PROJECT REPORT

Retro Piano Game

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GROUP 7

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Objective:

The objective of our project is to develop an interactive Arduino-based piano game with three different modes. The project involves hardware and software integration to create an engaging musical experience. The modes include free play, note guessing, and a music player mode where you can listen to nostalgic music and some famous tracks.

Progress:

Hardware Setup:

In the hardware part of our project, there is a menu interface written in C code, communicating with Arduino. Nine buttons and a buzzer, connected to the Arduino's pins via a transistor, constitute the setup. The transistor's function here is to amplify the sound produced by the buzzer.

Circuit Completion:

First, we placed the buttons on the board, with one button for each piano key. Then, we provided the necessary support with resistors and jumper cables. We connected the transistor and buzzer and completed the circuit. After the circuit part was completed, we started the software part of the project.

Software Development:

First, we created the menu interface with C code. While creating this interface, we also utilized the Arduino-Serial library for communication between the menu and Arduino. Later, we wrote the code for our three modes with Arduino. These codes process input from our buttons and output it as sound through the buzzer. We adjusted the frequencies of the sounds on the buzzer by referencing the frequencies of certain keys on the piano. The modes are as follows:

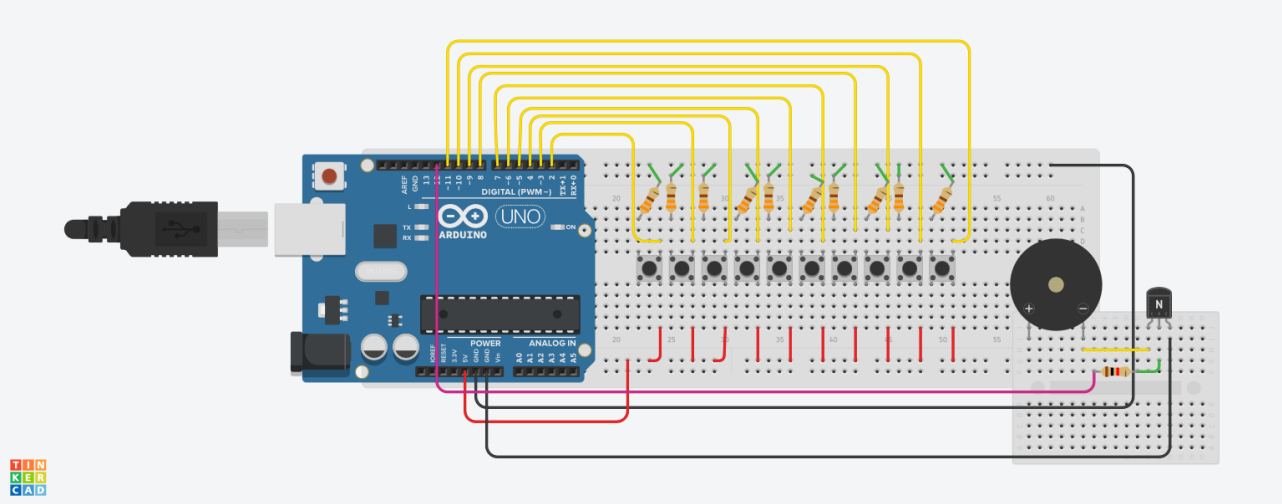
Free Play Mode: It allows users to play the piano keys freely.

Note Guessing Game Mode: It involves users in a game consisting of 10 levels, where at each level, they need to play a random sequence of notes

equal to the level number in succession. If a player makes a mistake, the guessing game starts over from the beginning.

Music Player Mode: This mode allows users to listen to a list of famous songs and theme tunes, consisting of several pieces played through the buzzer.

System-Block Diagram:



Equipment Used:

- Breadboard
- Jumper Cables
- Power Source
- Arduino Uno
- Buttons
- Resistors
- Transistor
- Buzzer

Task Distributions:

- Selim Barut:
  - Took part in circuit design of the project.
  - Took part in the outer design of the project.

- Emre Kaan Şahin:
  - Took part in creating slides.

- Yusuf Eren Nalbant:
  - Took part in writing the code of the project.

- Ayşe Feyza Serbest:
  - Took part in writing the code of the project.

- Mert Canoğlu:
  - Took part in the outer design of the project.
  - Took part in writing the report.
  - Took part in the demo video of the project.

- Mehmet Baha Keskin:
  - Took part in writing the code of the project.
  - Took part in circuit design of the project.
  - Took part in the demo video of the project.

- İrem Akşun:
  - Took part in creating slides.
  - Took part in the presentation of the project.

- Batuhan Yanar:
  - Took part in writing the report.
  - Took part in the demo video of the project.
  - Took part in circuit design of the project.

- Sultan Azize Kuru:
  - Took part in circuit design of the project.

- Yusuf Alperen Çelik
  - Took part in circuit design of the project.
  - Took part in the outer design of the project.