Practical 2

Aim: - To interface multiple LED's with Arduino and write a program to blink 3 LEDs, one at a time, in a back and forth formation.

Components Required :

Arduino Board, Bread Board, LEDs , Resistors, Connecting wires.

Theory:

We have already discussed the method to blink a single LED. In this practical, we will discuss the process to blink three LEDs using for loop. The three LEDs will light up one after the other.

We will connect the three LEDs to the desired pins of the Arduino board. The limiting value of resistance should be between 220 and 330 ohms to set the optimal current through the LEDs. The required resistance is enough to light up an LED without damaging the board and the LED. We will turn the LED ON/OFF individually.

The connection of the above project is discussed below:

- o Connect the resistor of 220 Ohm in series with the three LEDs. Now connect it to the respective pins of the Arduino board.
- o Connect the negative terminal of the three LEDs to the GND (Ground).

After you build the circuit plug your Arduino board into your computer, start the Arduino Software (IDE) and enter the code. There are certain functions in the code which are common have the following use:

1) setup () : The setup () function is called when a sketch starts. Use it to initialize variables, pin modes, start using libraries, etc. The setup() function will only run once, after each powerup or reset of the Arduino board.

2) loop () Function : After creating a setup() function, which initializes and sets the initial values, the loop() function does precisely what its name suggests, and loops consecutively, allowing your program to change and respond.

3) pinMode() Function : The pinMode() function is used to configure a specific pin to behave either as an input or an output.

4) digitalWrite() Function: The digitalWrite() function is used to write a HIGH or a LOW value to a digital pin.

5) delay() function : The way the delay() function works is pretty simple. It accepts a single integer (or number) argument. This number represents the time (measured in milliseconds).

Implementation :

**Component:** Arduino Board, Bread Board, LEDs , Resistors, Connecting wires.

Circuit Diagram:
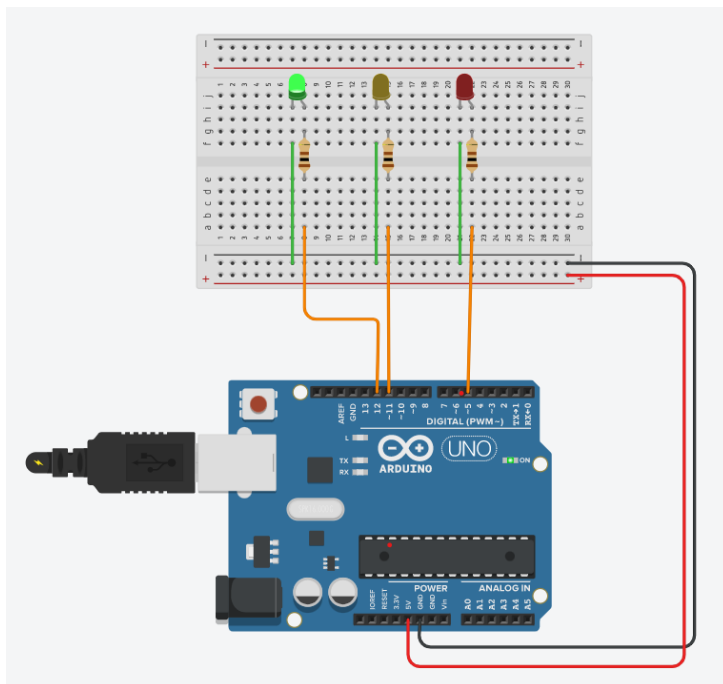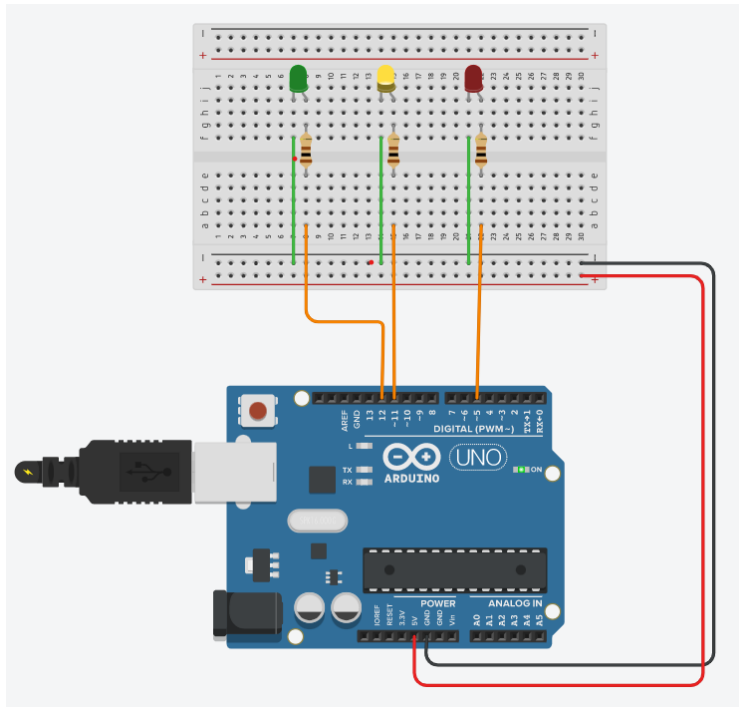

