

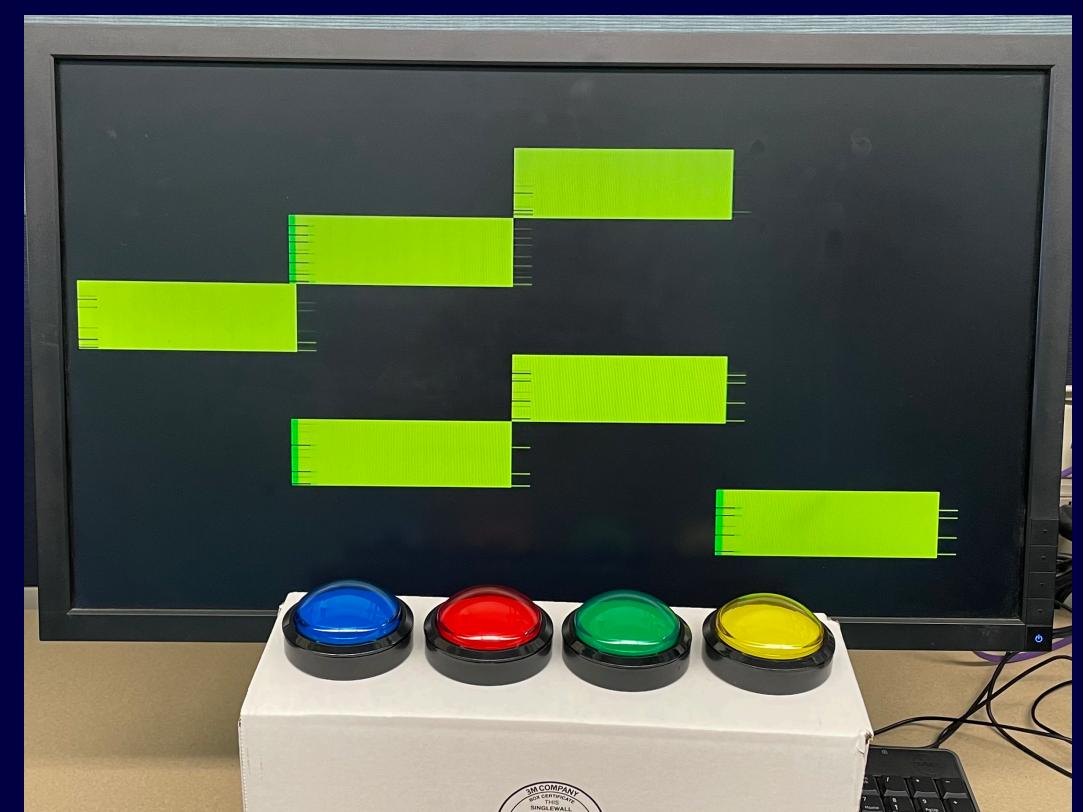
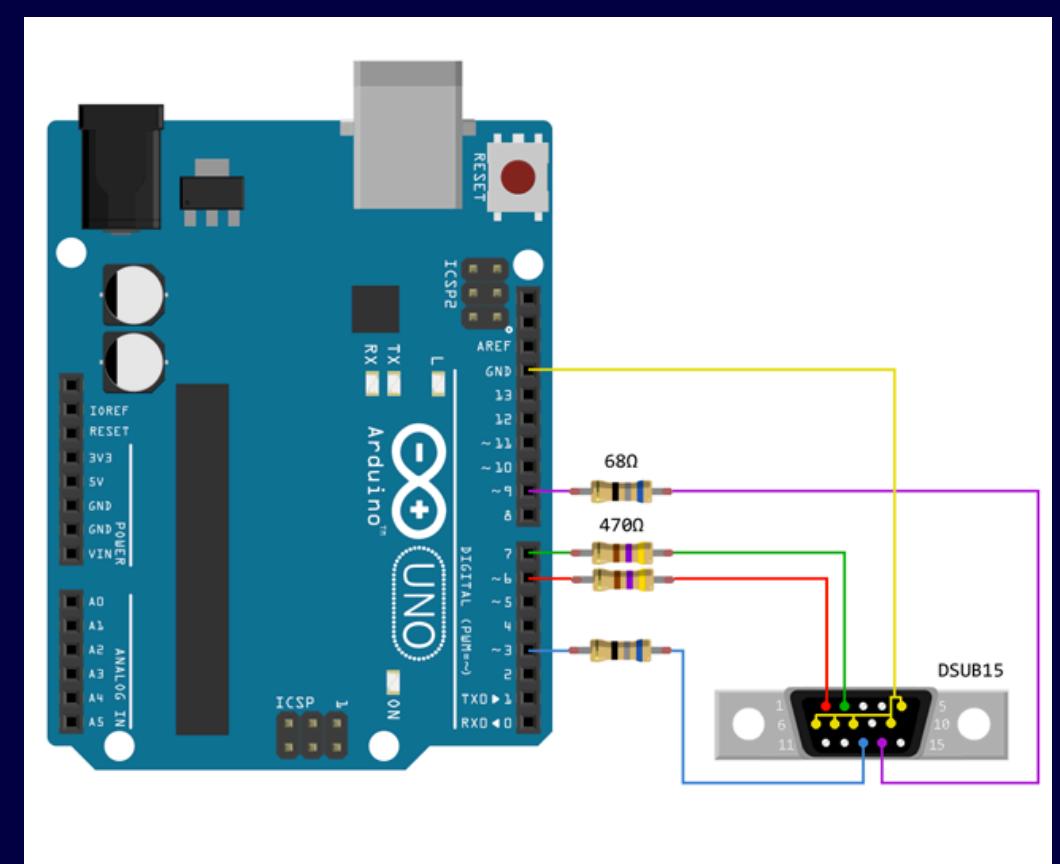
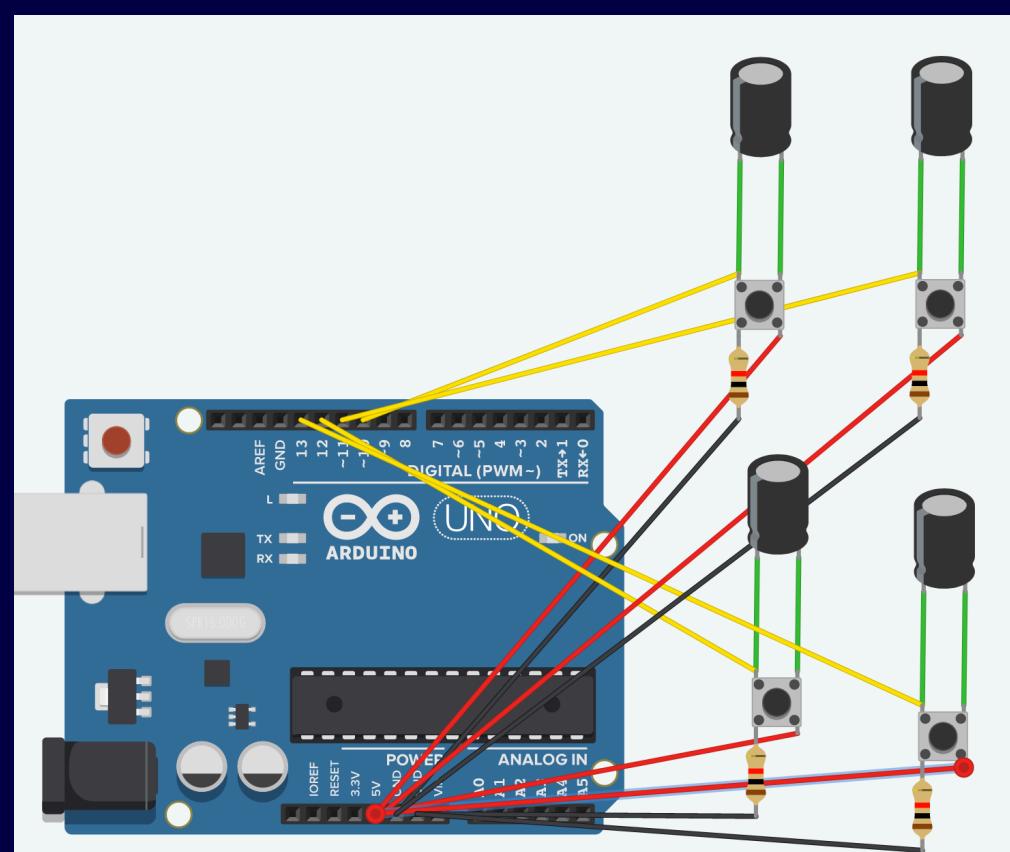
# Piano Tiles

