

### **Assignment 3**

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### **Components Used:**

Arduino UNO x1

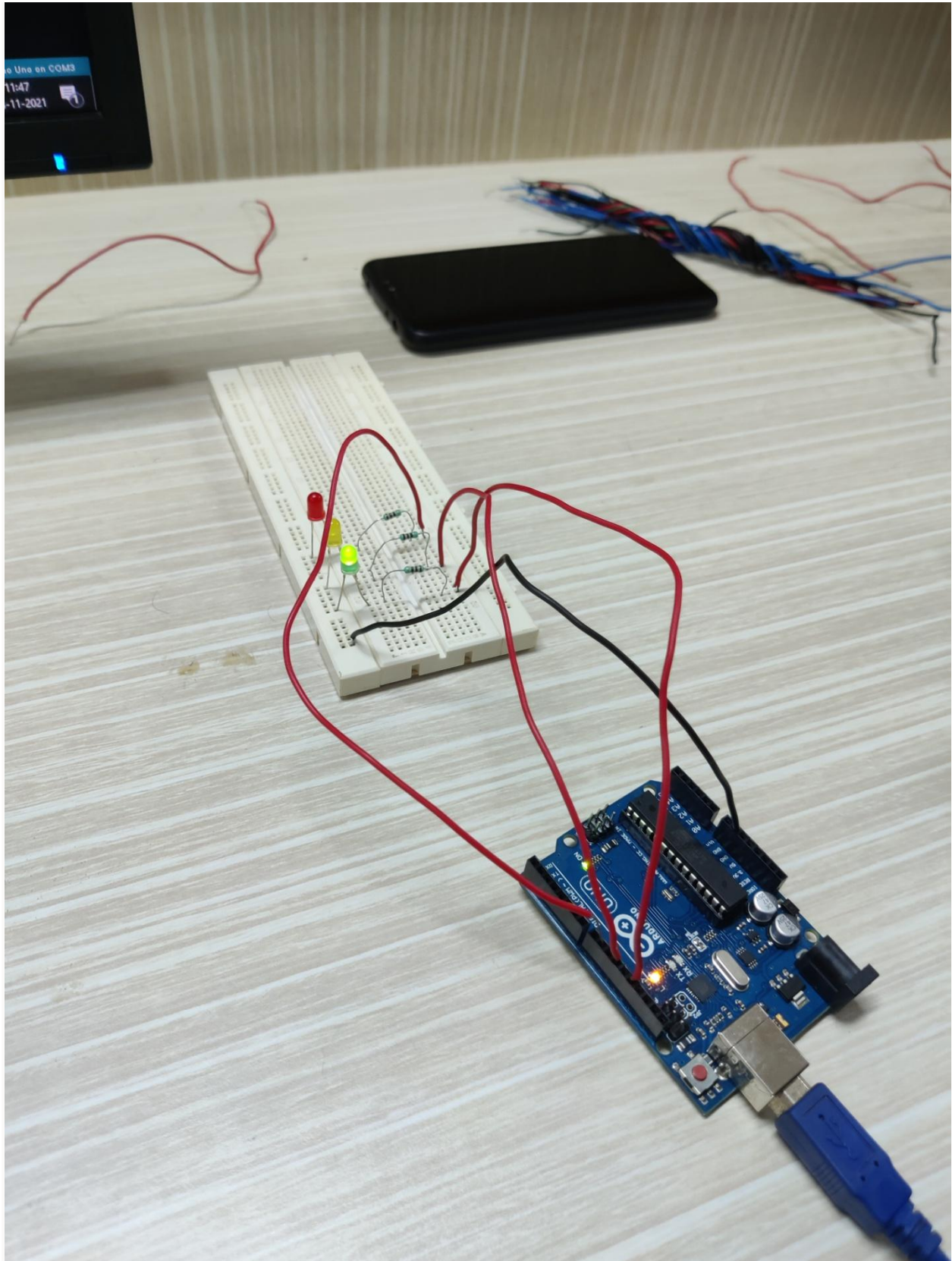
Bread Board x1

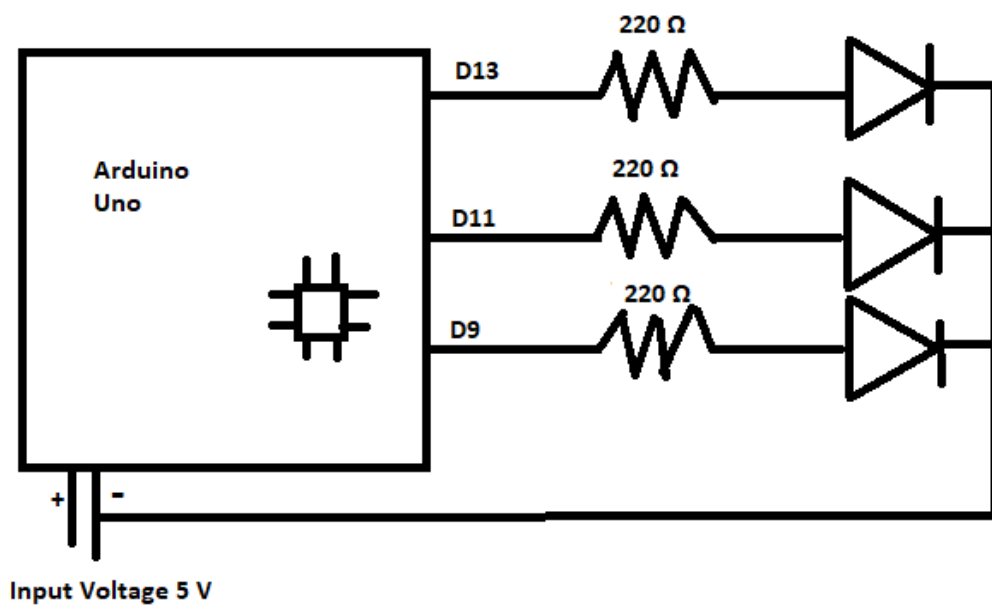
LED Lights x3

Resistors x3

Wires x4

## Circuit:





**Task 1:** Replace all delay times and pin numbers with variables in the previous first task and demonstrate.

**Aim:** To Replace all delay times and pin numbers with variables in the previous first task and demonstrate.

**Challenge 1a** –blink with a 200ms second interval.

```
int red = 9;

int yellow = 11;

int green = 13;

void setup() {

    pinMode(red, OUTPUT);
    pinMode(yellow, OUTPUT);
    pinMode(green, OUTPUT);
}

void loop() {
    digitalWrite(red, HIGH);
    digitalWrite(yellow, HIGH);
    digitalWrite(green, HIGH);
    delay(200);
    digitalWrite(red, LOW);
    digitalWrite(yellow, LOW);
    digitalWrite(green, LOW);
    delay(200);
}
```

### **Challenge 1b** –blink to mimic a heartbeat

```
int red = 9;

int yellow = 11;

int green = 13;

void setup() {

  pinMode(red, OUTPUT);

