

Practical No. 1

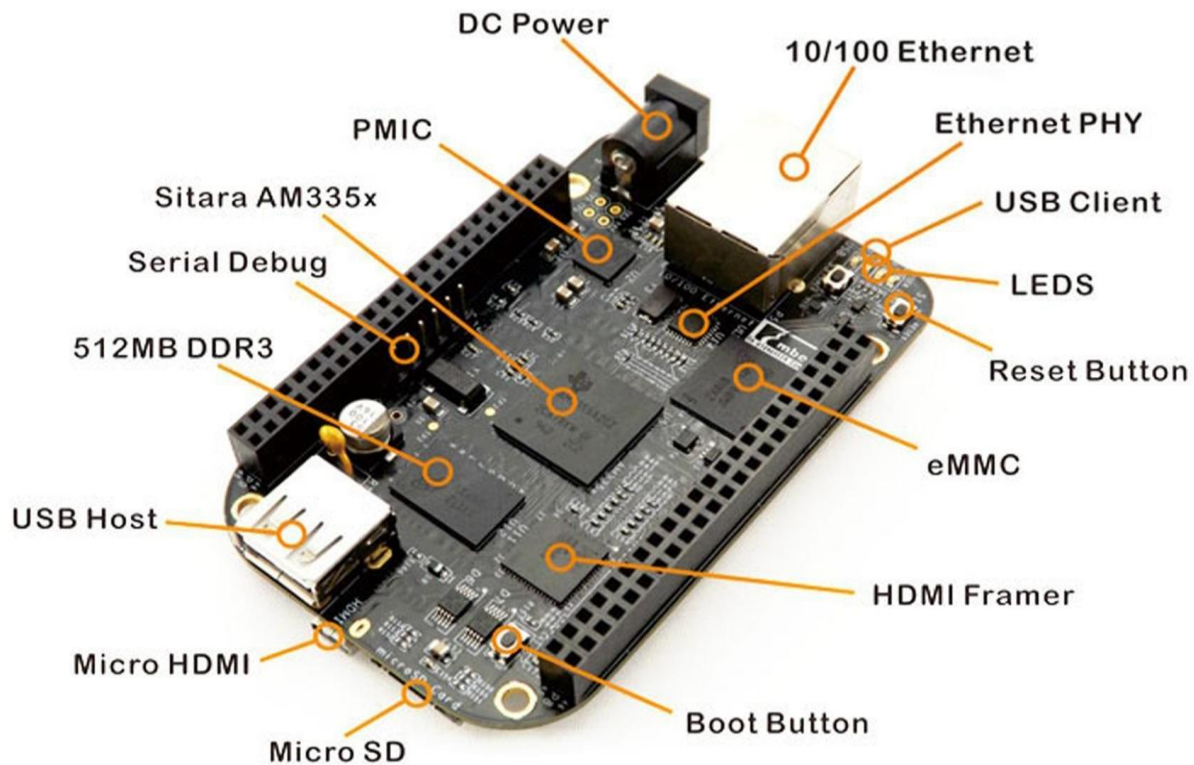
Name:Waghmare Tejas S Class:

S.E. (AI&DS)

