## Part 1

1. The orientation of the LED in the circuit matters significantly as otherwise the LED will blow out.

2. Without a resistor in series with the LED the current running through the LED will be too high and it will blow out.

3. An increase in resistance causes the LED to dim, and a decrease in the resistance increases the brightness of the LED

4. The order of the resistor and the LED does not change the results.

5. Followed as indicated

6. There are two states, Low which indicates low voltage and the bulb is essentially off, and HIGH, in which the LED is illuminated.

### Part 2

1. The following modified code was used:

int led = 7;

void setup() {

// initialize the digital pin as an output.

pinMode(led, OUTPUT);

Serial.begin(9600);

Serial.println("Enter a 1 to turn on the LED.");

}

void loop() {

if(Serial.available())

{

char ch = Serial.read();

if (ch=='1')

{

digitalWrite(led, HIGH); // turn the LED on (HIGH is the voltage level)

Serial.print("Turned on LED\n");

}

if (ch=='0')

{

digitalWrite(led, LOW); // turn the LED off by making the voltage LOW

Serial.print("Turned off LED\n");

}

}

}

### Part 3

1. digitalRead() interprets the signal given by the button in the circuit. In this case, that is to indicate the that input is connected to ground; completing the circuit.

2. An if() function is a conditional statement that executes a subset of code given that the conditions in if() are met. In this case, the if function is used to execute code that turns the led on or off based on the button pushed.