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DATEOFPERFORMANCE: *21.09.2020*

BRANCH: *CSE*

SECTION / GROUP: *23"B"*

SUBJECT NAME: *DIGITAL ELECTRONICS*

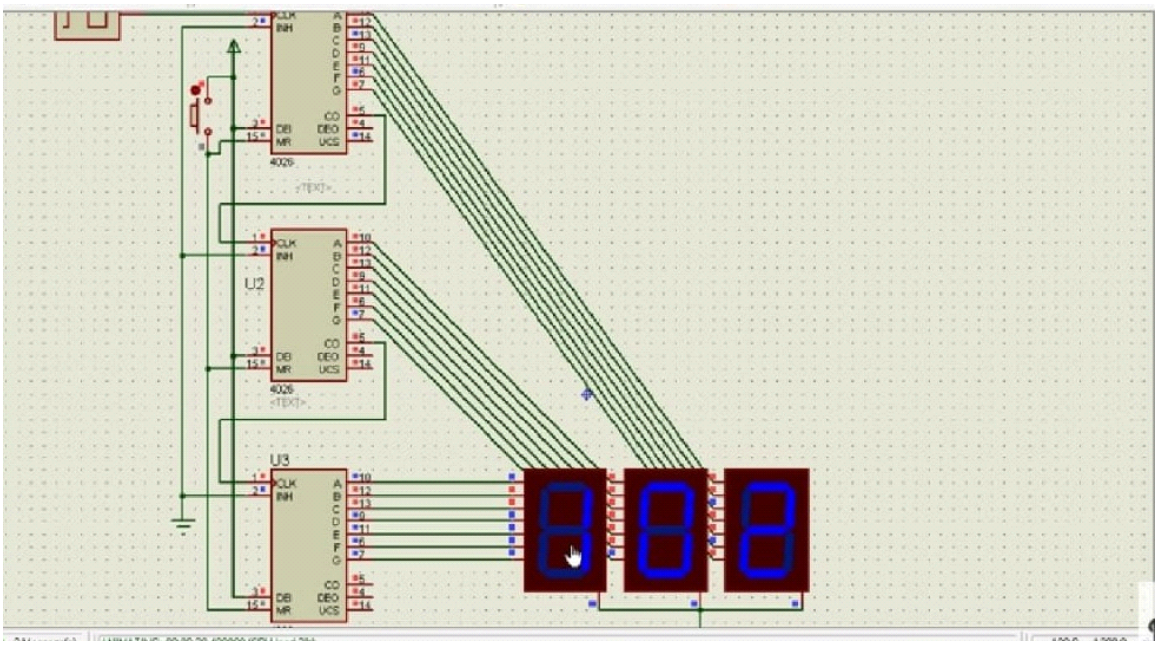
AIM:

Design a light - based object counter with a 7 - segment display (CD4026).

REQUIREMENTS:

1. LDR
2.CD4026 IC
3.5V Power Supply
4.Breadboard.
5.Connecting wires.
6.Windows 10 PC.

SIMULATION RESULTS:


CLK
INH
A
B
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DBI
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UCS
4026
U2
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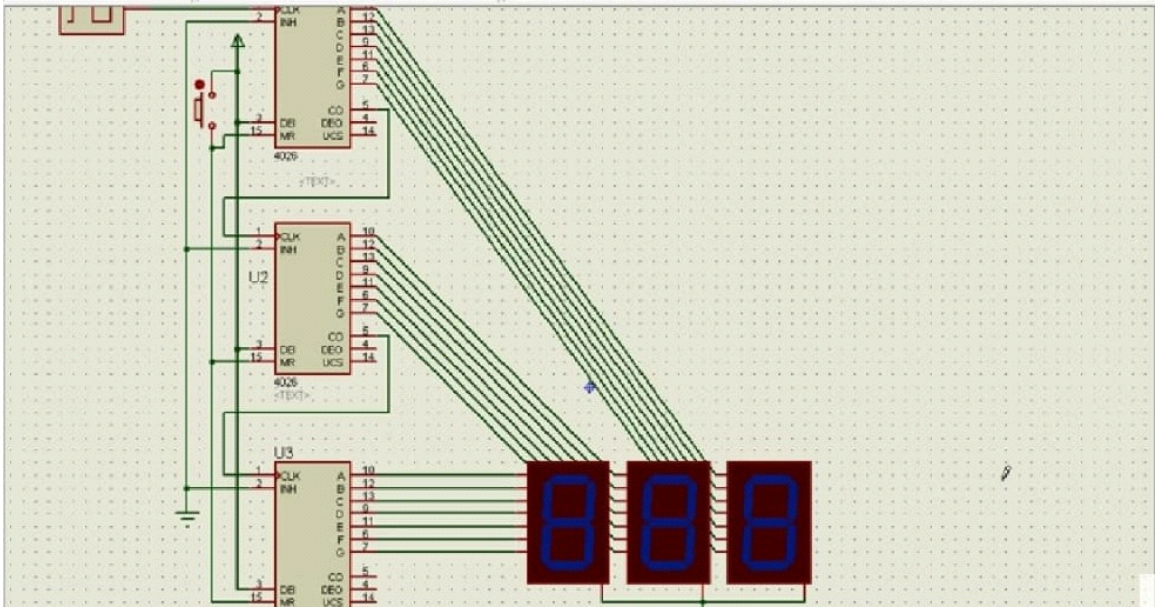
CLK
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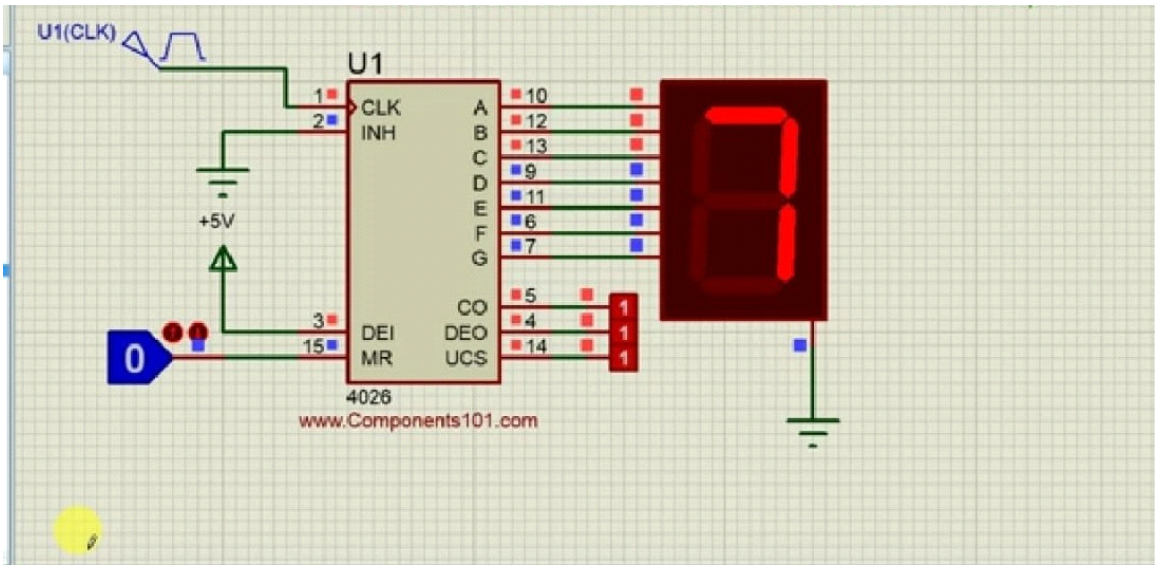