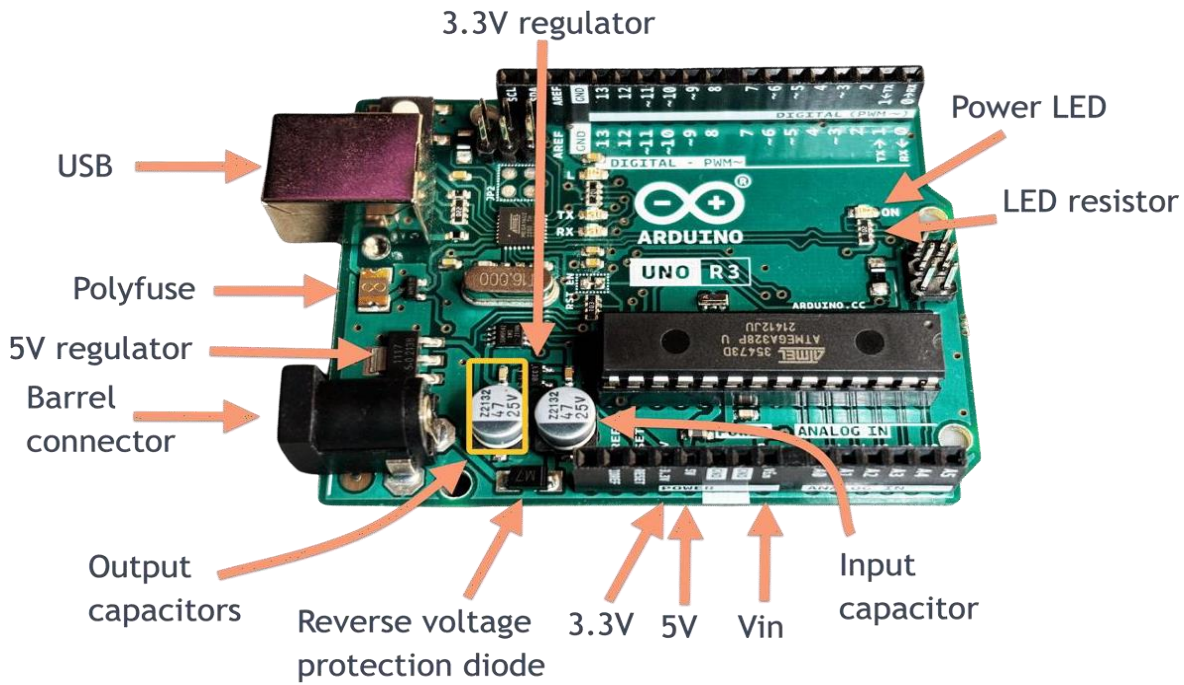
Roll No: 24

Title: Study of Raspberry-Pi/ Beagle board/ Arduino and other microcontroller (History & Elevation)

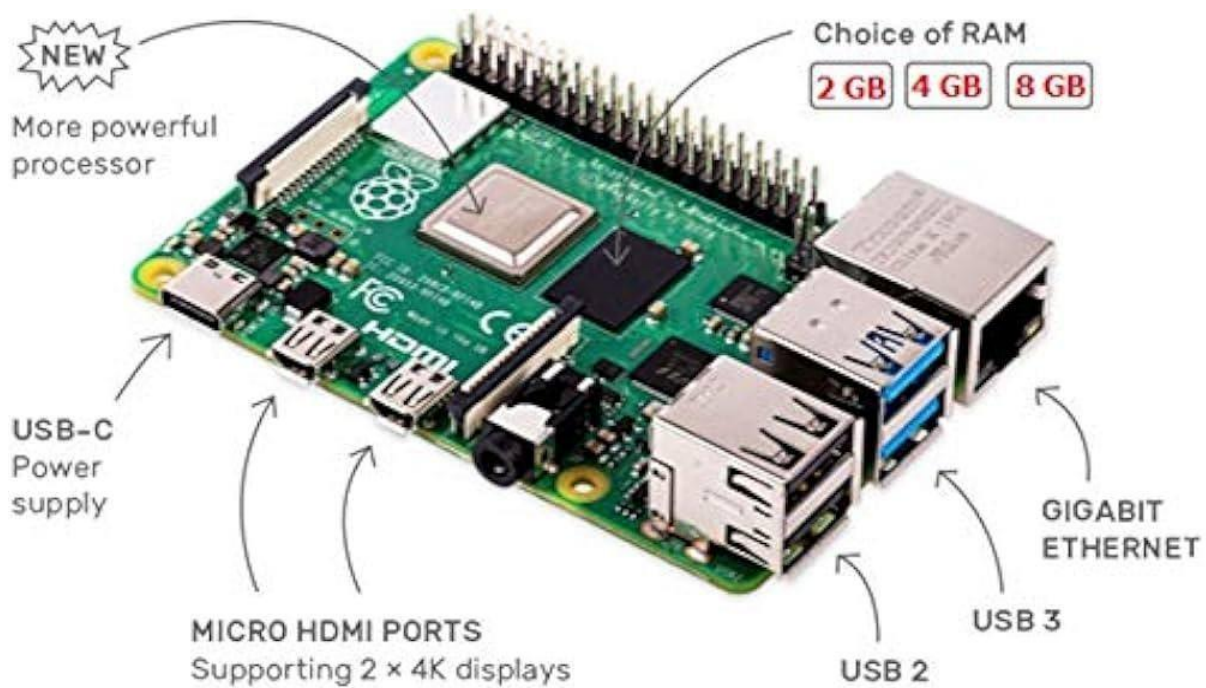
Beagle board



Arduino Uno



Raspberry-Pi



Practical No. 5

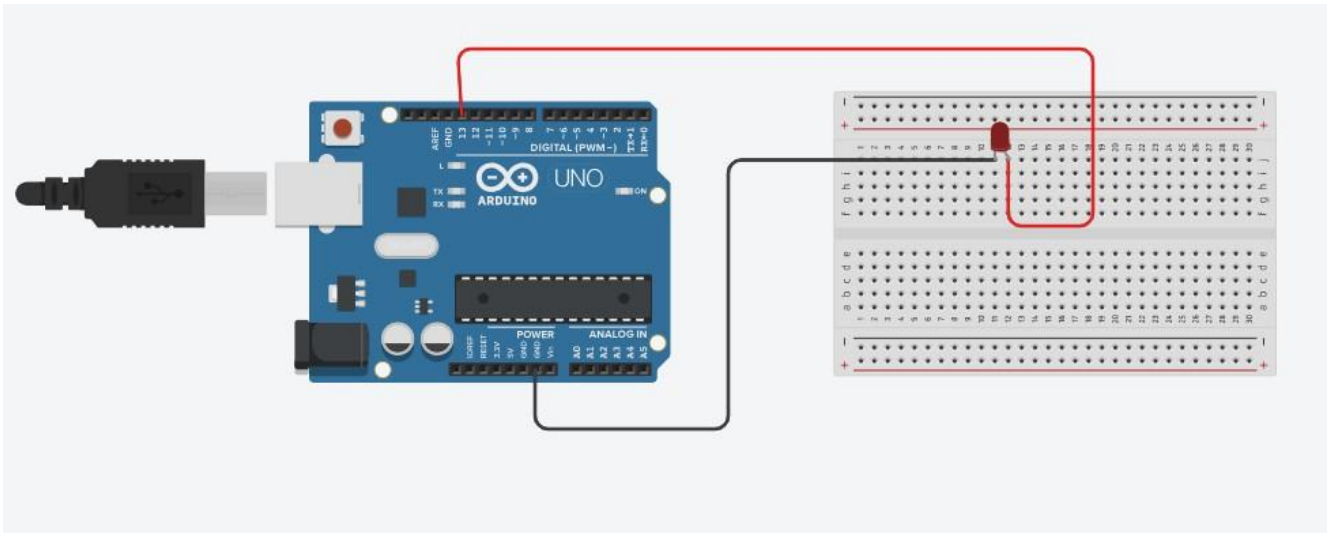
Name: Waghmare Tejas S Class:
S.E. (AI&DS)
Roll No: 24