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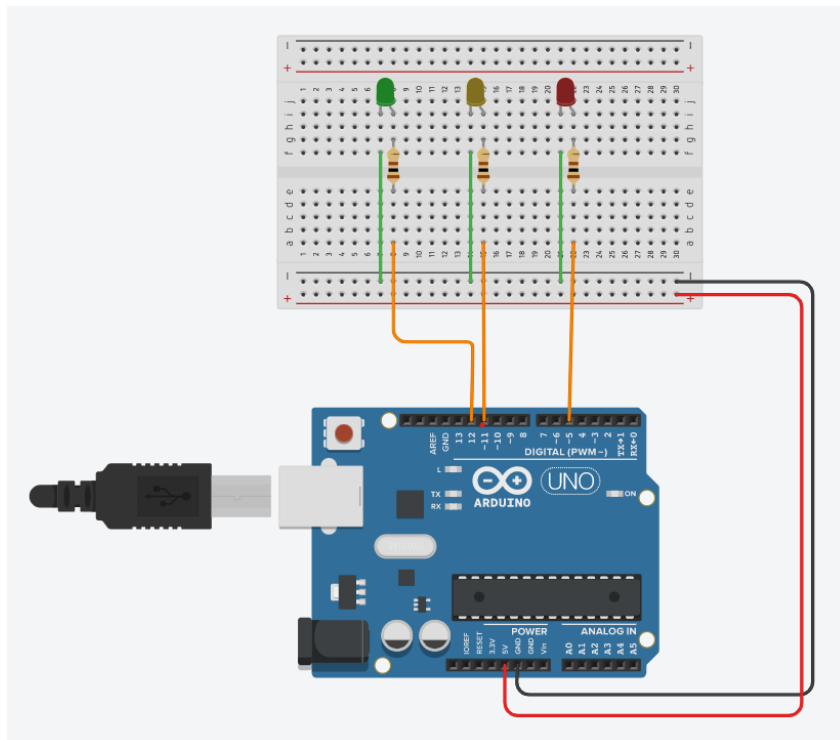
Program:

```cpp
// C++ code
//
void setup()
{
  pinMode(5, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
}
void loop()
{
  digitalWrite(5, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(5, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(11, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(11, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(12, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(12, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
}
```

Output:
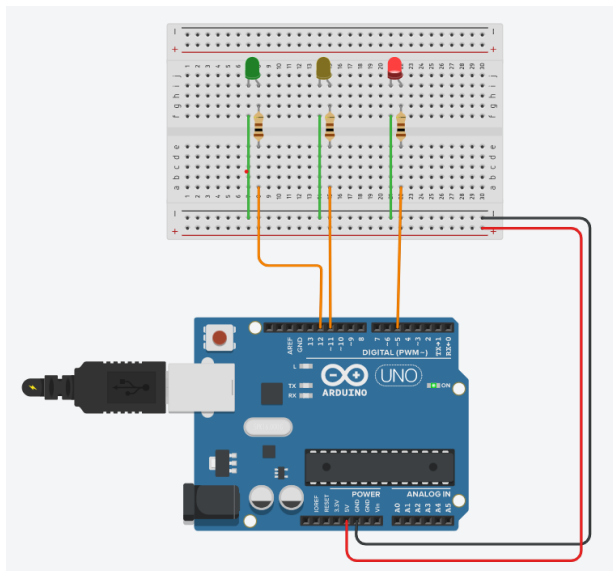
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Conclusion: Thus we studied the interfacing of multiple LED's.

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