, 4*x, ef
  FREQOUT 1, 4*x, d
  FREQOUT 1, x, g
  FREQOUT 1, x, f
  FREQOUT 1, x, g
  FREQOUT 1, x, f
  FREQOUT 1, x, ef
  FREQOUT 1, x, c
  FREQOUT 1, 4*x, ef
  FREQOUT 1, 4*x, d
  FREQOUT 1, x, g
  FREQOUT 1, x, f
  FREQOUT 1, x, g
  FREQOUT 1, x, f

 'line 2

  FREQOUT 1, x, ef
  FREQOUT 1, x, c
  FREQOUT 1, 3*x, d
```

```
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, x, af
FREQOUT 1, 8*x, ef
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
FREQOUT 1, x, hc
FREQOUT 1, 2*x, hef

'line 3

FREQOUT 1, 2*x, hef
FREQOUT 1, 4*x, hd
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
FREQOUT 1, x, hc
FREQOUT 1, 4*x, hef
FREQOUT 1, 4*x, hd
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
FREQOUT 1, x, hc
FREQOUT 1, 2*x, hd
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc

'line 4

FREQOUT 1, x, hbf
FREQOUT 1, x, haf
FREQOUT 1, 9*x, hef
FREQOUT 1, 4*x, 0
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, x, c
FREQOUT 1, x, d
FREQOUT 1, 2*x, lg
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, 2*x, c
```

```
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, x, c
FREQOUT 1, x, d
FREQOUT 1, 2*x, lg
FREQOUT 1, x, ef
FREQOUT 1, x, d

'line 5

FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, 2*x, c
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, x, c
FREQOUT 1, x, d
FREQOUT 1, 2*x, lg
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, d
FREQOUT 1, 2*x, c
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, x, hc
FREQOUT 1, x, hd
FREQOUT 1, 2*x, g
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, 2*x, hc

'line 6

FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, x, hc
FREQOUT 1, x, hd
FREQOUT 1, 2*x, g
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, 2*x, hc
FREQOUT 1, x, hef
```

```
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, x, hc
FREQOUT 1, x, hd
FREQOUT 1, 2*x, g
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hd
FREQOUT 1, 2*x, hc
FREQOUT 1, 2*x, hg
FREQOUT 1, 2*x, shc

'line 7

FREQOUT 1, 2*x, shef
FREQOUT 1, 4*x, shg
FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, ef
FREQOUT 1, x, c
FREQOUT 1, 4*x, ef
FREQOUT 1, 4*x, d
FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, ef
FREQOUT 1, x, c
FREQOUT 1, 4*x, ef
FREQOUT 1, 4*x, d

'line 8

FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, g
FREQOUT 1, x, f
FREQOUT 1, x, ef
FREQOUT 1, x, c
FREQOUT 1, 3*x, d
FREQOUT 1, x, ef
FREQOUT 1, x, d
FREQOUT 1, x, c
FREQOUT 1, x, bf
FREQOUT 1, x, af
FREQOUT 1, 8*x, ef
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
```

```
FREQOUT 1, x, hc
FREQOUT 1, 2*x, hef

'line 9

FREQOUT 1, 2*x, hef
FREQOUT 1, 4*x, hd
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
FREQOUT 1, x, hc
FREQOUT 1, 4*x, hef
FREQOUT 1, 4*x, hd
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hg
FREQOUT 1, x, hf
FREQOUT 1, x, hef
FREQOUT 1, x, hc
FREQOUT 1, 2*x, hd
FREQOUT 1, x, hef
FREQOUT 1, x, hd
FREQOUT 1, x, hc
FREQOUT 1, x, hbf
FREQOUT 1, x, haf
FREQOUT 1, 6*x, hef
END
```