Title: Write a program using Arduino to control LED (One or more ON/OFF). Or Blinking

CODE:

```
void setup() {  
  pinMode(LED_BUILTIN, OUTPUT);  
}  
void loop() {  
  digitalWrite(LED_BUILTIN, HIGH);  
  delay(1000);  
  digitalWrite(LED_BUILTIN, LOW);  
  delay(1000);  
}
```

OUTPUT :



Practical No. 6

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: 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

CODE-

```
const int redLED = 8;
const int yellowLED = 9;
const int greenLED = 10;

int counter = 0;

void setup() {
  pinMode(redLED, OUTPUT);
  pinMode(yellowLED, OUTPUT);
  pinMode(greenLED, OUTPUT);

  Serial.begin(9600);
}

void loop() {
  counter++;

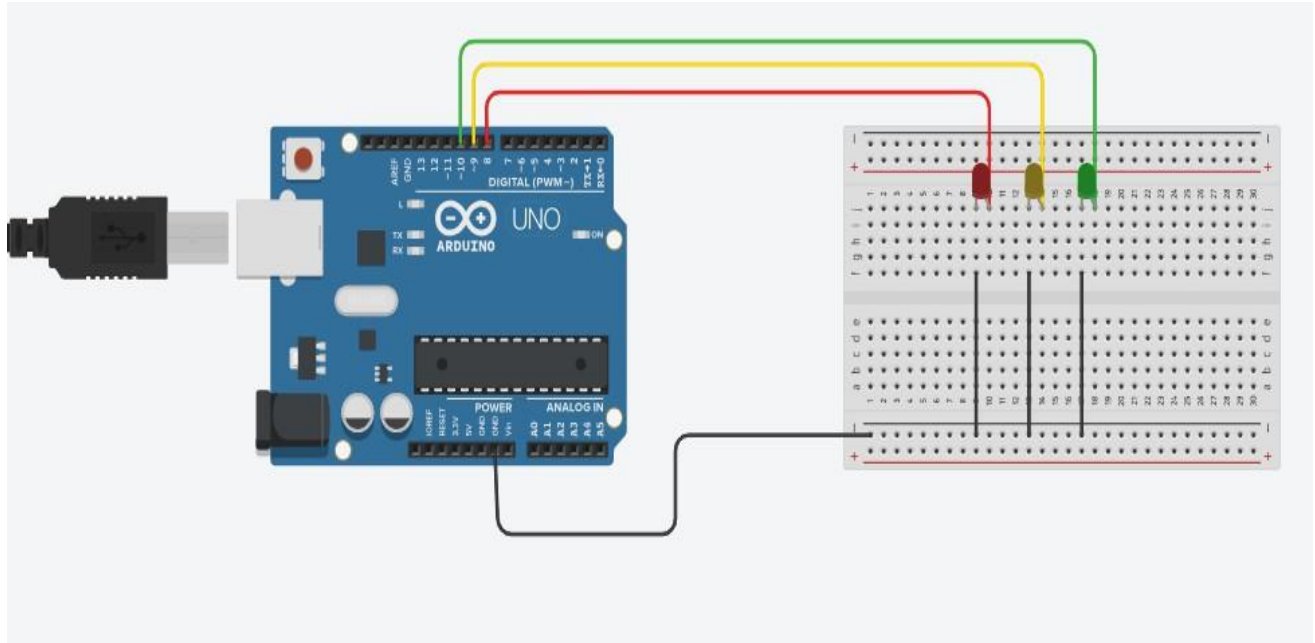
  Serial.print("Counter: ");
  Serial.println(counter);

  if (counter <= 100) {
    digitalWrite(greenLED, HIGH);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, LOW);
  }
  else if (counter > 100 && counter <= 200) {
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, HIGH);
    digitalWrite(redLED, LOW);
  }
  else {
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, HIGH);
  }

  delay(500);
}
```

```
if (counter > 250) {  
  counter = 0;  
}  
}
```

OUTPUT:



Practical No. 7

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: Create a program so that when the user enters 'b' the green light blinks, 'g' the green light is illuminated 'y' the yellow light is illuminated and 'r' the red light is illuminated.

