LAB BEEE : PATTERNS USING SWITCH & LDR

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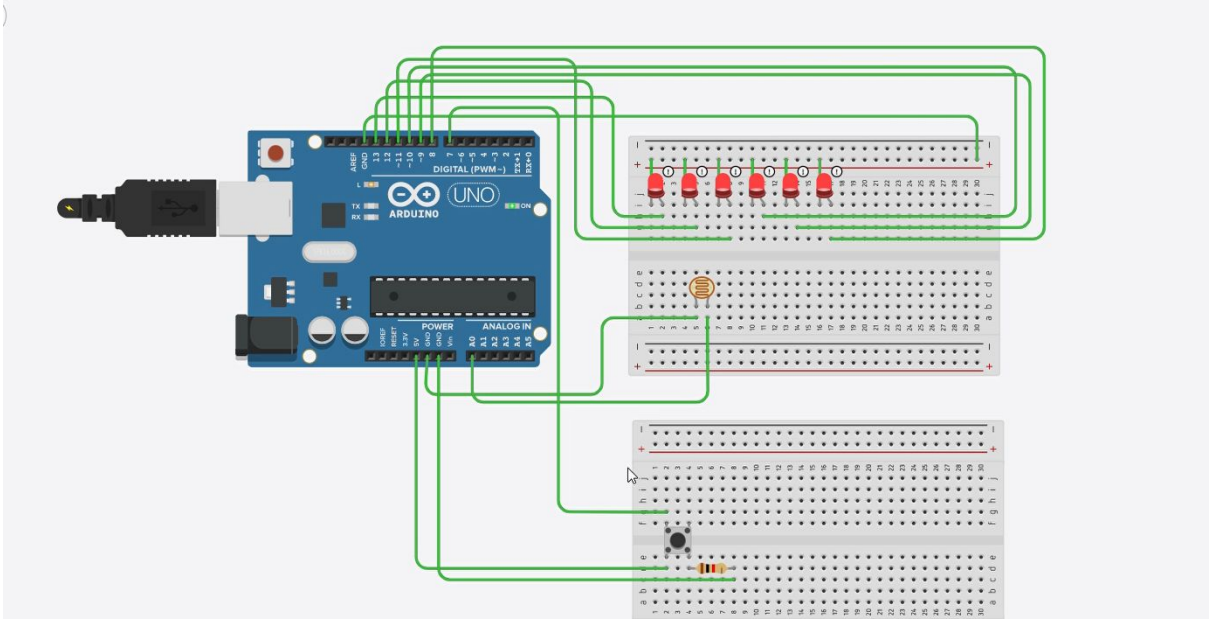
CIRCUIT DIAGRAM



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."

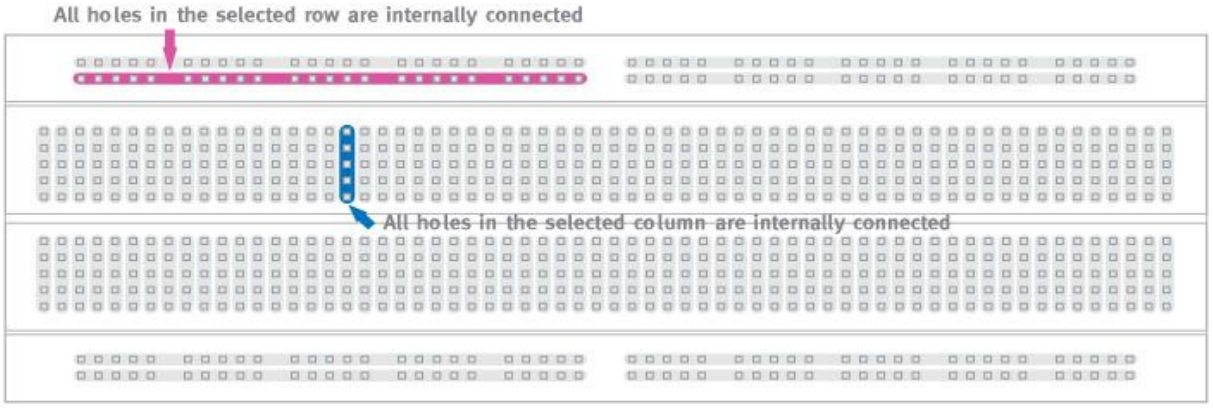
1) The arduino board can supply 5V as digital output signals from 14 pins (namely 0 to 13) present in it as digital input or output pins.

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) Using switch , a particular part of a circuit can be used based on some particular condition.

5) LDR is used to measure the light in units of LUX and this can also be used to display different patterns of LEDs based on some particular amounts of light.



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) Switch was not connected in the correct direction so we had to change the direction of switch.

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 wired 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.

3) Precaution should be taken that the switch and photoresistor(LDR) are connected properly and in the right direction for the proper functioning of the program.

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 learned how to make circuits using and arduino board and a bread-board and some other hardwares such as LDRs and switches.

PROGRAM

```
void setup() {
Serial.begin(9600);
pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
  pinMode(10,OUTPUT);
 pinMode(11,OUTPUT);
   pinMode(12 ,OUTPUT);
  pinMode(13,OUTPUT);
  pinMode(7,INPUT);
}


void loop() {
int c = analogRead(A0);
  int i=8;
  delay(500);
if(c<300)
{
if(digitalRead(7)==HIGH)
{
digitalWrite(8 ,HIGH);
  digitalWrite(9,HIGH);
  digitalWrite(10 ,HIGH);
  digitalWrite(11,HIGH);
  digitalWrite(12,HIGH);
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(8 ,LOW);
  digitalWrite(9,LOW);
  digitalWrite(10 ,LOW);
  digitalWrite(11,LOW);
```

```
  digitalWrite(12,LOW);
  digitalWrite(13,LOW);
}

  else
  {
  digitalWrite(8 ,HIGH);
  digitalWrite(9,HIGH);
  digitalWrite(10 ,HIGH);
  digitalWrite(11,HIGH);
  digitalWrite(12,HIGH);
  digitalWrite(13,HIGH);
  delay(1000);
  digitalWrite(8 ,LOW);
  digitalWrite(9,LOW);
  digitalWrite(10 ,LOW);
  digitalWrite(11,LOW);
  digitalWrite(12,LOW);
  digitalWrite(13,LOW);
  }
}

}
```

RESULT

The blinking of LEDs in the patterns provided in the question were verified by the code above.