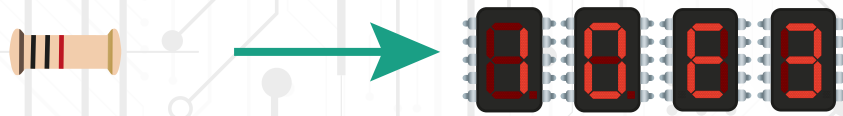




Resistor Color to Value



//Documentation

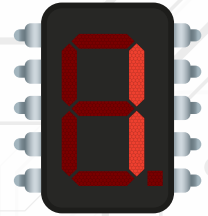
This Project Was Made by:

Yamen AL-Shalet

Mohammad Yaman Dawod

Mohammad AL-Tabbaa

The idea:



The story began this Semester when we started digital electronics course so the first problem faced our friends is how to read Resistor value's by identifying it's color bands then decode the colors to the Corresponding value and determine the resistance in Ohms-(Ω) so we made this easy to use device that takes the the color bands as an input and outputs the Resitance .

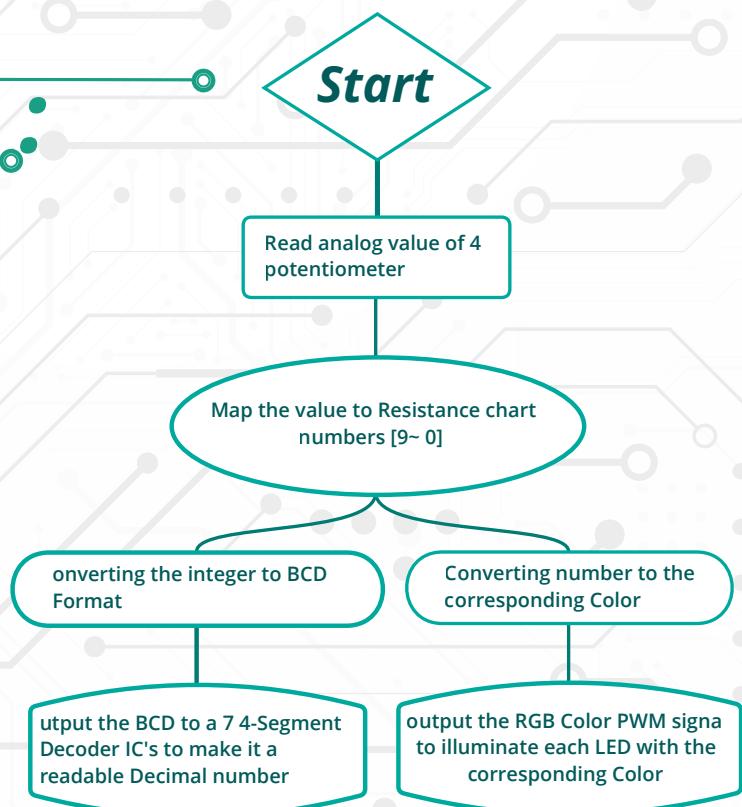


Team Members

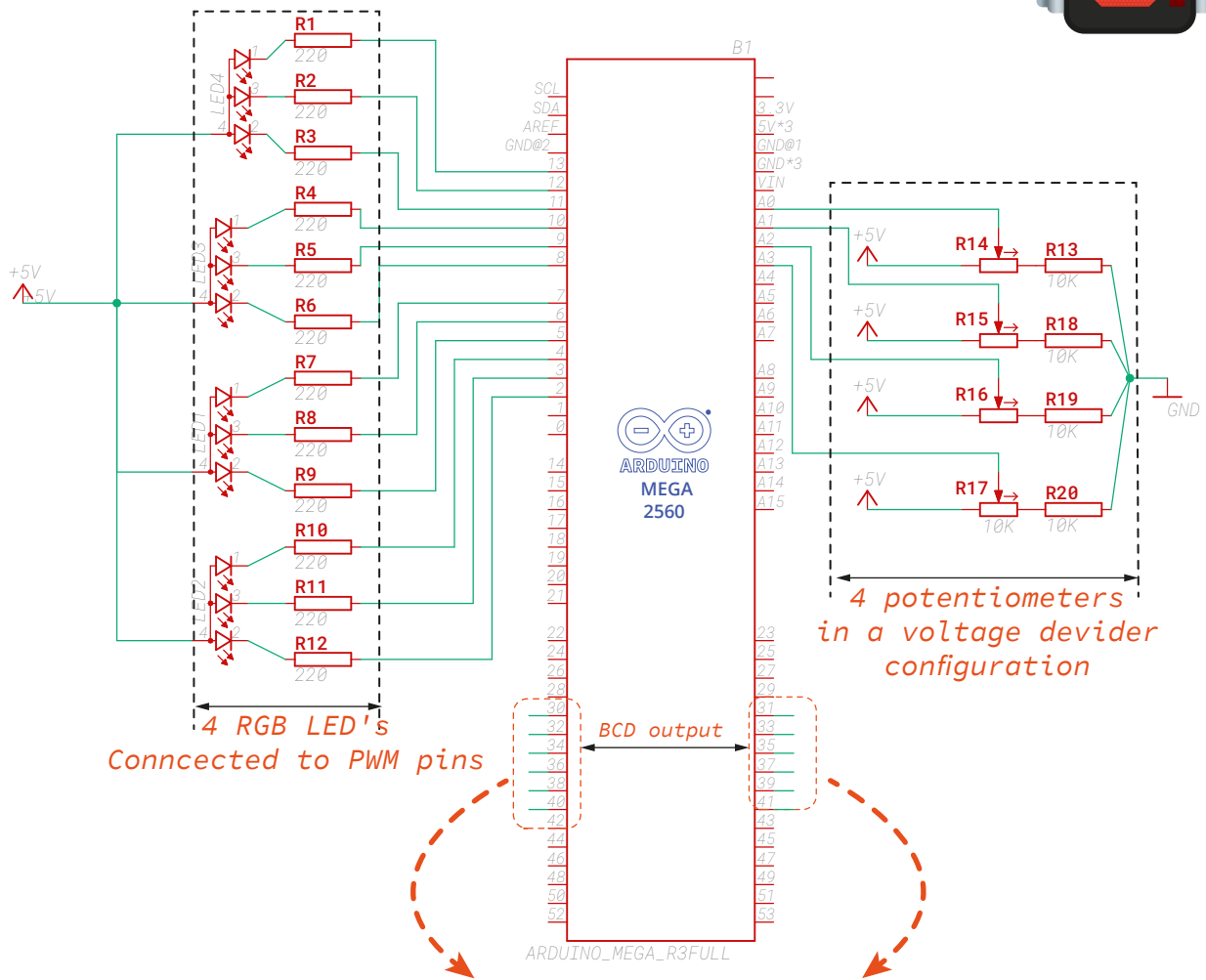
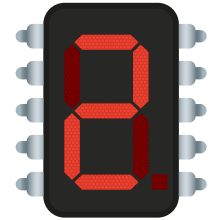
But this humble project can be further expanded to a larger scale by making a package that helps children especially those in middle and high school because they have a lot of potential and a lot of creative idea's!

Flow Chart:

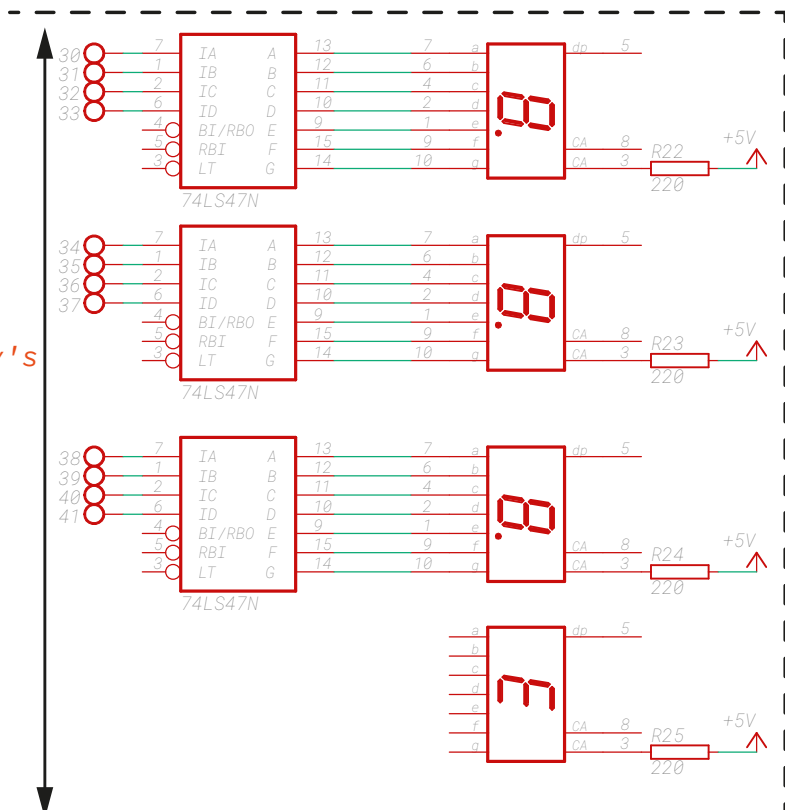
This is the overall flow chart of the project which all it run in a continues loop in the `void loop()` in the project source code.



The Schematic:

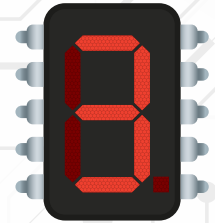


a 4 7Segment Display's
to OutPut the
Calculated Value



The Code:

```
void setup() {pinMode(2,Output);} void loop() {do  
While(isRunning()){analogWrite(2,21);}}
```

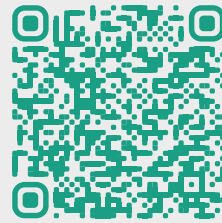


```
void numToColor(int pin ,int color) {  
  int r,g,b;  
  switch(color)  
  {  
  case 0://"black"  
  r=0;g=0;b=0;  
  break;  
  case 1://"brown"  
  r=120;g=30;b=0 break;  
  case 2://"red"  
  r=255;g=0;b=0; break;  
  case 3://"orange"  
  r=255;g=75;b=0; break;  
  case 4://"yellow"  
  r=255;g=150;b=0; break;  
  case 5://"green"  
  r=0;g=255;b=0; break;  
  case 6://"blue"  
  r=0;g=0;b=255; break;  
  case 7://"violet"  
  r=125;g=0;b=200; break;  
  case 8://"gray"  
  r=30;g=30;b=30; break;  
  case 9://"white"  
  r=255;g=255;b=255; break;  
  }
```

each color has a characteristic number which is translated into it's RGB PWM components

```
void WriteColor(int pin,int r,int g,int b){  
  analogWrite(pin,255-r);  
  analogWrite(pin+1,255-g);  
  analogWrite(pin+2,255-b);  
  }
```

the PWM args are passed to illuminate the RGB LED with a specific color



Full Source Code

```
void loop() {
```

```
  pot1=analogRead(A1);  
  pot2=analogRead(A2);  
  pot3=analogRead(A3);  
  pot4=analogRead(A4);
```



Map the analog value from knobs to Decimal digital number which represents the choosed color

```
  num1=map(pot1, 0, 1023, 18, -1);  
  num2=map(pot2, 0, 1023, 18, -1);  
  num3=map(pot3, 0, 1023, 19, -1);  
  num4=map(pot4, 0, 1023, 18, -1);
```

```
  Serial.println((num4*100+-  
  num3*10+num2*1)*10^num1);
```

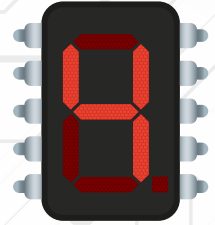
```
  numToColor(led1, num1);  
  numToColor(led2, num2);  
  numToColor(led3, num3);  
  numToColor(led4, num4);  
  numTo7Seg(num1, pin1);  
  numTo7Seg(num2, pin2);  
  numTo7Seg(num3, pin3);  
  numTo7Seg(num4, pin4);
```

```
}
```

```
void numTo7Seg(int n,int pin){  
  int q,w,e,r;  
  switch(n)  
  {  
  case 0:  
  q=0;w=0;e=0;r=0;break;  
  case 1:  
  q=0;w=0;e=0;r=1;break;  
  case 2:  
  q=0;w=0;e=1;r=0;break;  
  case 3:  
  q=0;w=0;e=1;r=1;break;  
  case 4:  
  q=0;w=1;e=0;r=0;break;  
  case 5:  
  q=0;w=1;e=0;r=1;break;  
  case 6:  
  q=0;w=1;e=1;r=0;break;  
  case 7:  
  q=0;w=1;e=1;r=1;break;  
  case 8:  
  q=1;w=0;e=0;r=0;break;  
  case 9:  
  q=1;w=0;e=0;r=1;break;  
  }  
  digitalWrite(pin, q);  
  digitalWrite(pin+1, w);  
  digitalWrite(pin+2, e);  
  digitalWrite(pin+3, r);
```

the final output is procced into a BCD code then send it to the 7-Segment display decoders

The Conclusion



The project has a lot of potential and could be further improved, (make it a game with a score system - add an LCD, make it like an analog Ohmmeter.....etc) but the time was short so we made it as fast as possible

Finally special thanks to Mr. Ayman Bakleh and Mr. Mahmoud Mawed who taught this Arduino Course and helped us troubleshoot the problems and motivated us to do this project

Farewell everyone!