CODE:

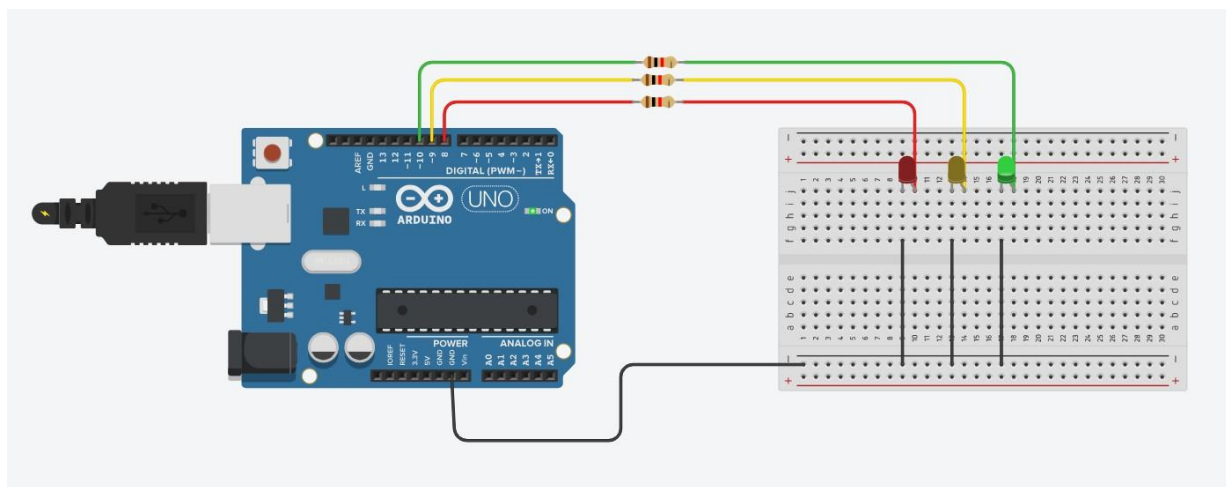
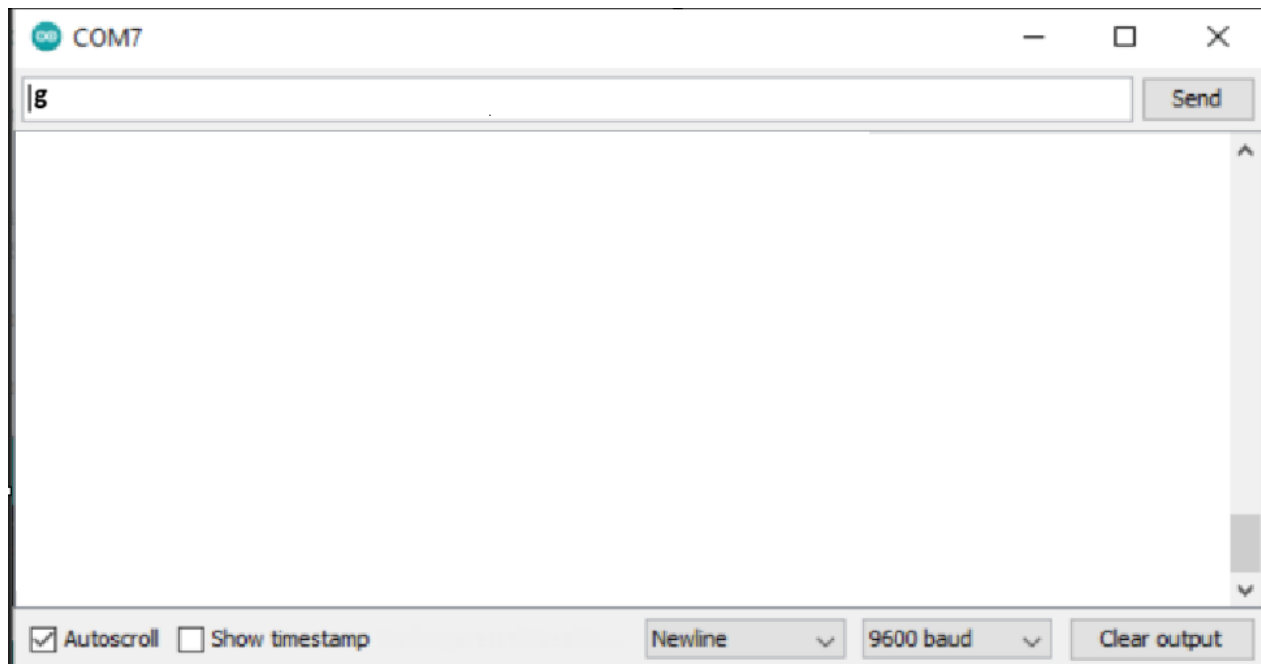
```
const int greenLED = 2;
const int yellowLED = 3;
const int redLED = 4;

void setup() {
  pinMode(greenLED, OUTPUT);
  pinMode(yellowLED, OUTPUT);
  pinMode(redLED, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  if (Serial.available() > 0) {
    char command = Serial.read();
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, LOW);

    if (command == 'g') {
      digitalWrite(greenLED, HIGH);
      delay(5000);
    } else if (command == 'y') {
      digitalWrite(yellowLED, HIGH);
      delay(5000);
    } else if (command == 'r') {
      digitalWrite(redLED, HIGH);
      delay(5000);
    }
  }
}
```