  pinMode(yellow, OUTPUT);

  pinMode(green, OUTPUT);

}

void loop() {

  digitalWrite(red, HIGH);

  digitalWrite(yellow, HIGH);

  digitalWrite(green, HIGH);

  delay(100);

  digitalWrite(red, LOW);

  digitalWrite(yellow, LOW);

  digitalWrite(green, LOW);

  delay(100);

  digitalWrite(red, HIGH);

  digitalWrite(yellow, HIGH);

  digitalWrite(green, HIGH);

  delay(100);

  digitalWrite(red, LOW);
```

```
digitalWrite(yellow, LOW);  
  
digitalWrite(green, LOW);  
  
delay(800);  
  
}
```

**Challenge 1c** –find the fastest blink that the human eye can still detect.

The Fastest Blink That A Human Eye Can Still Detect Is 12ms

```
int red = 9;  
int yellow = 11;  
int green = 13;  
void setup() {  
  pinMode(red, OUTPUT);  
  pinMode(yellow, OUTPUT);  
  pinMode(green, OUTPUT);  
}  
void loop() {  
  digitalWrite(red, HIGH);  
  digitalWrite(yellow, HIGH);  
  digitalWrite(green, HIGH);  
  delay(12);  
  digitalWrite(red, LOW);  
  digitalWrite(yellow, LOW);  
  digitalWrite(green, LOW);  
  delay(12);  
}
```

**Result:**

The Output For Given Tasks Were Obtained Successfully.

