Ain Shams University
Faculty of Engineering
Discipline Programs

Digital Design Major Task Report

Computer Engineering and Software Systems (CESS)

Submitted to:

Dr. Manal Mohsen

Eng. Mohamed Nagy

Submitted by:

Habiba Yasser 20P3072

Nadine Hisham 20P9880

Zeyad Essam 20P5728

Table of Contents

1.0 Circuit Implementation 3

1.1 ICs Used 3

1.2 How to connect the circuit 7

1.3 Circuit Photos 8

2.0 Circuit Simulation 9

List of Figures

Figure 1:4026 ic **3**

Figure 2: 7 segment **4**

Figure 3: 555 ic **5**

Figure 4: Photo 1 counter **8**

Figure 5: Photo 2 counter **8**

1.0 Circuit Implementation

1.1 ICs Used

In the first part of the project which is the counter we have used the following components:

. The (4026) Ic which is a counter.

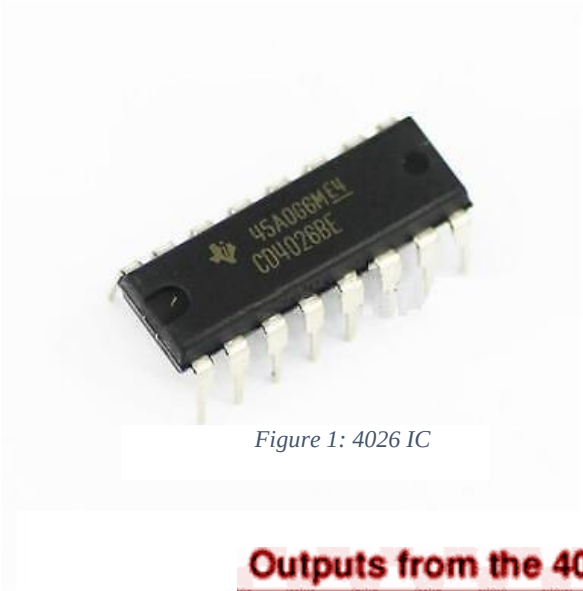

Figure 1: 4026 IC

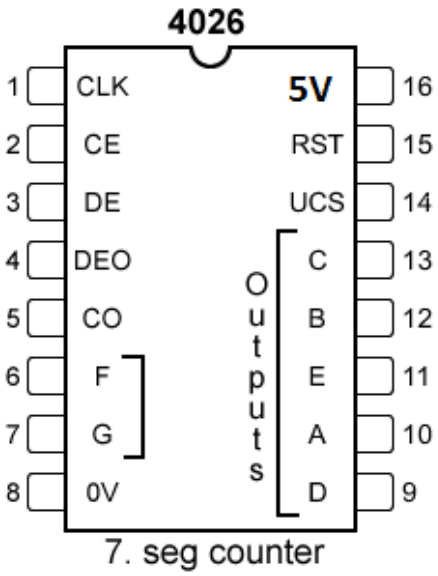

Figure 2: 4026 datasheet

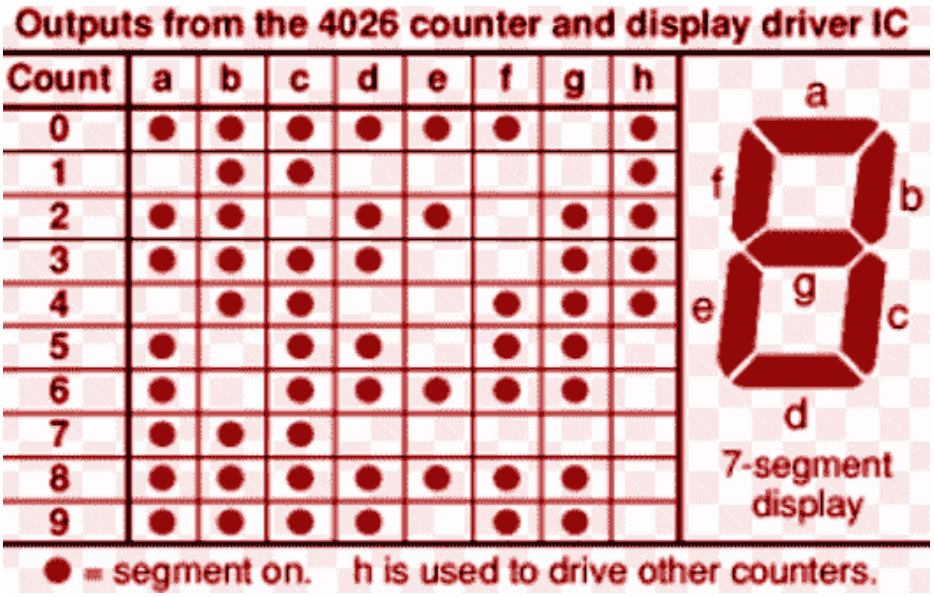

Figure 3: 4026 truth table

. Two seven segment displays to display the numbers from 0 to 59 second.