OUTPUT:



Practical No. 8

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

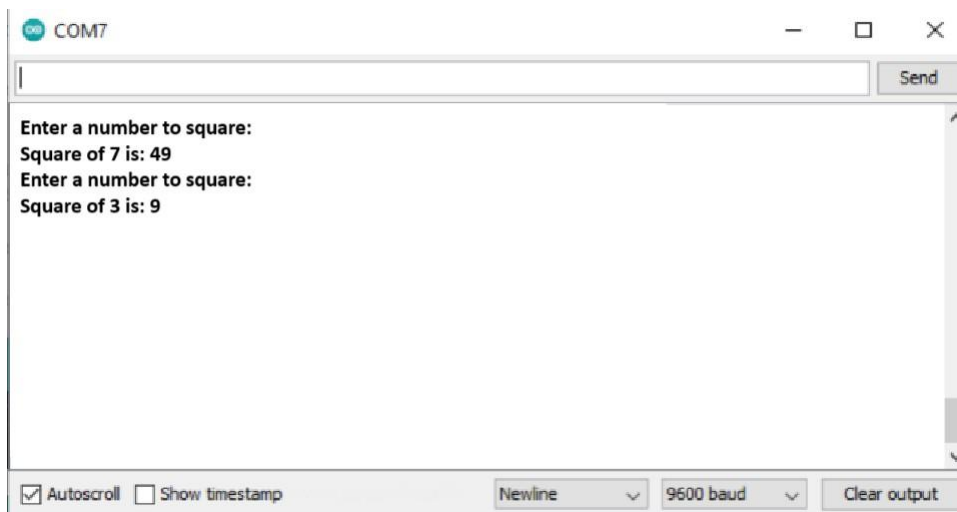
Roll No: 24

Title: Write a program that asks the user for a number and outputs the number squared that is entered

CODE:

```
void setup() {  
  Serial.begin(9600);  
  while (!Serial); // Wait for Serial Monitor to open (for boards like Leonardo)  
  Serial.println("Enter a number to square:");  
}  
  
void loop() {  
  if (Serial.available() > 0) {  
    int num = Serial.parseInt(); // Read integer from serial input  
    int square = num * num;  
  
    Serial.print("You entered: ");  
    Serial.println(num);  
    Serial.print("Squared value: ");  
    Serial.println(square);  
    Serial.println("\nEnter another number to square:");  
  }  
}
```

OUTPUT:



Practical No. 9

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: Write a program to control the color of the LED by turning 3 different potentiometers. One will be read for the value of Red, one for the value of Green, and one for the value of Blue