**Task 2:** Create a program that resets the delayTime to 2000 once it has reached 0

**Aim:**

To Create a program that resets the delayTime to 2000 once it has reached 0

```
int delayVariable = 0;

void setup(){
    pinMode(13, OUTPUT);
}

void loop(){
    digitalWrite(13, HIGH);
    delay(delayVariable);
    digitalWrite(13, LOW);
    delay(delayVariable);
    delayVariable+=10;
    if(delayVariable==2000){
        delayVariable=0;
    }
}
```

**Result:**

The Output For Given Task Was Obtained Successfully.

**Task 3:** : Modify your traffic light code so that each time a new LED is illuminated the console displays the status of the stoplight

Advanced Green

Green Yellow

Red

Advanced Green

...

**Aim:**

To Modify your traffic light code so that each time a new LED is illuminated the console displays the status of the stoplight

```
void setup() {  
  pinMode(9, OUTPUT); //RED  
  pinMode(11, OUTPUT); //YELLOW  
  pinMode(13, OUTPUT); //GREEN  
  Serial.begin(9600);  
}  
  
void loop() {  
  Serial.print("\nRed");  
  digitalWrite(9, HIGH);  
  digitalWrite(11, LOW);  
  digitalWrite(13, LOW);  
  delay(5000);  
}
```



```
Serial.print("\nYellow");  
digitalWrite(9, LOW);  
digitalWrite(11, HIGH);  
digitalWrite(13, LOW);  
delay(2000);
```

```
Serial.print("\nAdvanced Green");  
digitalWrite(9, LOW);  
digitalWrite(11, LOW);  
digitalWrite(13, HIGH);  
delay(500);  
digitalWrite(9, LOW);  
digitalWrite(11, LOW);  
digitalWrite(13, LOW);  
delay(500);
```

```
digitalWrite(9, LOW);  
digitalWrite(11, LOW);  
digitalWrite(13, HIGH);  
delay(500);  
digitalWrite(9, LOW);  
digitalWrite(11, LOW);  
digitalWrite(13, LOW);
```

```
delay(500);

digitalWrite(9, LOW);
digitalWrite(11, LOW);
digitalWrite(13, HIGH);
delay(500);
digitalWrite(9, LOW);
digitalWrite(11, LOW);
digitalWrite(13, LOW);
delay(500);

Serial.print("\nGreen");
digitalWrite(9, LOW);
digitalWrite(11, LOW);
digitalWrite(13, HIGH);
delay(5000);
}
```

**Result:**

The Output For Given Task Was Obtained Successfully.

**Task 4:** Create a program that illuminates the green LED if the counter is less than 100, illuminates the yellow LED if the counter is between 101 and 200 and illuminates the red LED if the counter is greater than 200.

**Aim:**

To Create a program that illuminates the green LED if the counter is less than 100, illuminates the yellow LED if the counter is between 101 and 200 and illuminates the red LED if the counter is greater than 200.

```
int count = 0;

void setup() {
  pinMode(9, OUTPUT); //RED
  pinMode(11, OUTPUT); //YELLOW
  pinMode(13, OUTPUT); //GREEN
}

void loop() {
  if (count < 101) {
    digitalWrite(9, LOW);
    digitalWrite(11, LOW);
    digitalWrite(13, HIGH);
    delay(10);
  } else if (count < 201) {
    digitalWrite(9, LOW);
    digitalWrite(11, HIGH);
```

```
    digitalWrite(13, LOW);  
    delay(10);  
} else if (count < 301) {  
    digitalWrite(9, HIGH);  
    digitalWrite(11, LOW);  
    digitalWrite(13, LOW);  
    delay(10);  
} else {  
    count = -1;  
}  
count++;  
}
```

**Result:**

The Output For Given Task Was Obtained Successfully.