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Experiment 1.4

Aim: *Program to interface the Arduino/Raspberry Pi with LED and blinking application.*

Objectives:

- *Learn about interfacing.*
- *Learn about IoT programming.*

Hardware:

- *1 × Breadboard*
- *1 × Arduino Uno*
- *3 × LEDs (Red, Yellow, Green)*
- *3 × 220Ω Resistor*
- *3 × Jumper*

Description:

Nowadays, everyone prefers a personal vehicle. Hence, the number of vehicles on the road is increasing continuously, which results in traffic jams. Traffic light controller helps to manage the traffic and to maintain proper traffic management. These systems are placed at the intersections of the road or at the crossings to avoid congestions and accidents. The systems indicate to the driver by using different colors of light. Therefore it is simple to avoid congestion at the intersections.

Code:

```
int red = 1;
int yellow = 3;
int green = 5;

void setup()
{
  Serial.begin(9600);
  pinMode(red, OUTPUT);
  pinMode(yellow, OUTPUT);
  pinMode(green, OUTPUT);
}
```

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Course Name: Internet Of Things Lab

```
void loop()
{
  changeLights();
  delay(5000);
}

void changeLights()
{
  // green off, yellow on for 1 second
  digitalWrite(green, LOW);
  digitalWrite(yellow, HIGH);
  delay(1000);

  // turn off yellow, then turn red on for 2 seconds
  digitalWrite(yellow, LOW);
  digitalWrite(red, HIGH);
  delay(2000);

  // red and yellow on for 3 seconds (red is already on though)
  digitalWrite(yellow, HIGH);
  delay(3000);

  // turn off red and yellow, then turn on green
  digitalWrite(yellow, LOW);
  digitalWrite(red, LOW);
  digitalWrite(green, HIGH);
  delay(3000);
}
```
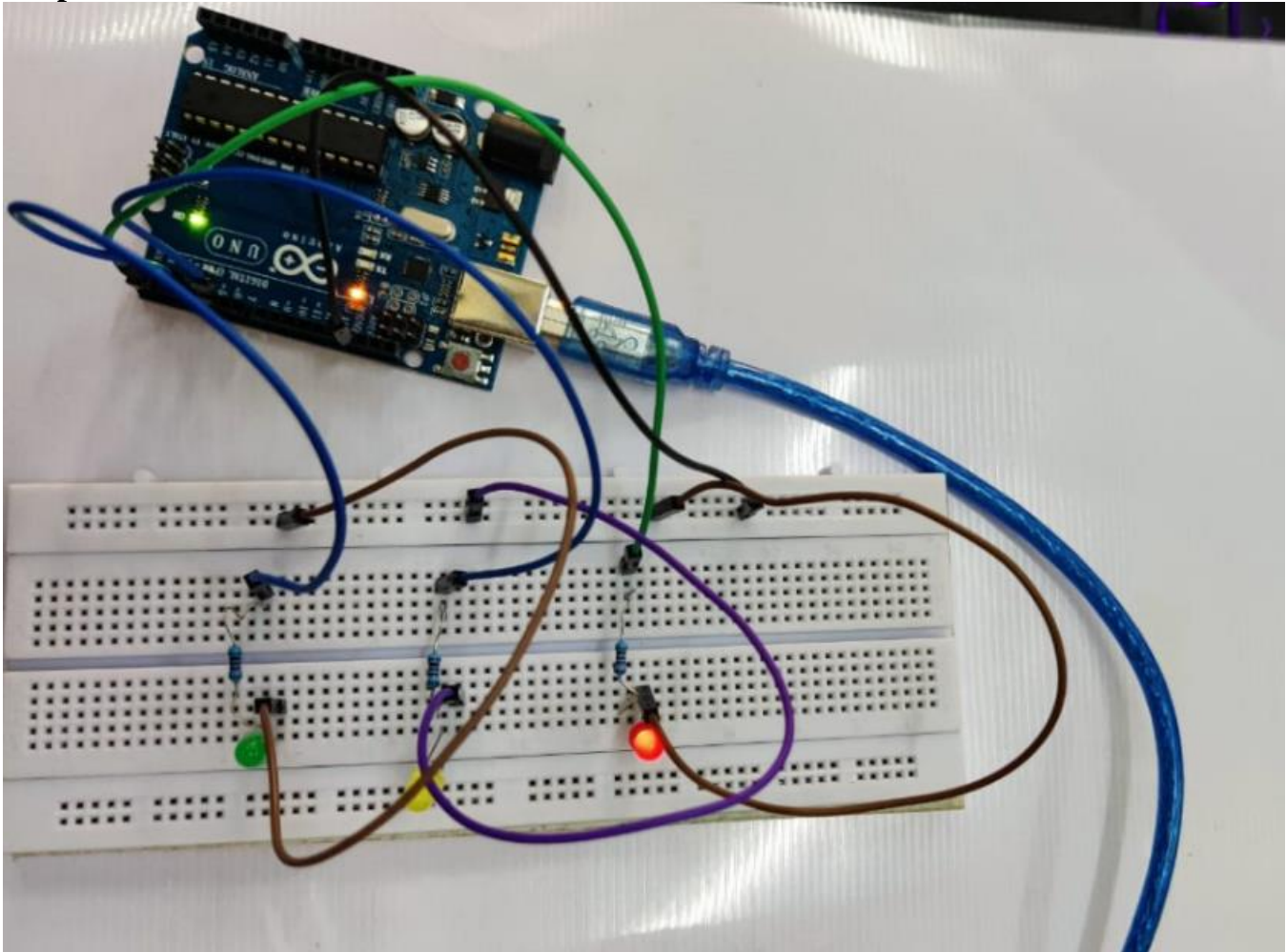
Course code: 21CSP-344

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Output:

Learning Outcomes:
1. *Learn the use of sensors.*
2. *Learn to perform task on real hardware without using any virtual platform.*
3. *Learn to know about how traffic light system works.*