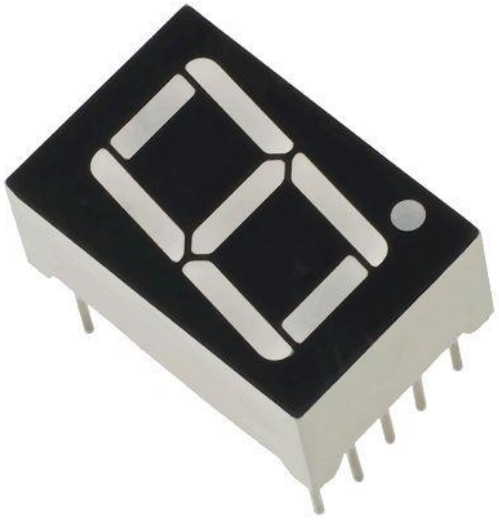

Figure 4: 7 Segment Display

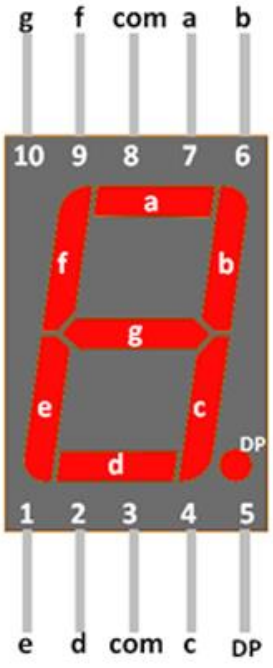

Figure 5: 7 Segment Display Datasheet

.The (555) Ic which is the timer.

