*Project Summary*
*Music Box 2:   Casey Hennessey*
*Tyler Roelle*
*Isaac Sutton*

Requirements:
The system must control lights.
The system should play pre-programmed songs.
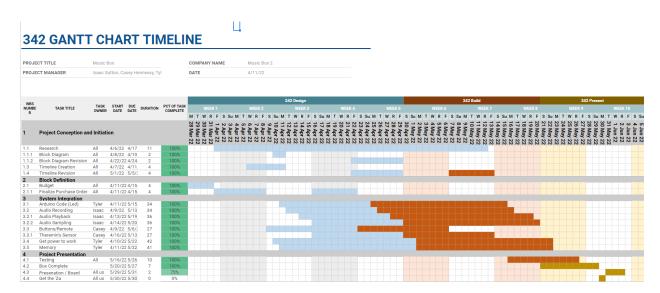The system should be able to playback a microphone recording.
The system must be aesthetically pleasing.
The system must be easy to use.
The lights should respond to the music.
The user can modulate the playback.

The first time we got the playback working via the remote control and had the lights flashing was a moment of high-fives and cheers. It was good quality and we had the speakers and lights all ready to go. This was during the first block checkoff and we had more or less already met the minimum requirements for the project. The next big moment was during week 18 when we met and tested everything together with the final version of the audio playback software. The lights were doing the beat detection and the music was loud and clear. We turned off the room lights and just enjoyed the show for about 10 minutes. The final turning point was right at the start of the Expo. The code was modified in an attempt to get even better audio fidelity, but the modifications broke the recording playback feature. We managed to get the code running again about 15 minutes after the Expo started. In retrospect it was probably for the best because it was hard to hear anyone speak once we started rocking out!

# 342 GANTT CHART TIMELINE

| PROJECT TITLE | Music Box | COMPANY NAME | Music Box 2 |
| PROJECT MANAGER | Isaac Sutton, Casey Hennessy, Tyl | DATE | 4/11/22 |

| WBS NUMBER | TASK TITLE | TASK OWNER | START DATE | DUE DATE | DURATION | PCT OF TASK COMPLETE |
|---|---|---|---|---|---|---|
| 1 | **Project Conception and Initiation** | | | | | |
| 1.1 | Research | All | 4/6/22 | 4/17 | 11 | 100% |
| 1.1.1 | Block Diagram | All | 4/8/22 | 4/10 | 2 | 100% |
| 1.1.2 | Block Diagram Revision | All | 4/22/22 | 4/24 | 2 | 100% |
| 1.3 | Timeline Creation | All | 4/7/22 | 4/11 | 4 | 100% |
| 1.4 | Timeline Revision | All | 5/1/22 | 5/5/. | 4 | 100% |
| 2 | **Block Definition** | | | | | |
| 2.1 | Budget | All | 4/11/22 | 4/15 | 4 | 100% |
| 2.1.1 | Finalize Purchase Order | All | 4/11/22 | 4/15 | 4 | 100% |
| 3 | **System Integration** | | | | | |
| 3.1 | Arduino Code (Led) | Tyler | 4/11/22 | 5/15 | 34 | 100% |
| 3.2 | Audio Recording | Isaac | 4/9/22 | 5/13 | 34 | 100% |
| 3.2.1 | Audio Playback | Isaac | 4/13/22 | 5/19 | 36 | 100% |
| 3.2.2 | Audio Sampling | Isaac | 4/14/22 | 5/20 | 36 | 100% |
| 3.3 | Buttons/Remote | Casey | 4/9/22 | 5/6/. | 27 | 100% |
| 3.3.1 | Theremin's Sensor | Casey | 4/16/22 | 5/13 | 27 | 100% |
| 3.4 | Get power to work | Tyler | 4/10/22 | 5/22 | 42 | 100% |
| 3.5 | Memory | Tyler | 4/11/22 | 5/22 | 41 | 100% |
| 4 | **Project Presentation** | | | | | |
| 4.1 | Testing | All | 5/16/22 | 5/26 | 10 | 100% |
| 4.2 | Box Complete | | 5/20/22 | 5/27 | 7 | 100% |
| 4.3 | Presenation / Board | All us | 5/29/22 | 5/31 | 2 | 75% |
| 4.4 | Get the 'Za | All us | 5/30/22 | 5/30 | 0 | 0% |

Finding an enclosure for the components was a bit of a headache as we had only a nebulous idea of how much space we were going to need. In the end we simply bought a wooden planter and turned it upside down. This allowed us to use screws to mount components like the speakers without concerning ourselves with vibrations shaking the whole thing apart. Doing the Fast Fourier Transform ended up being a bigger hassle than expected. Instead we used the Spectrum Shield for producing the light show. It was a fantastic solution that cut our work down by weeks. The modulation of playback ended up being our biggest hurdle, and we didn't even find software that would work until Week 18. Once we did find software, Isaac had the unfortunate task of creating a playback and recording interface all over again. Had that not been an issue, we would have been well ahead of schedule.