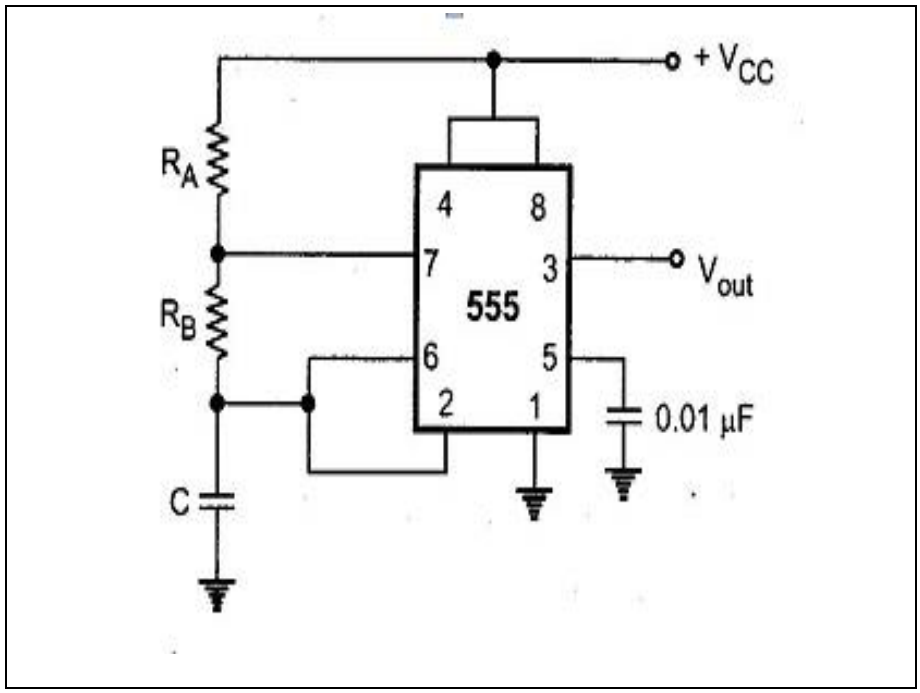
Astable Multivibrator- Design and Implementation

Astable multivibrator has two quasi stable states HIGH and LOW .Without any external triggering circuit, it automatically changes its two states and gives reactangular waveform. By using external connected resistors and capacitor we can control the output frequency . so, it works as a oscillator. Implementing this project by using 555 timer, because with this timer we can get output HIGH and LOW time duration from micro seconds to hours.

Circuit Diagram:



Astable Multivibrator using 555 timer

Components used:

1. IC 555 timer
2. R_A= 10 KΩ, R_B = 100KΩ, C = 10 µF
3. LED as load
4. 9 Volts battery

Designing circuit:

The charging and discharging time constants depends on the values of the resistors R_A, R_B and C. Generally the charging time constant is more than the discharging time constant. So, LED is ON for more time than OFF.

Calculating Time period of oscillations and its frequency :

Duty cycle= Ton/T

So, the total time period = Ton + Toff

Ton = 0.693*(R_A+R_B)C = 0.7623 sec

Toff = 0.693*R_B*C= 0.693 sec

Time period = Ton +Toff = 1.4553 sec

Frequency of oscillations = 1/T = 0.687 Hz