Rachit Gupta - Srinivasan Arumugham - Dayita Ray

**Abstract:** Play the infamous mobile device game “piano tiles” on a computer using real life buttons! The player presses the button corresponding to the correct tile as seen on the screen and it records how fast a player completes a sequence of tiles. If the player clicks on the wrong button, the game will end. The longer the player is able to keep clicking on the correct buttons, the higher their score will be! The score is given by a letter ranking, S being the highest tier and F being the lowest tier

## Hardware Components:

- Arduino Board
- VGA Display
- VGA Breakout Board
- Push Buttons
- Piezo Buzzer
- Jumper Cables
- Capacitors
- Resistors
- Perforated Boards
- Cardboard Box



## Future Improvements:

- Speaker that plays music
- Better graphics
- Adding multiple songs/maps
- Menu and joystick to navigate it
- 2 player version
- Less jitter

**Functionality:** The device interfaces with a VGA display using the VGAx library. The VGAx library uses 2 of the 3 internal clocks on the Arduino to generate interrupts for the horizontal and vertical sync pulses to time the presentation of the pixel data properly. The remaining clock is used to precisely provide the display with the correct color data at each instance. On the software side, we utilized a state machine to efficiently implement a menu and different stages of the game. The button inputs were debounced using a capacitor and a pulldown resistor. In all, the device simulates a relatively sophisticated game like piano tiles and drives a VGA display all with the limited horsepower of an Arduino microcontroller.

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