Binary Clock and Stopwatch

Objective of the Project:
The objective of this project is to develop a clock that uses binary notation to display time using differently coloured LEDs. The time format of the clock is hh:mm:ss. A stopwatch mode is also implemented which can be operated using a button and it an also support functions like pause, resume and reset.
Arduino Uno microcontroller is used to build the project.

How does Binary notation in clock or stopwatch works:

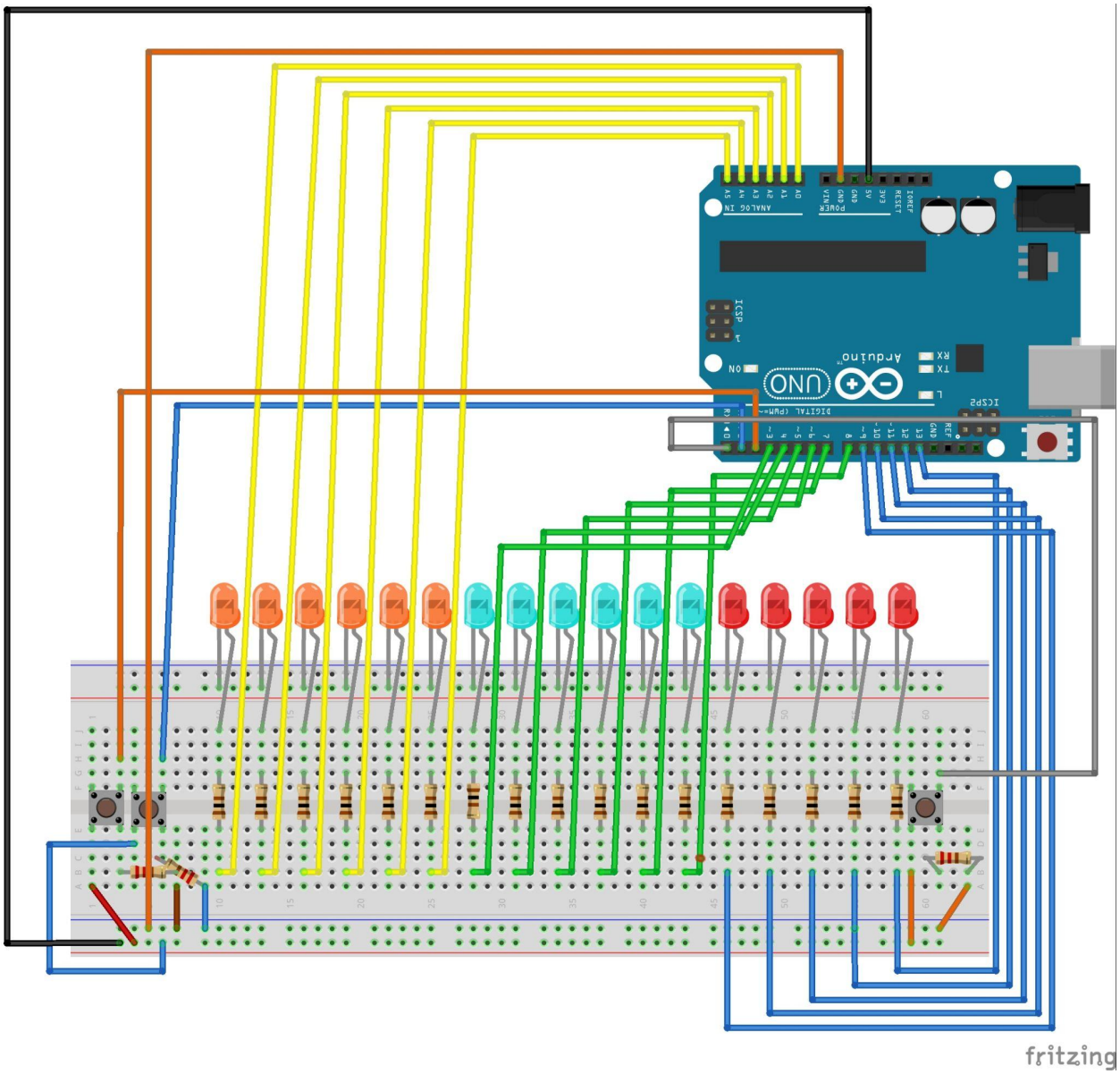
	Hours	Minutes	Second
32	0	1	1
16	0	0	0
8	0	0	1
4	1	0	1
2	1	0	0
1	0	1	0
	6	**33**	**44**

From the above table we can understand that using binary notation we can identify the time here, the time is 6:33:44 this means 6hours 33 minutes and 44 seconds. In the project I wiil be using LEDs to show these binary notation. For example if I am using 6 LEDs for seconds then if the first LED glows then according to the binary reading time is 1 second.

