



Abstract

The Play Light is a product that will be used as a teaching tool for piano beginners to help memorize or remember piano scales. Play Light consists mainly of a microcontroller, LEDs, buttons, and a frame to attach to a given keyboard. The user of the Play Light will attach it to their keyboard and be able to press a button on the product that will light up their individual keys which will show them the specific scale that they have selected. The user will then have easy access to the scales that they can't remember when they are trying to learn.

Proposed Solution (cont.)

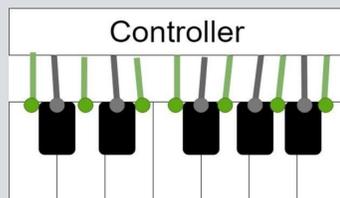
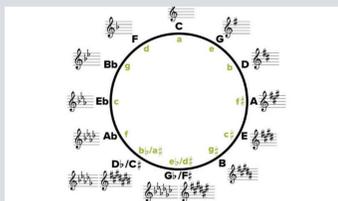
- market initially into childhood or "toy"
- Then, move into middle school and early high school market
- Finally, enter the mature market, once the product is also mature.

Future work

Team 4 aims to deliver a beautiful, simple to use tool, but very effective in learning piano which is supported young talents that have interest in. It would save in time and make learning more enjoyable. The Play Light project will be divided into several stages suitable for all ages to use, especially between the ages of 6 and 12 which receptive ability is developing very fast.

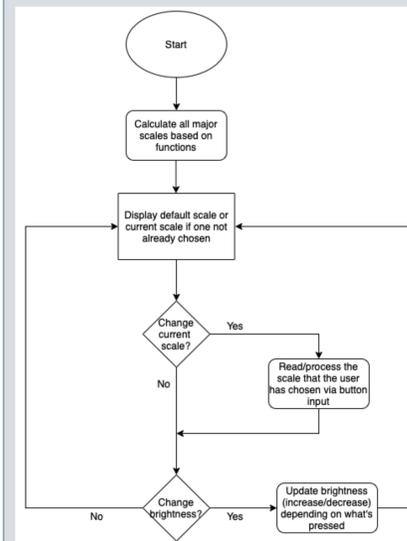
Need For Product

- Playing piano skillfully requires years of practice.
- The main issue is that you need to memorize all musical scales to play masterfully.
- Anyone wanting to play the piano will have a hard time learning because of this fact.
- The global musical instruments market size was valued at \$9,826.5 million in 2020, and is projected to reach \$11,589.8 million by 2030, registering a CAGR of 2.1%.
- Piano tutors & premium apps cost money.

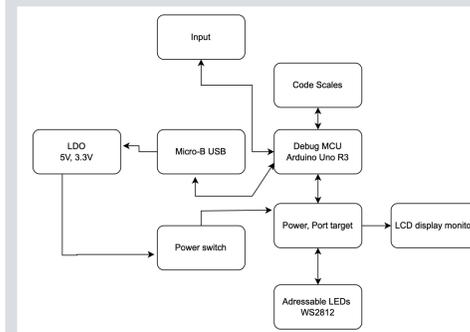


Flow Diagrams

Software



Hardware



Glossary

- **LDO** - Low-dropout regulator. Device that can regulate the output voltage when powered from a high input voltage.
- **MCU** - Microcontroller Unit. A computer that can run user written code to operate on peripherals.
- **Addressable LED** - Addressable Light Emitting Diode. An Addressable LED allows for easier interfacing than a regular LED.
- **LCD** - Liquid Crystal Display. A type of display commonly seen in TVs, phones, etc.
- **CAD** - Computer-aided Design. Software that can design layouts or model 3D objects.

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Proposed Solution

Our device will display any scale on the piano the user wishes to play. Based on the user selection by pressing the button to switch the scale in an array. With the scale chosen by user, the MCU will review and process the code, then execute and display the scale on the piano. The LEDs will light up and show the scale chosen.

Components

- Arduino Uno Rev3
- Addressable LEDs WS2812B
- Push Button
- Resistors (330 Ohms)
- Capacitors (100uF)
- 3D Printed Frame
- Breadboard

