Project Proposal

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Overview

We plan to code a reflex/reaction game where the user is required to press buttons, manipulate switches in a specific order determined by the OLED screen display output. The player will be able to choose from some pre-determined set of pixel drawings called a "track". Different tracks have different difficulties. In each track, pixel drawings will be moving from one end of the screen to the other end at a specific rhythm. There will be a certain "interaction zone" between both ends. Once the pixels attain this zone, the user must react by offering a "hit" (pressing a button, manipulating a switch, or both). Depending on the accuracy of the hit (whether it is done in the interaction zone with the right buttons or not), the player scores points. The player fails a track if they do not gain a certain amount of points after finishing the track. The player will then be offered the choice to play again or to return to the main menu.

Hardware and Software Components

***Screen display**

The screen will be the main output of our game. We will have to create different user interfaces for the different sections of our game (main menu, track menu, in-track interface).

***Buttons/Switches**

During a track, we need to capture the input of the buttons and switches, while also determining the time they were pressed/switched positions. The input will then be compared to the "optimal input" (the one expected by the software for a perfect accuracy). The result of this comparison will then determine the points of the player. Outside of the track, a button will be used as a "select" button and another one as the "back" button.

***Knob**

The knob present on the BoosterPack will allow players to navigate between choices in the menus of the game (main menu, track menu). Turning the knob a certain degree will change the selection choice. The player will then be able to confirm their choice by pressing one of the buttons.

***Tracks**

We will have to pre-code a few tracks and offer a library of them. With switch cases, we can determine which track to display following the selection of a track. Each track will have its own speed at which it'll run and a certain amount of points as a passing threshold.

Possible challenges

We anticipate the following challenges:

- Drawing and making an object move on the OLED display
- Comparing the accuracy of the player and awarding points
- Coding and storing tracks
- Fitting everything in a 128x32 screen
- Implementing a scrolling feature for the track menu (which will probably overflow the size of the screen)