LED Pattern Project 1 | Controlling Multiple LEDs with Arduino Uno

In this LED pattern project using an Arduino Uno, the setup involves six LEDs—two red, two yellow, and two green—connected to a breadboard along with six resistors to limit current, ensuring the LEDs aren’t damaged. A potentiometer is also part of the circuit, serving as an analog input device that can vary voltage depending on how much it's turned. This voltage is read by the Arduino through one of its analog pins.

The Arduino is programmed to control the LEDs in various patterns. As the potentiometer is turned, it changes the analog input value, which the Arduino reads and uses to determine which pattern to display. For instance, at one position, it might blink the red LEDs alternately, at another it might light up all LEDs in a sequence like a traffic signal, and further turning could change the speed or direction of the pattern. Essentially, the potentiometer acts like a mode selector or speed controller for the LED patterns, giving you dynamic, real-time control over how the LEDs behave in the circuit.