**Proposal and Justification for**

**Tuning fork/ Metronome Project**

**Date:**  October 11, 2016

**Authors:** Brian Dunn

Kyle Johnson

Kam Robertson

Saly Hakkoum

**Proposed work**

In our project we will be using a microcontroller to output a single tone in half steps through four octaves to a speaker or piezo buzzer. The idea of our project seems to be a bit tricky and complicated because the software and hardware will have to be tuned precisely, we are thinking probably using some external potentiometers on analogy inputs. We are also going to be integrating our device to have a button or rotary switch to select the tone and display on a 3-digit display.

**Workplan**

According to the project requirement, our project plan will be the following:

|  |  |  |
| --- | --- | --- |
| **Start date:** 10/11/2016 | **End date:** 11/22/2016 | **Duration:** 7Weeks |

|  |  |  |
| --- | --- | --- |
| **Description** | **Start Date** | **End Date** |
| Parts Identification | 10/11/2016 | 10/21/2016 |
| Prototyping | 10/13/2016 | 10/26/2016 |
| Preliminary Schematic | 10/25/2016 | 10/29/2014 |
| Preliminary Layout | 10/27/2016 | 11/4/2016 |
| Boards Manufacturing | 11/5/2016 | 11/9/2016 |
| Assembly-Test-Debug | 11/10/2016 | 11/30/2016 |
| Demonstration | 11/30/2016 | 12/8/2016 |

# **Project management**

A team of four people will be working on completing this project at the schedule specified above. Our team is divided up into two sub-teams:

Hardware team: Kyle Johnson and Kam Robertson

Software team: Brian Dunn and Saly Hakkoum

However, our efforts will be combined during the progress of this process and especially in the last couple weeks for debugging and testing purposes.

# **Project Costs**

Estimates so far:

From http://www.digikey.com:

LM78L05 (price: $0.63 each, qty 4 required)

--> LM78L05ACMX/NOPBTR-ND

LM386 (price: $0.88 each, qty: 4 required)

--> LM386MX-1/NOPBCT-ND

PIC16F648A (price: $ 1.97 each, qty: 4 required)

--> PIC16F648A-I/P-ND

PIEZO BUZZER

--> pending

Power Supply

--> pending

Programmer:

PICkit3 (price: $67.95 each, unknown quantity (at least 1))

--> LPC1-PROMO-ND