CODE:

```
const int redPotPin = A0;
const int greenPotPin = A1;
const int bluePotPin = A2;

const int redLEDPin = 9;
const int greenLEDPin = 10;
const int blueLEDPin = 11;

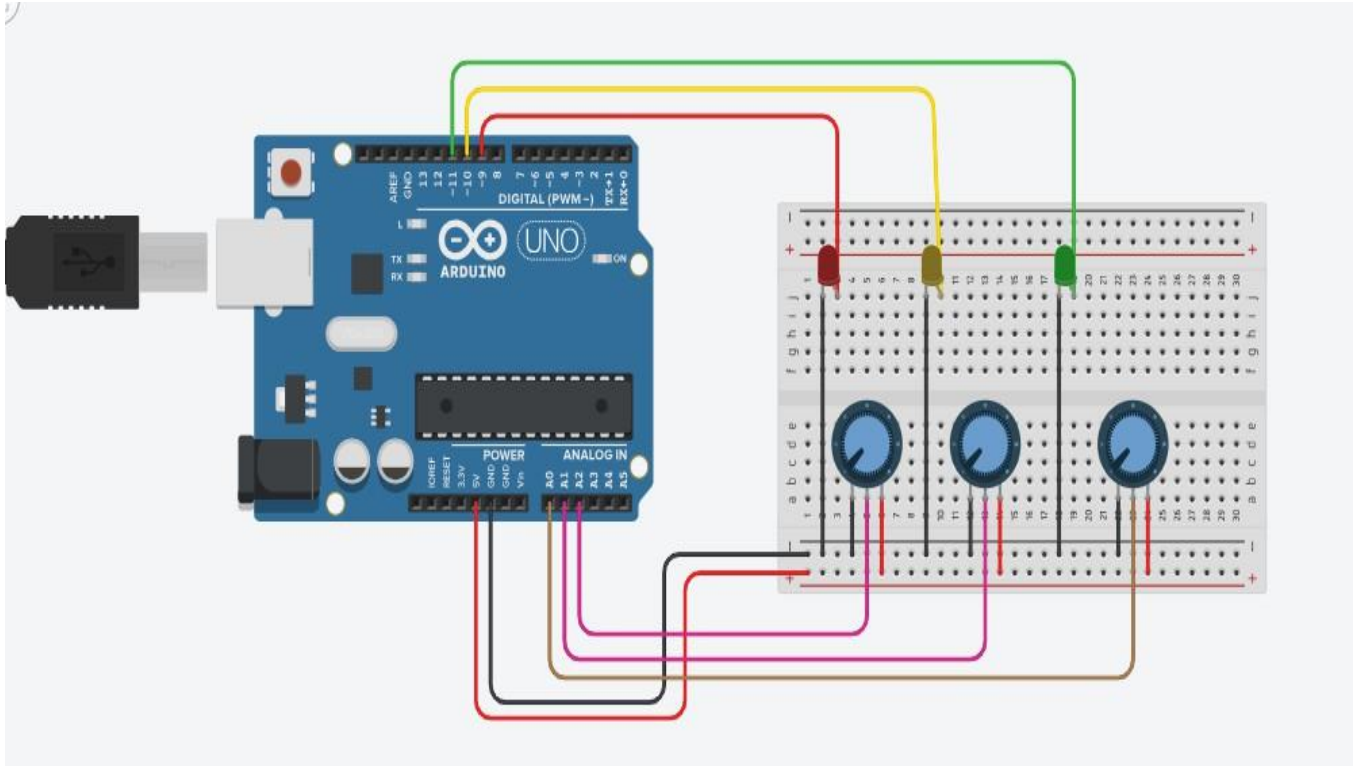
void setup() {
  pinMode(redLEDPin, OUTPUT);
  pinMode(greenLEDPin, OUTPUT);
  pinMode(blueLEDPin, OUTPUT);
}

void loop() {
  int redVal = analogRead(redPotPin);
  int greenVal = analogRead(greenPotPin);
  int blueVal = analogRead(bluePotPin);

  redVal = map(redVal, 0, 1023, 0, 255);
  greenVal = map(greenVal, 0, 1023, 0, 255);
  blueVal = map(blueVal, 0, 1023, 0, 255);

  analogWrite(redLEDPin, redVal);
  analogWrite(greenLEDPin, greenVal);
  analogWrite(blueLEDPin, blueVal);
}
```

```
delay(10);  
}  
OUTPUT:
```



Practical No. 10

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: Write a program read the temperature sensor and send the values to the serial monitor on the Computer.

CODE:

```
int sensorPin = A0;
```

```
void setup() {  
  Serial.begin(9600);  
}
```

