



EE128: BOP BOP UPRISING

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PROJECT DESCRIPTION

Create a rhythm game (similar to Dance Dance Revolution) where a player presses buttons correspondent to a visual map and song.

PROJECT GOALS

01

SONG

Output a song to go with the gameplay.

03

USER INPUT

Obtain user input and compare the timing to the song/map.

02

MAP

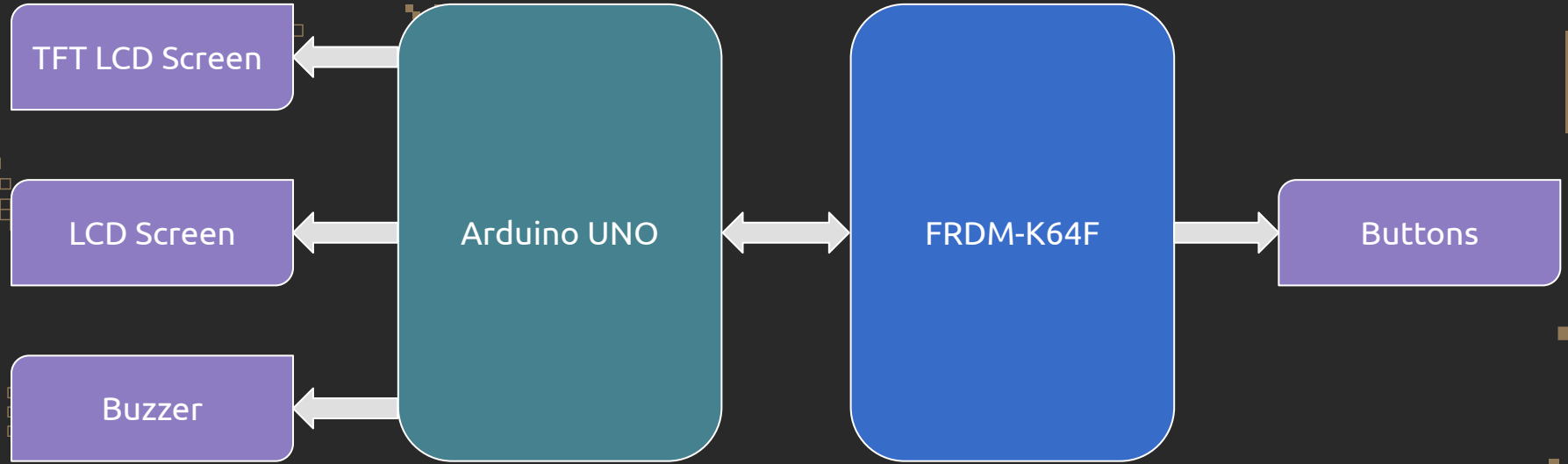
Create a map with varying notes that go along with song.

04

SCORE

Keep track of score and accuracy of user input.

DESIGN



DESIGN: STATE MACHINES

01

SPI

Decodes SPI
messages from
buttons

03

Music System

Play song when
gameplay starts
and stop at end

05

Input Capture

Capture button
presses and
accuracy to map

02

Start Game

Initialize game to
start and display
start screen

04

(Scroll) Map

Display map
(note sequence)
timed to music

06

Endgame

End game and
display end
screen



IMPLEMENTATION: FRDM-K64F



TIMER INTERRUPT/ISR

Timer interrupts were used as triggers when buttons were pressed throughout gameplay



SPI

SPI allows for communication between the K64F and Arduino, specifically button presses

IMPLEMENTATION: ARDUINO UNO



Input Capture

Read pixel color when button is pressed to determine accuracy of button press to map



TFT LCD Screen

Have TFT LCD screen display start screen, map, and end screen



Buzzer

Use a sequence of frequencies to play song through buzzer



LCD Screens

Have LCD screens display note accuracy (judgement) and score





What song is playing?
Butterfly by Smile.dk

Why isn't everything on
just one LCD screen?
*The more elements on one
screen, the more laggy the
gameplay is.*

On a scale of 1-10,
how tedious was
this project?
15

FUTURE SCOPE

01

BUILT-IN LEADERBOARD

02

CASING/BUTTON UPGRADES

03

MORE SONGS/MAPS