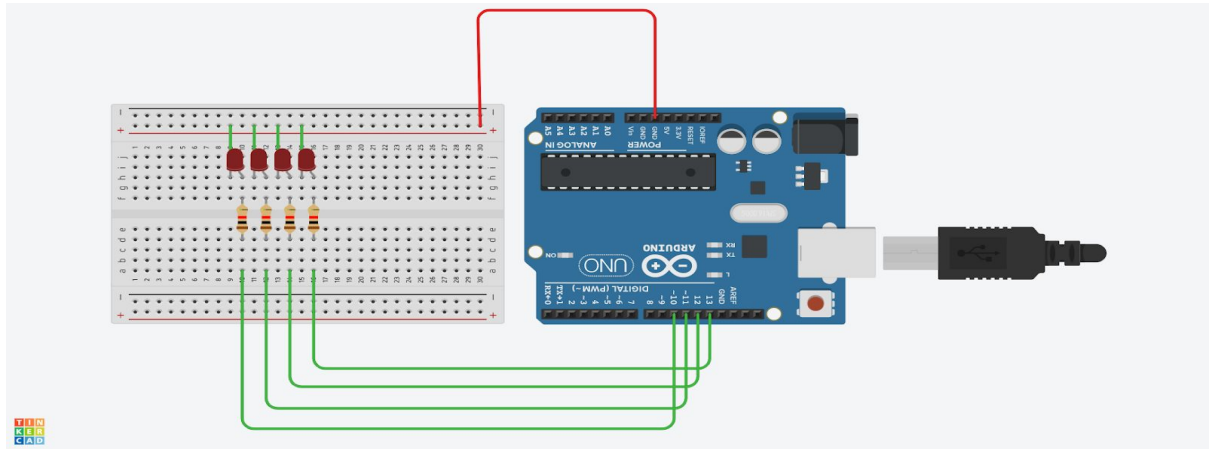


# EXPERIMENT 2 : LED Chaser

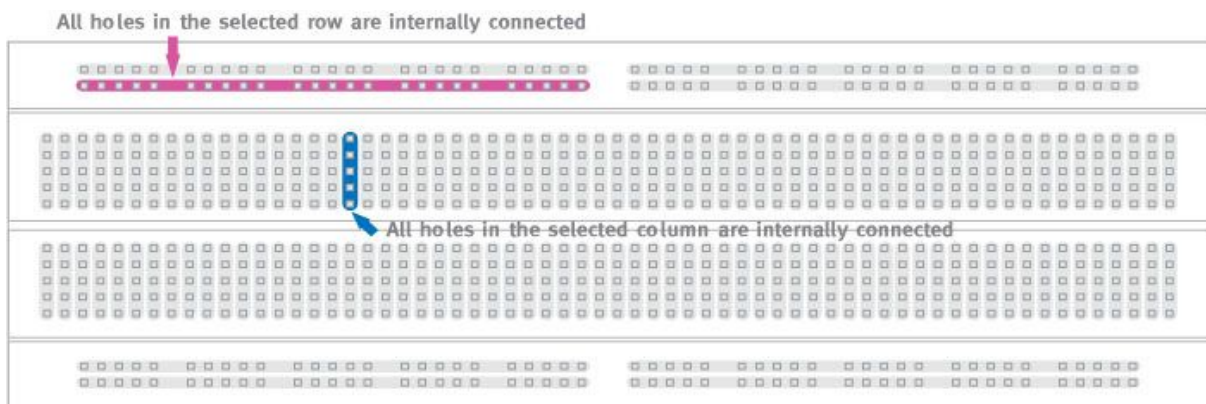
## CIRCUIT DIAGRAM



## THEORY & CONCEPTS

LEDs (that's "ell-ee-dees") are a particular type of diode that converts electrical energy into light. In fact, LED stands for "Light Emitting Diode."

- 1) The arduino board can supply 5V as digital output signals from 14 pins (namely 0 to 13) present in it as digital input or output pins.
- 2) The GND pin of the arduino board acts as ground.
- 3) In the bread-board present in the above circuit diagram, the two rows present at the top and bottom are connected with each other in series and the columns present in between are connected in a set of 5.



4) In series circuit voltage gets divided and in parallel circuit current gets divided.

5) Kirchoff's Current Law - Total current entering a junction is equal to the current leaving the junction.

6) Ohm's Law - Ohm's law states that the current through a conductor is directly proportional to the voltage across the two points provided that the physical conditions such as temperature remains constant.

## **PROBLEMS AND TROUBLESHOOTING**

The problems we faced while doing this experiment are :-

1) At first the LED was not working properly so we had to change and put a new LED in its place.

2) The circuit was not getting closed as the wires were not connected properly so I made sure that the connections were made properly.

3) The required pattern was not getting created because of some error in the code so I had to change the code as per requirement.

## **PRECAUTIONS**

The precautions that we need to keep in mind while doing this experiment are :-

1) The connections at all the points should be made tightly and firmly and the wires should be inserted into the pins properly.

2) The two pins of the LED should be connected at their appropriate point i.e, the positive point should be connected to the **P** pin and the negative point should be connected to the **N** pin.

## **LEARNINGS**

1) I have learned about how to make a series circuit using an arduino board and a bread-board.

2) I have learned about how an arduino works and I also learned how current flows and how it works.

3) I have now gained a practical experience of how an LED and a resistor works.

4) I have also learned how to make different types of patterns using LEDs bulbs by providing different signals through arduino board.

5) I have learned how to make circuits using an arduino board and a bread-board and some other hardware.

## **PROGRAM**

```
void setup()
{
  for(int i=10;i<14;i++)
  {
    pinMode(i,OUTPUT);
  }
}

void loop()
{
  allledsoff();
  for(int i=10;i<14;i++)
  {
    if(i==13)
    {
      digitalWrite(i,HIGH);
      digitalWrite(i-3,HIGH);
      delay(100);
    }
    else
    {
      digitalWrite(i,HIGH);
      digitalWrite(i+1,HIGH);
      delay(100);
      allledsoff(); } } }

void allledsoff()
{
  for(int i=10;i<14;i++)
  digitalWrite(i,LOW);
  delay(200);
}
```

## **RESULT**

While doing this experiment, I observed that the first two LEDs glow and then the first LED goes off and the third one glows and a chain like this is formed and this pattern is a replication of the code that we have made for the arduino board using signals.

