**PLAY A MELODY**

**USING**

**The tone() function**

This example shows how to use the tone() command to generate notes. It plays a little melody you may have heard before.

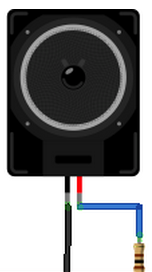
**Hardware Required:**

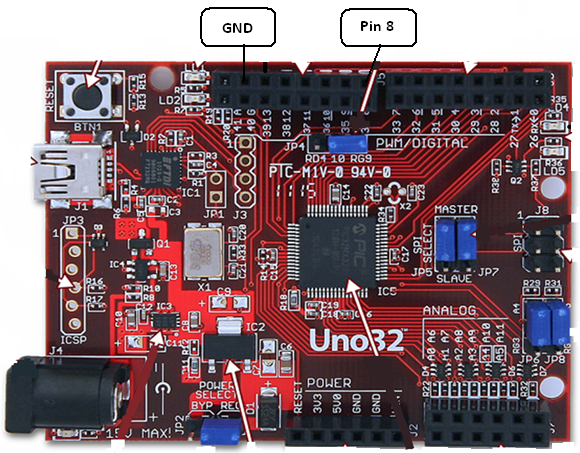
* Chipkit UNO32 board
* 8 ohm small speaker
* 100 ohm resistor
* hook-up wire

**Circuit:**

Connect one terminal of your speaker to digital pin 8 through a 100 ohm resistor. Connect the other terminal to ground.

**Code:**

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The code below uses an extra file, pitches.h. This file contains all the pitch values for typical notes. For example, NOTE\_C4 is middle C. NOTE\_FS4 is F sharp, and so forth. This note table was originally written by Brett Hagman, on whose work the tone() command was based. You may find it useful for whenever you want to make musical notes.

The main sketch is as follows:

*/\*  
  Melody  
   
 Plays a melody   
   
 circuit:  
 \* 8-ohm speaker on digital pin 8  
 \*/*  
 #include "pitches.h"  
  
*// notes in the melody:*  
int melody[] = {  
  NOTE\_C4, NOTE\_G3,NOTE\_G3, NOTE\_A3, NOTE\_G3,0, NOTE\_B3, NOTE\_C4};  
  
*// note durations: 4 = quarter note, 8 = eighth note, etc.:*  
int noteDurations[] = {  
  4, 8, 8, 4,4,4,4,4 };  
  
void **setup**() {  
  *// iterate over the notes of the melody:*  
  for (int thisNote = 0; thisNote < 8; thisNote++) {  
  
    *// to calculate the note duration, take one second*  
    *// divided by the note type.*  
    *//e.g. quarter note = 1000 / 4, eighth note = 1000/8, etc.*  
    int noteDuration = 1000/noteDurations[thisNote];  
    tone(8, melody[thisNote],noteDuration);  
  
    *// to distinguish the notes, set a minimum time between them.*  
    *// the note's duration + 30% seems to work well:*  
    int pauseBetweenNotes = noteDuration \* 1.30;  
    delay(pauseBetweenNotes);  
    *// stop the tone playing:*  
    noTone(8);  
  }  
}  
  
void **loop**() {  
  *// no need to repeat the melody.*  
}

To make the pitches.h file, click on the "new Tab" button in the upper right hand corner of the window. It looks like this:

http://arduino.cc/en/uploads/Tutorial/newTab.png

The paste in the following code:

*/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 \* Public Constants  
 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/*  
  
#define NOTE\_B0  31  
#define NOTE\_C1  33  
#define NOTE\_CS1 35  
#define NOTE\_D1  37  
#define NOTE\_DS1 39  
#define NOTE\_E1  41  
#define NOTE\_F1  44  
#define NOTE\_FS1 46  
#define NOTE\_G1  49  
#define NOTE\_GS1 52  
#define NOTE\_A1  55  
#define NOTE\_AS1 58  
#define NOTE\_B1  62  
#define NOTE\_C2  65  
#define NOTE\_CS2 69  
#define NOTE\_D2  73  
#define NOTE\_DS2 78  
#define NOTE\_E2  82  
#define NOTE\_F2  87  
#define NOTE\_FS2 93  
#define NOTE\_G2  98  
#define NOTE\_GS2 104  
#define NOTE\_A2  110  
#define NOTE\_AS2 117  
#define NOTE\_B2  123  
#define NOTE\_C3  131  
#define NOTE\_CS3 139  
#define NOTE\_D3  147  
#define NOTE\_DS3 156  
#define NOTE\_E3  165  
#define NOTE\_F3  175  
#define NOTE\_FS3 185  
#define NOTE\_G3  196  
#define NOTE\_GS3 208  
#define NOTE\_A3  220  
#define NOTE\_AS3 233  
#define NOTE\_B3  247  
#define NOTE\_C4  262  
#define NOTE\_CS4 277  
#define NOTE\_D4  294  
#define NOTE\_DS4 311  
#define NOTE\_E4  330  
#define NOTE\_F4  349  
#define NOTE\_FS4 370  
#define NOTE\_G4  392  
#define NOTE\_GS4 415  
#define NOTE\_A4  440  
#define NOTE\_AS4 466  
#define NOTE\_B4  494  
#define NOTE\_C5  523  
#define NOTE\_CS5 554  
#define NOTE\_D5  587  
#define NOTE\_DS5 622  
#define NOTE\_E5  659  
#define NOTE\_F5  698  
#define NOTE\_FS5 740  
#define NOTE\_G5  784  
#define NOTE\_GS5 831  
#define NOTE\_A5  880  
#define NOTE\_AS5 932  
#define NOTE\_B5  988  
#define NOTE\_C6  1047  
#define NOTE\_CS6 1109  
#define NOTE\_D6  1175  
#define NOTE\_DS6 1245  
#define NOTE\_E6  1319  
#define NOTE\_F6  1397  
#define NOTE\_FS6 1480  
#define NOTE\_G6  1568  
#define NOTE\_GS6 1661  
#define NOTE\_A6  1760  
#define NOTE\_AS6 1865  
#define NOTE\_B6  1976  
#define NOTE\_C7  2093  
#define NOTE\_CS7 2217  
#define NOTE\_D7  2349  
#define NOTE\_DS7 2489  
#define NOTE\_E7  2637  
#define NOTE\_F7  2794  
#define NOTE\_FS7 2960  
#define NOTE\_G7  3136  
#define NOTE\_GS7 3322  
#define NOTE\_A7  3520  
#define NOTE\_AS7 3729  
#define NOTE\_B7  3951  
#define NOTE\_C8  4186  
#define NOTE\_CS8 4435  
#define NOTE\_D8  4699  
#define NOTE\_DS8 4978