

# Homework 2: Song Composer Report Draft

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# 1 Description

This project utilizes the AVR Butterfly through the terminal to allow a user to enter songs, along with a title and author, and play them back.

This document serves as the first draft of the project report. The submission for the first week only requires the functions in `music.c` to be implemented along with an example for a proof of accuracy.

## 2 Library Functions

The `music.c` file contains the functions required for converting the user inputs to notes.

### 2.1 User Inputs to Notes

Notes comprise of an ASCII character, (A-G, and R) and a duration of the note (0-31). They are converted from user inputted strings to `uint8_t` by left-shifting the integer value mapped to the ASCII character by 5 bits and adding the duration.

Unpacking the notes is possible by right-shifting by 5 bits to retrieve the ASCII character or by bitwise and-ing with 0x1F (0001 1111) to retrieve the duration.

## 3 Code

The C scripts used for the implementation has been attached alongside the report.

### 3.1 `music.h`

Header file that contains all the constants and the declarations for the functions in the program.

### 3.2 `music.c`

Implements the functionality for handling packing and playing songs.