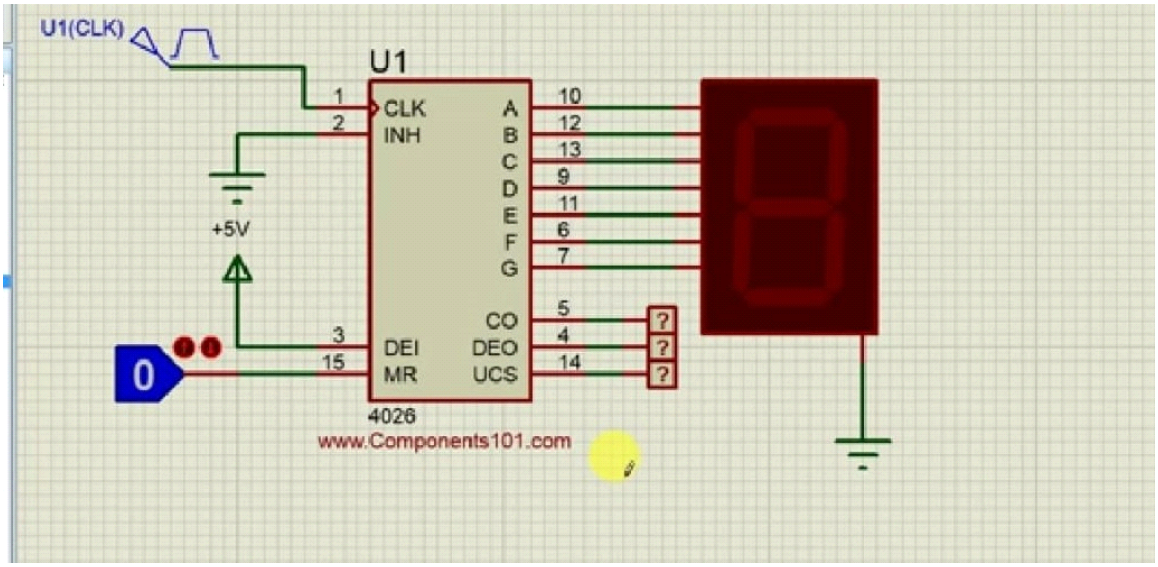

CONCEPT USED :

Object counters or product counters are important applications used in industries,shopping malls,etc.They count objects or products automatically and reduce human efforts.They are used at different places for different purposes and different

usages.They can be used as visitor counter,vehicle counter material / product counter etc.

Examples where object counters are used :
(i) In LIFT to count and display the number of persons inside the lift at a particular given time.
(ii) In any big supermarket or shopping malls as a visitor counter to keep track of the number of visitors who have visited the mall.
(iii) On the conveyor belt in the industry to count the number of objects passed.
(iv) In vehicle parking place to count and display the number of vehicles inside the parking lot.

So, the application areas are varied where object counters are used.The object counter is made up of sensor,counter and display.The sensor senses any object that passes in front of it and gives an output pulse to the counter. Counter increments count by one when it gets pulse input from the sensor. The current count is displayed on any type of display like the 7 - segment or LCD display.

LEARNING / OBSERVATIONS:

The light source from the torch is continually hit on the LDR if so the resistance of the LDR is too low and the voltage drop across LDR and ground is less than 0.6 V. When an object is passed between the light beams, the light will not hit on the LDR so the resistance of LDR becomes high. Since V=I / R (Voltage

= Current / Resistance) i.e.,the resistance of the LDR is the high voltage across LDR become high. As soon as the object crosses the light beam a LOW and HIGH voltage transition occurs,which is given to the CLOCK (input) of CD4026 IC,it will start to count with the clock and display the count on 7 - segment display.

The working object counter using LDR, CD4026, and 7-segment was verified on simulation software and implemented on a breadboard.

TROUBLESHOOTING:

No Problem.