CD4060 as Time Delay Ckt

Sanjay Byrannanavar • February 22, 2022

- In previous part (click here) t we learnt how to configure the clock Signal given to the IC.
- Where we come across the formula of frequency of operation of the IC and also the timing consideration of each output pins of the IC.

> *In this document we are going to see how CD4060 can be implemented as time delay circuit.*

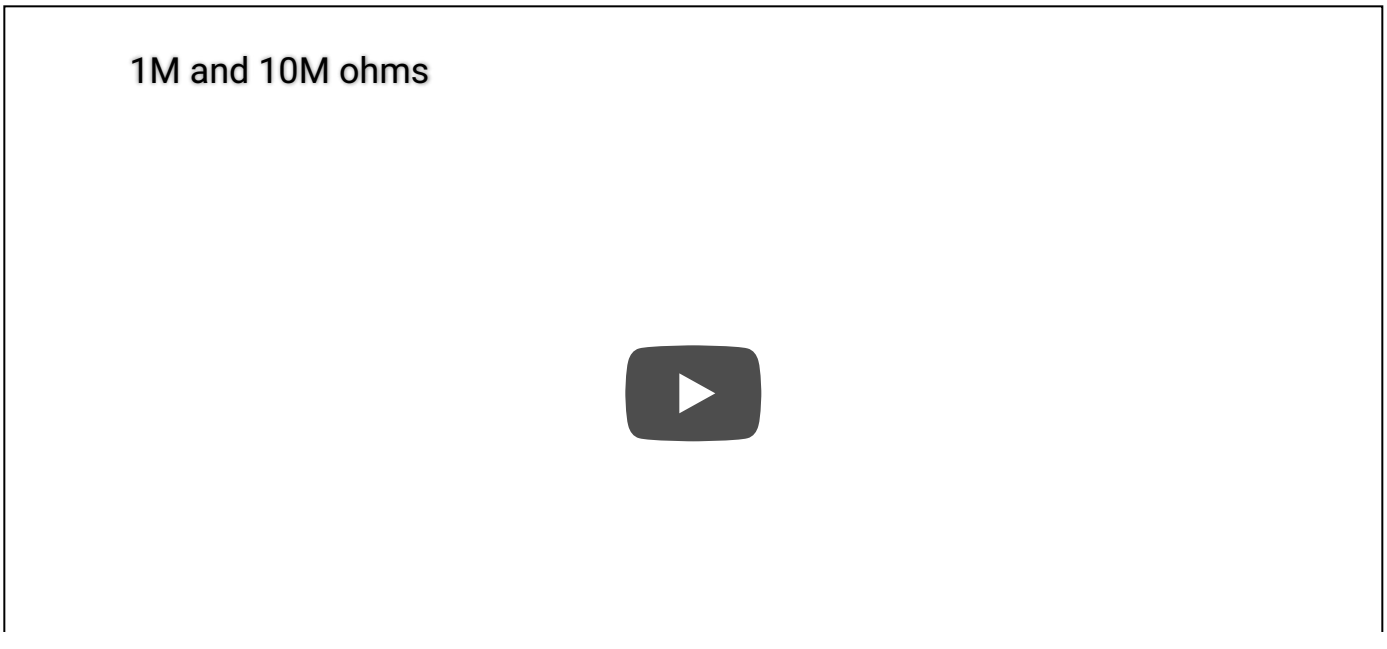
- First Step you are going to observe the speed of occurrence of the output for different values of Resistor R1 that is used in ckt.
- We are going to observe the changes for the resistance values of 1k, 10K, 100k, 1M, 10M ohms.
- Please refer to the below attached video's.