Materials required:

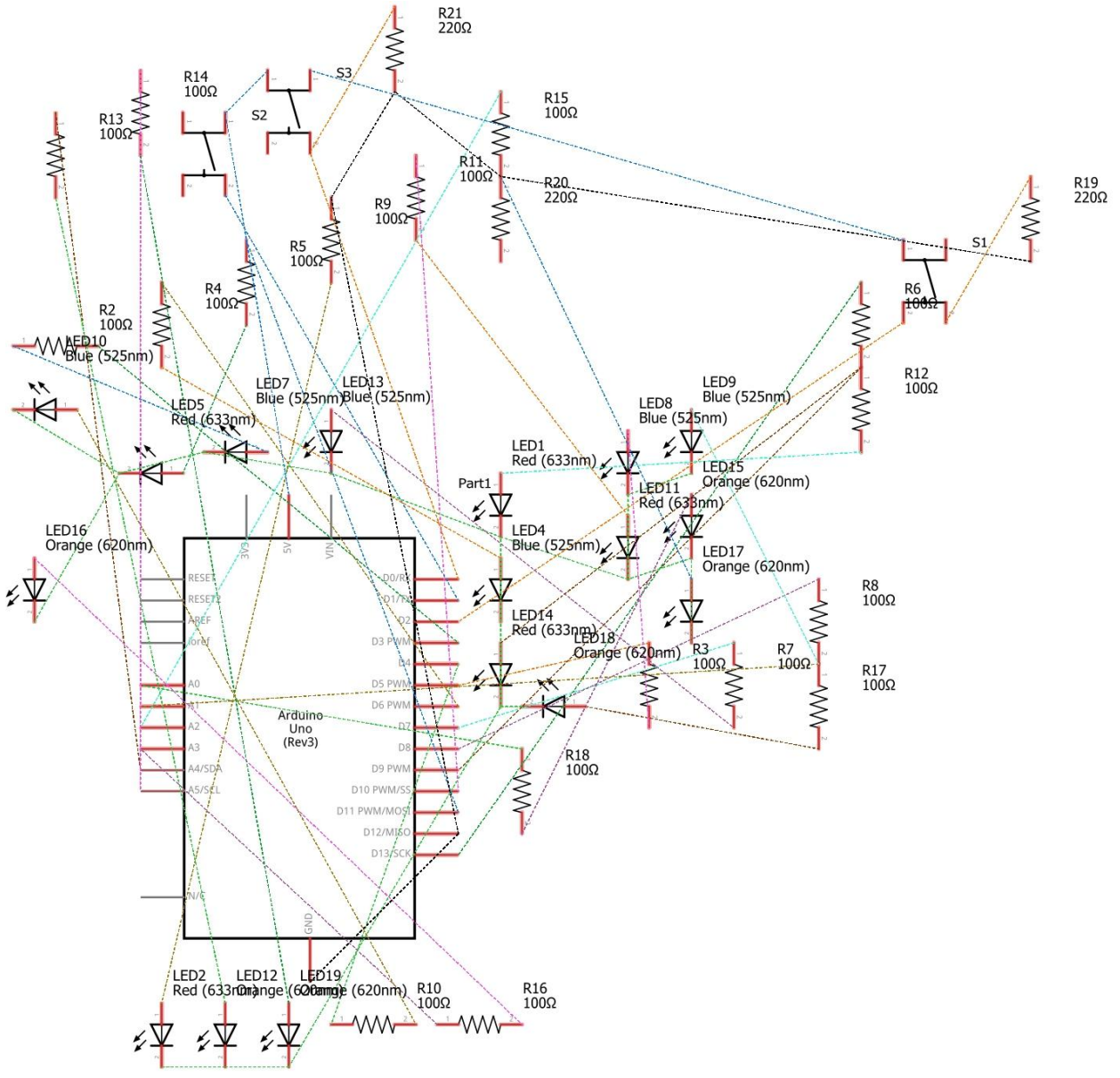
1. Arduino Uno
2. Bread Board
3. LEDs: 5 red LEDs for hours, 6 blue LEDs for minutes, 6 orange LEDs for seconds.
4. Pushbutton
5. Jumping WIres

Circuit Diagram:



This is the circuit diagram of the project where we can understand how we have connected the LEDs with Arduino through registers. And we can see how the pushbutton is connected. We have used 17 LEDs here where red LEDs represents hour, Blue LEDs representing minute and the orange LEDs is for seconds. Each of the LEDs are connected to 100 ohm register. This is circuit diagram is also applicable for stopwatch function. Used three pushbuttons for start, stop, reset and paus the stopwatch.

Pin configuration:



This shematic diagram will help us to understand the pin configuration of this project.