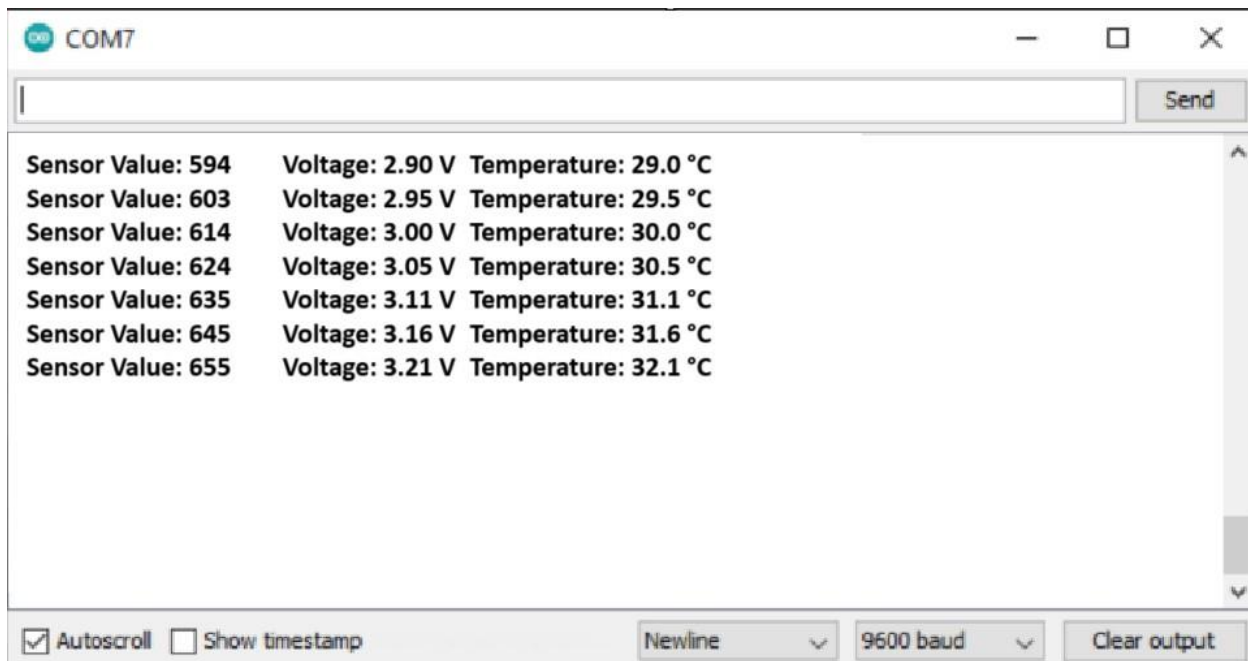
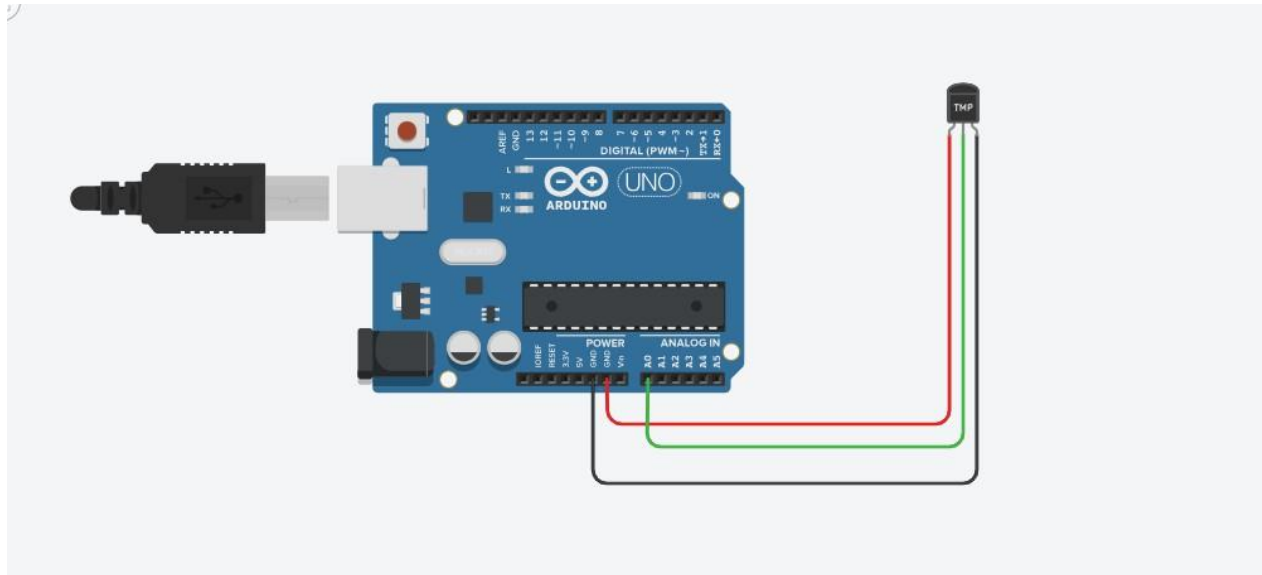
```
void loop() {  
  int sensorValue = analogRead(sensorPin);  
  
  float voltage = sensorValue * (5.0 / 1023.0);
```

```
  float temperatureC = voltage * 100;
```

```
  Serial.print("Sensor Value: ");  
  Serial.print(sensorValue);  
  Serial.print("\t Voltage: ");  
  Serial.print(voltage, 2);  
  Serial.print(" V\t Temperature: ");  
  Serial.print(temperatureC);  
  Serial.println(" °C");
```

```
  delay(2000);  
}
```

OUTPUT:



Practical No: 11

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: Statement: Write a program so it displays the temperature in Fahrenheit as well as the maximum and minimum temperatures it has seen.