R1 = 1K ohms

If video is not visible then please CLICK Here
https://youtu.be/vUHSrMsgc68

R1 = 10K and 100K ohms

If video is not visible then please CLICK Here
https://youtu.be/M3cAJie3hDA



R1 = 1M AND 10M Ohms

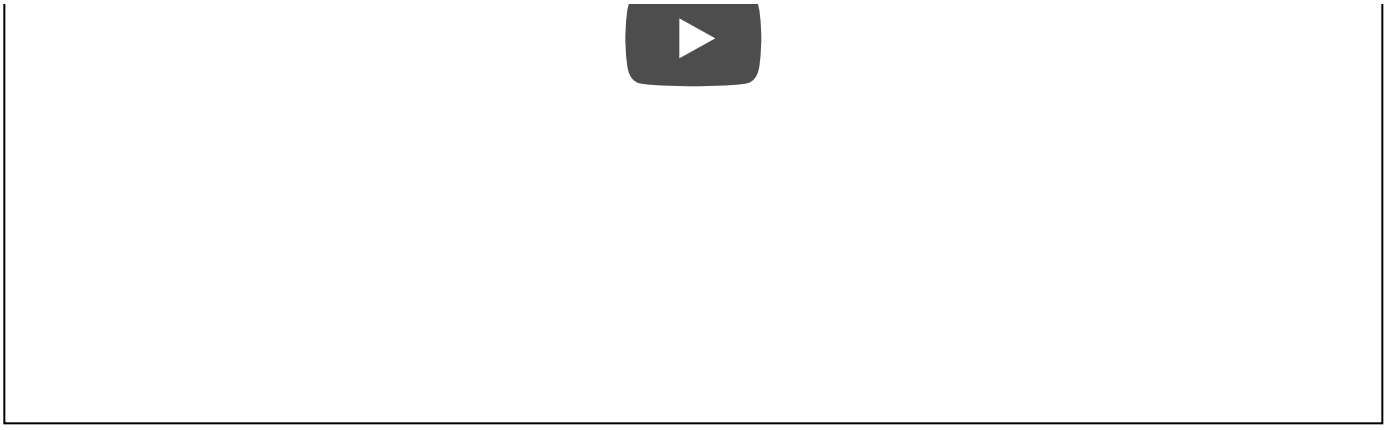
If video is not visible then please CLICK Here
https://youtu.be/xxl7Fk4lOwo

- U have noticed that the speed of outputs occurred is changing as we are changing the R1 value.
- By seeing this we can say that the time of occurence is changing with R1 value.
- And we can say this as a time delay or time controlled ckt.
- Also observed that the outputs goes on repeating until all the outputs are becoming logic state 1.
- And once all the outputs are logic 1 then the IC resets automatically and the Loop again starts from beginning.
- Which is not desired for our time delay application ,which can lock the output state at the desired output pin.

> *So to lock the IC at required output pin we*
> *use an LOW POWER SWITCHING DIODE IN4148 in B/W the output pin we want and the pin number -11.*

- So refer the below video to Understand the application of IN4148 diode.

Stoping the ckt at desired output



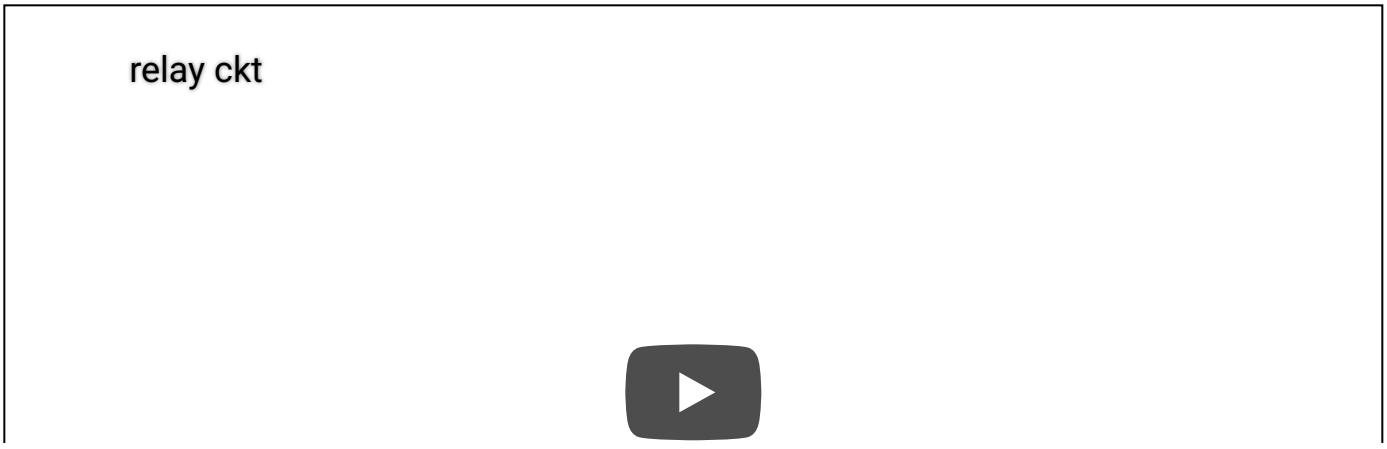
Implementation of IN4148 to lock the IC

If video is not visible then please CLICK Here
https://youtu.be/No_uYXJN_Wg

> *One more problem is that the voltage at the output pin is just around 5V.*
>
> *So this 5V can't be used to operate the high power appliances like turning on the lamps at time that is set using IC CD4060.*

> *So to overcome this we use the magnetic switching device called relay which uses small input voltage to run the low or high power external ckt.*

> *We use a diode and capacitor with the relay's input side to avoid back emf and switch debouncing.*
>
> *To know the relay concept refer the attached video below.*



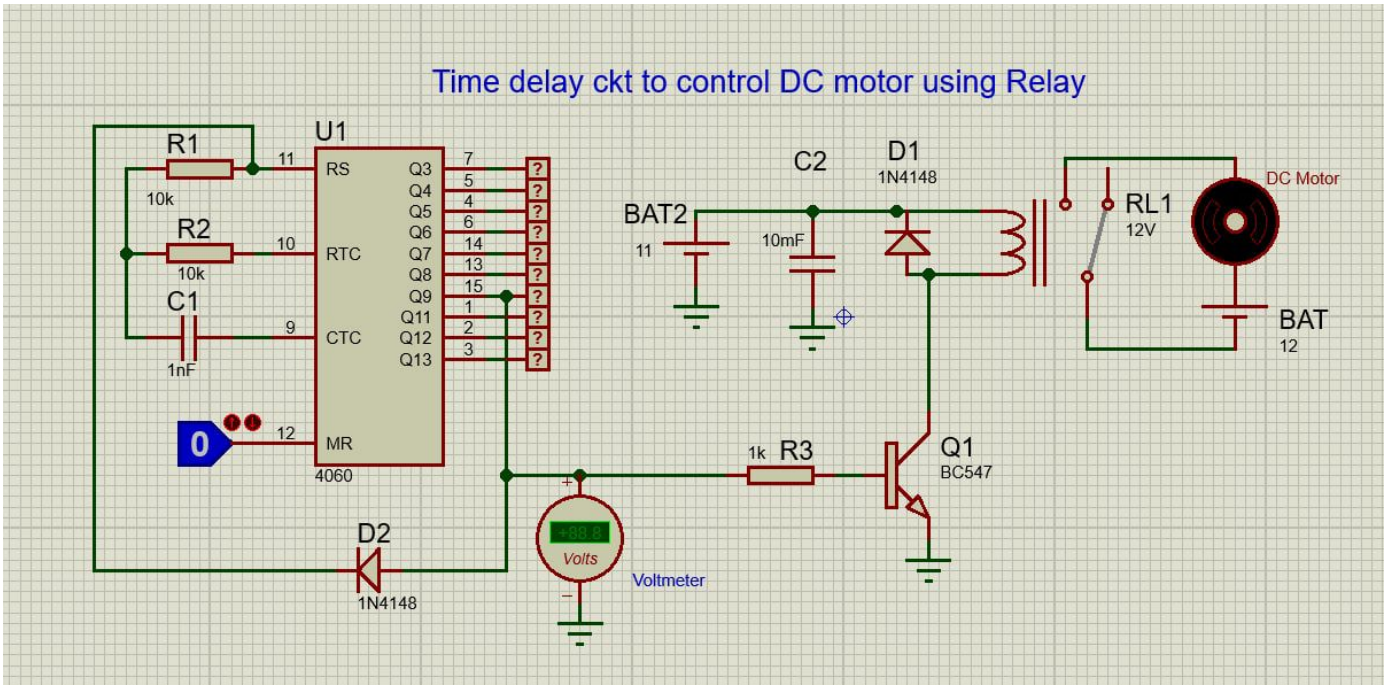
Concept of relay ckt

If video is not visible then please CLICK Here
https://youtu.be/Rm7hUSk5FNM

Using Time delay circuit with Relay

> *So instead of giving that 3.3v mentioned in*
> *the video we can remove that 3.3v and can attach that terminal to the output we want to for time delay.*

> *For example if we want the output at Q9 i.e*
> *pin number 15.*
> *We remove 3.3v in the relay ckt and attached to Q9 pin of CD4060 IC.*
>
> *So when the output of the pin Q9 occurs then the IC is locked by IN4148 diode and the base of the transistor is given with voltage of 5v so acts as a closed switch thus makes the input side of the relay as closed ckt.*
>
> *Which produces the magnetic flux around the coil and that makes the magnetic needle to move to Normally opened terminal of the relay and makes external ckt to complete the loop.*



Final Circuit

Refer Below video for Final Circuit

Final Ckt

If video is not visible then please CLICK Here

https://youtu.be/7pv7Rx4JQeU