

William Poole

Pascal Francis-Mezger

ECE 177

27 January 27, 2021

### **LAB1 Prelab**

1.

The circuit needs 20mA total to flow through the resistor and LED, Best way to do this would be on resistor and one led in a series circuit. Now, we know that the voltage supplied is 3.3v and forward voltage on the led is 2.1 volts, as well as the maximum current as 20mA. So the resistor has the remaining voltage left of  $(3.3v - 2.1v) = 1.2v$  Now that we know voltage across the resistor, the resistance can be calculated. The equation is  $\text{Volts} = \text{Current} * \text{resistance}$  so,  $1.2v = 20mA * R$ .  $1.2v / 20mA = R = 60ohms$ . A larger Resistor can be used though, the LED will dim or not even light up.

2.

Breadboards are used for quickly prototyping circuitry due to the openness of the board. Wires can be plugged into all holes on the board to allow for many shapes and sizes of circuits. It also allows connections between multiple devices like our Nucleo boards from ECE 101.

3.

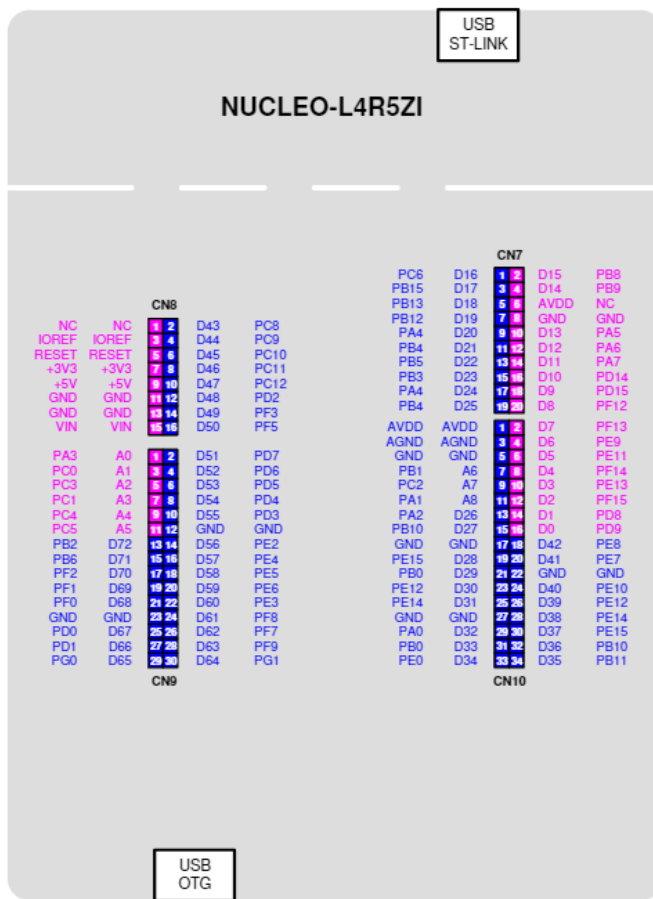
LEDs will either have a flat side on the plastic housing to denote the cathode leg. AS well as the fact that the cathode is cut short to also help differentiate it from the anode. Anode should be on the side of higher voltage potential for it to operate correctly.

4.

IDE's contain basic building blocks for programming, like a code editor and some other helpful tools. Some contain more like a compiler and other more unique and advance tools. So it comes in one package to allow easier entry into programming, though it still can be used to allow for higher programming later down the road.

5.

Figure 15. NUCLEO-L4R5ZI



■ Arduino subset of Zio – A0 to A5 and D0 to D15  
■ Zio extension – A6 to A8 and D16 to D72

10	D3	TIMER_A_PWM3	PE13
12	D2	I/O	PF15
14	D1	USART_A_TX	PD8

D2 is connected to pin PF15