CODE:

```
const int tempPin = A0;

float currentTempF;
float maxTempF = -1000;
float minTempF = 1000;

void setup() {
  Serial.begin(9600);
  Serial.println("Reading temperature in Fahrenheit...");
}

void loop() {
  int analogValue = analogRead(tempPin);
  float voltage = analogValue * (5.0 / 1023.0);
  float tempC = voltage * 100.0; // LM35: 10mV/°C

  currentTempF = (tempC * 9.0 / 5.0) + 32.0;

  if (currentTempF > maxTempF) {
    maxTempF = currentTempF;
  }

  if (currentTempF < minTempF) {
    minTempF = currentTempF;
  }

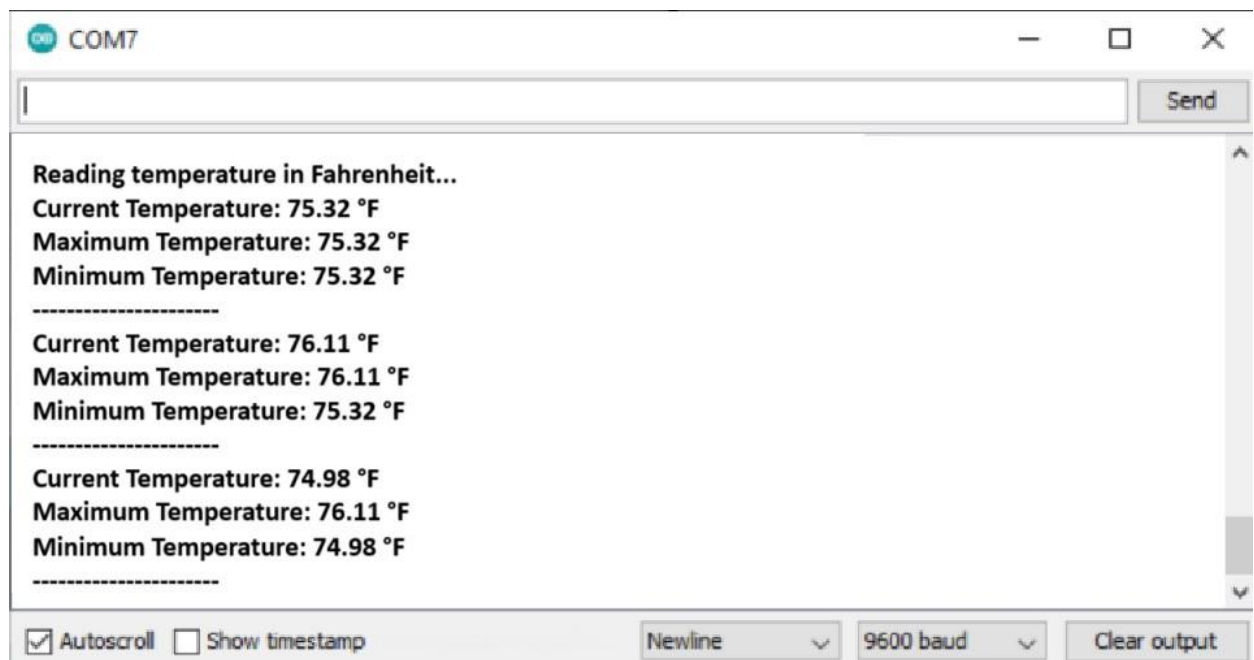
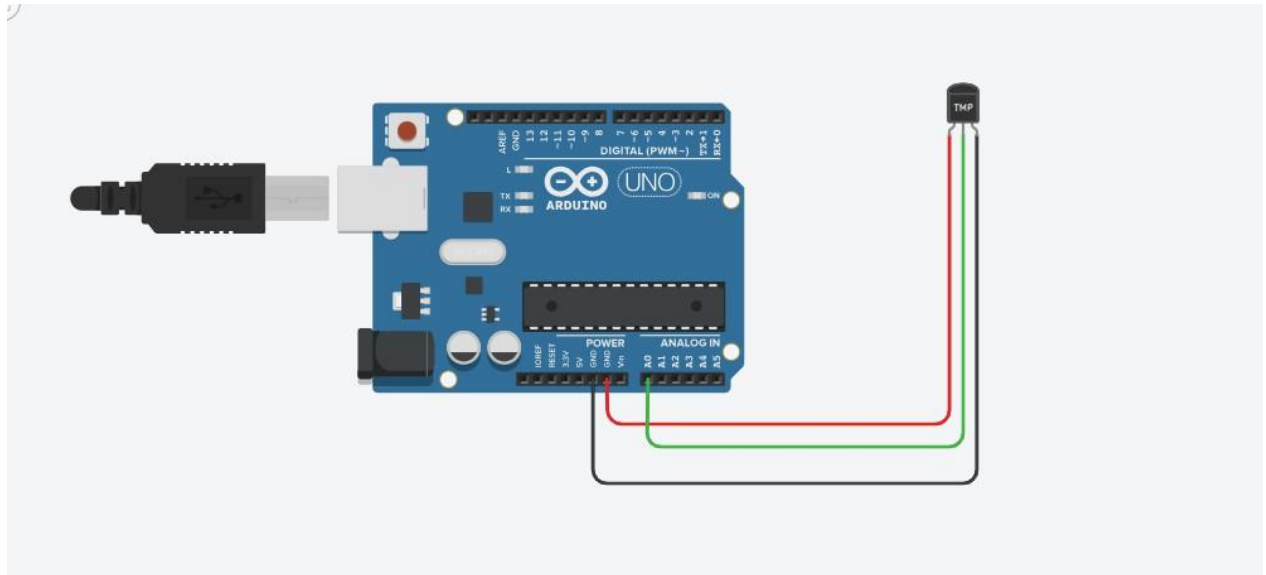
  Serial.print("Current Temperature: ");
  Serial.print(currentTempF);
  Serial.println(" °F");

  Serial.print("Maximum Temperature: ");
  Serial.print(maxTempF);
  Serial.println(" °F");

  Serial.print("Minimum Temperature: ");
  Serial.print(minTempF);
```

```
Serial.println(" °F");  
  
Serial.println("-----");  
  
delay(2000);  
}
```

OUTPUT:



Practical No. 12

Name:Waghmare Tejas S **Class:**

S.E. (AI&DS)

Roll No: 24

Title: Write a program to show the temperature and shows a graph of the recent measurements.

CODE:

```
const int tempPin = A0;

void setup() {
  Serial.begin(9600);
}

void loop() {
  int analogValue = analogRead(tempPin);
  float voltage = analogValue * (5.0 / 1023.0);
  float tempC = voltage * 100.0;

  Serial.println(tempC);

  delay(500);
}
```

OUTPUT:

