**LED Flowing Lights Using Arduino**

**1. Introduction**

In this project, we learn how to create LED flowing lights using an Arduino Uno. The objective is to control eight LEDs in such a way that they turn on one after another in a sequence, and then turn off one after another in the same sequence. This creates a flowing or chasing light effect. The project is simulated using Tinkercad, a web-based electronics simulator.

**2. Components Required**

The following components are required to build this project:

* Arduino Uno board
* 8 LEDs
* 8 resistors (each of 220 ohms)
* One breadboard
* Jumper wires

The Arduino acts as the controller, the LEDs are the visual indicators, resistors are used to protect the LEDs, the breadboard is used to mount the components, and jumper wires are used to make connections.

**3. Circuit Diagram Explanation**

In the circuit, the positive terminals (anodes) of the eight LEDs are each connected to digital pins 1 to 8 on the Arduino Uno. The negative terminals (cathodes) of the LEDs are connected to one end of a 220-ohm resistor. The other end of each resistor is connected to the ground (GND) of the Arduino.

This arrangement allows the Arduino to individually control each LED. The resistors are important to limit the current going through each LED and prevent them from getting damaged.

**4. Simulation Output**

When the simulation is run on Tinkercad, the LEDs light up one after another, and then turn off one after another in a loop. This creates the flowing lights effect, similar to the lights often seen on decorative displays or moving signs.

This project demonstrates how a simple combination of hardware and software using Arduino can produce interesting visual patterns and teaches the basics of controlling multiple outputs in a sequence.