Twinkle Twinkle

Time required: 45 minutes

Please read all the directions carefully before beginning the assignment.

- Comment your code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

Understanding

Demonstrate understanding of:

libraries, functions

Libraries

A library file is a collection of code that you can use from an Arduino sketch. It allows you to easily reuse code. The library file notes.h is placed in the sketch folder.

Requirements

Play Twinkle Twinkle, Little Star from a library file.

Tutorial Assignment

1. Start the Arduino IDE. Save the sketch as **TwinkleTwinkle**.
2. Copy the **notes.h** file attached to the assignment into the **TwinkleTwinkle** sketch folder.
3. Complete and test the program as shown.

```
/**
   @file    TwinkleTwinkle.ino
   @author  William A Loring
   @version V1.0.0
   Revised: 06/07/2017 Created: 12/10/2016
   @Description: Use notes.h to play Twinkle Twinkle Little Star
*/
#include <MeMCore.h> // mBot library
#include "notes.h"   // Library file for playing notes
// Individual "notes" have been #defined in the notes.h tab to make
// playing sounds easier. noteC4, for example, is defined as 262, the
// frequency for middle C. See the tab above^
MeBuzzer buzzer;     // Setup buzzer object

void setup() {
  pinMode(7, INPUT); //Define button pin as input
}

void loop() {
  // Wait until onboard button is pressed
  while (analogRead(7) < 100) { // Loop While Button is not pressed
    playTwinkleTwinkle();       // Call function
  }
}

void playTwinkleTwinkle(){
  playNote(noteC4, QN); // Call playNote function with two parameters, note and duration
  playNote(noteC4, QN);
  playNote(noteG4, QN);
  playNote(noteG4, QN);
  playNote(noteA4, QN);
  playNote(noteA4, QN);
  playNote(noteG4, QN);
  delay(250);           // Quarter rest
  playNote(noteF4, QN);
  playNote(noteF4, QN);
  playNote(noteE4, QN);
  playNote(noteE4, QN);
  playNote(noteD4, QN);
  playNote(noteD4, QN);
  playNote(noteC4, HN);
}

// This custom function takes two parameters, note and duration to make playing songs easier.
// Each of the notes have been #defined in the notes.h file. The notes are broken down by
// octave and sharp (s) / flat (b).
void playNote(int note, int duration){
  buzzer.tone(note, duration);
}
```

Assignment

Start with your tutorial project and add the following.

1. Add a new function call and function name to match the song you chose.
2. Play a small part of a song of your choosing or make up your own song. There is plenty of sheet music available on the web with notes and names of notes to help you figure out a different song.
   Here is a web site to get you started with a known song. https://noobnotes.net

Assignment Submission

- **All students** → Attach finished programs to the assignment in Blackboard.
- **In class assignment submission** → Demonstrate in person.
- **Online submission** → A link to a YouTube video recording showing the assignment placed in the submission area in BlackBoard.