

Arduino circuits

Analog output

Ardunios

- This week, we'll be using the Arduino to build and program some circuits

BRONZE Challenge:

1. Create a new circuit in TinkerCAD
2. Connect 1 potentiometer to the Arduino (using a breadboard), then program the Arduino to serial print the values from it.
3. Add an analog RGB LED to the circuit. In the program, map the potentiometer values (obtained in step 2), to the Red pin of the RGB LED.

BRONZE Challenge:

4. Add another potentiometer and map its values to the Green pin.
5. Finally, add a third potentiometer and map its values to the Blue pin.

Now you should be able to create any colour of light using the potentiometers

SILVER Challenge:

1. Create a new circuit in TinkerCAD
2. Connect a push button to an Arduino using a breadboard. Write a program to tell when the button is pressed.
3. Add a piezo buzzer to your circuit. Program the buzzer to sound when the button is pressed.

SILVER Challenge:

4. Add 2 more buttons to your circuit.
5. Program each button to play a different tone with the buzzer.

You now have a musical instrument!

GOLD Challenge:

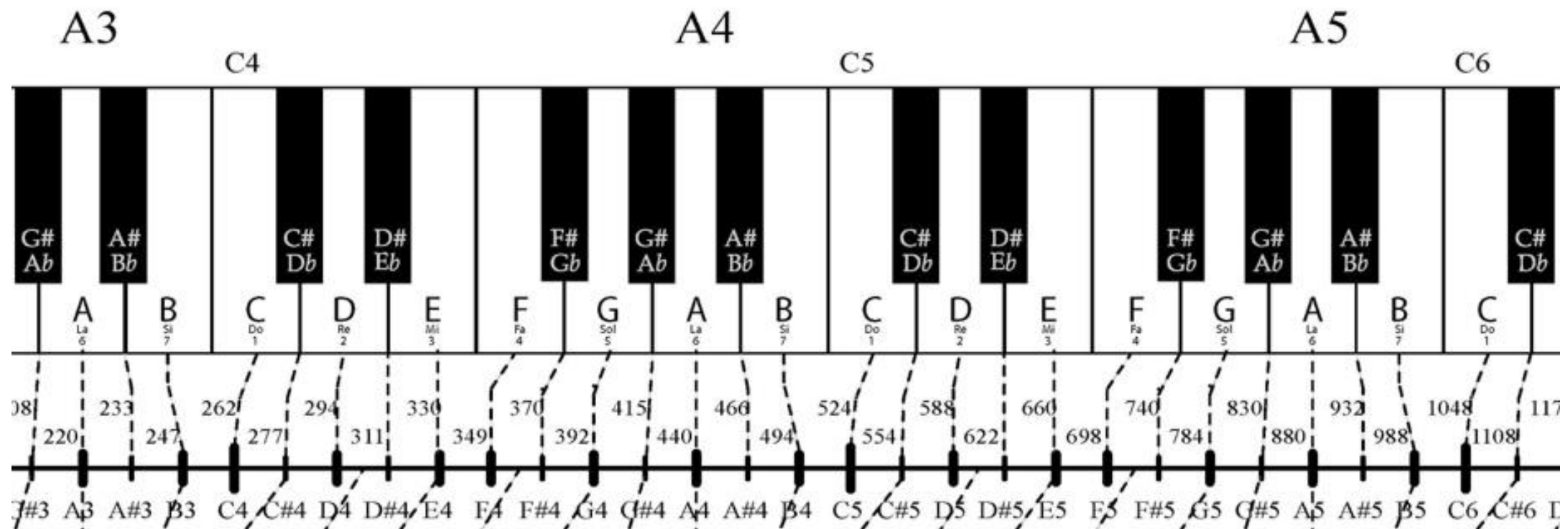
1. Create a new TinkerCAD circuit.
2. Connect a push button to the Arduino. Write a program to detect when the button is pressed.
3. Add a RGB LED to the circuit. Program the button to generate a random number for each colour pin each time it is pressed.

You now have a random colour generator!

Extension Challenge

1. Create a new circuit in TinkerCAD.
2. Connect a piezo buzzer to an Arduino (with a breadboard)
3. Program the Arduino to play a simple short tune with the piezo buzzer – See next slide for the values needed to play notes.

Extension Challenge



Extension Challenge

4. Try and recreate this piece – you'll need 3 piezo buzzers. Extended keyboard mappings are on the next slide, sort of.

[illegible]

Extension Challenge