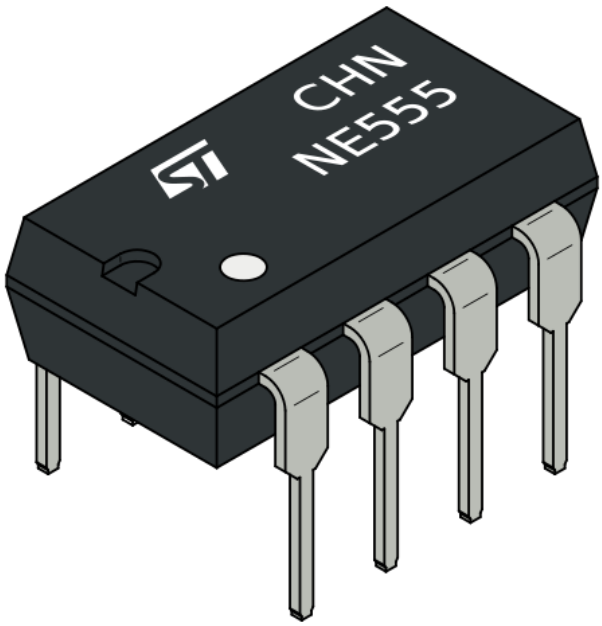

Figure 6: 555 Ic

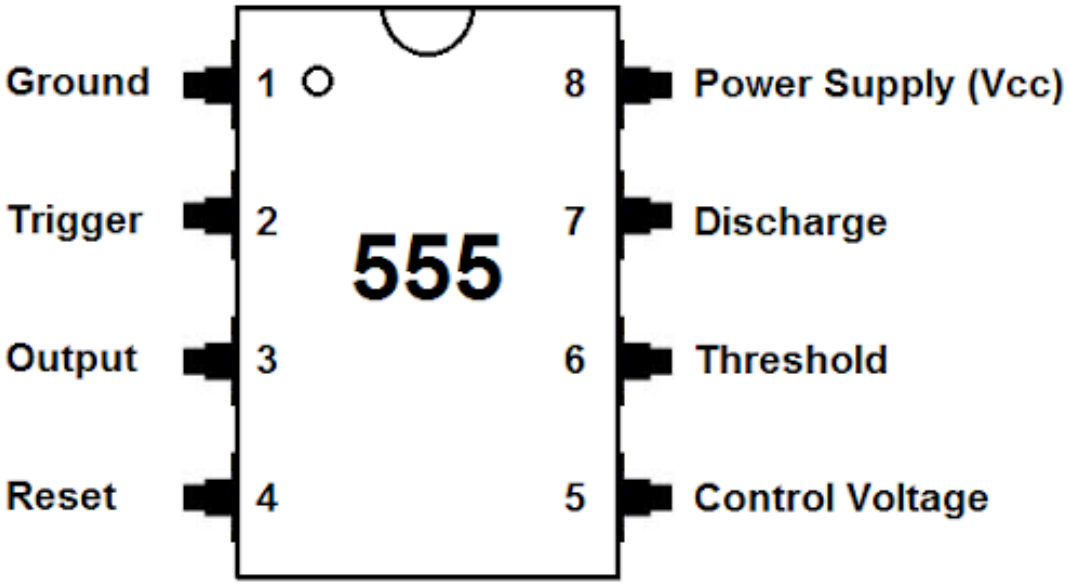

Figure 7: 555 Datasheet

- **The (7411) triple input AND gate Ic**

Figure 8: 7411 Ic

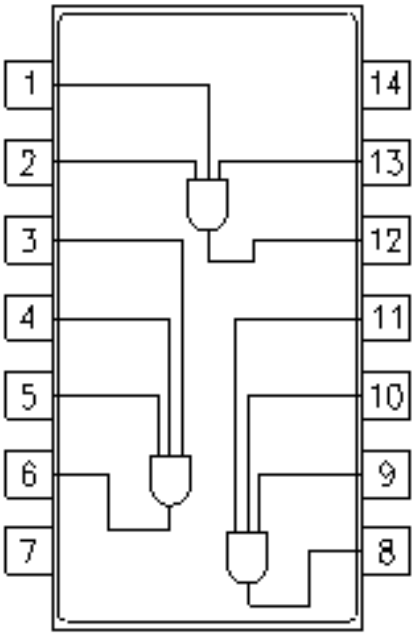

Figure 9: 7411 Datasheet

Inputs			outputs
W	X	Y	Z = W. X. Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Figure 10: 7411 Truth Table

1.2 How to connect the circuit

In the first part of the project which is the counter:

This counter counts from 0 to 59 & then resets automatically to 0, that if it's not manually reset.

As for the counting function, it's induced by 555 timer Ic that generates the pulse signal which in turn feeds into the clock input of the 1st Ic (at pin 1), the first 4026 ic counts the units digit & gives of a "divide by ten" pulse on pin 5 which is fed into the clock input of the 2nd IC which by it's turn counts the tens digit. The tens digit 7 segment display only counts to 5 by connecting e ,f , g pins of the 4026 Ic to 7411 Ic and then connecting the output to pin 15 of 4026.

1.3 Circuit Photos

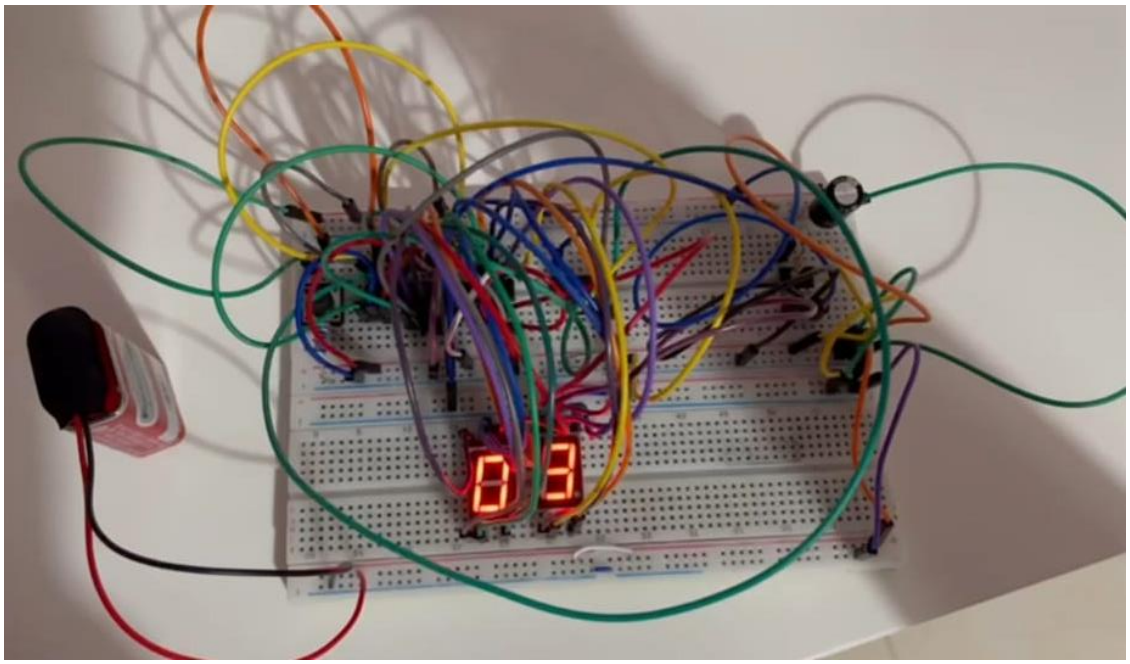

Figure 11: Photo 1 counter

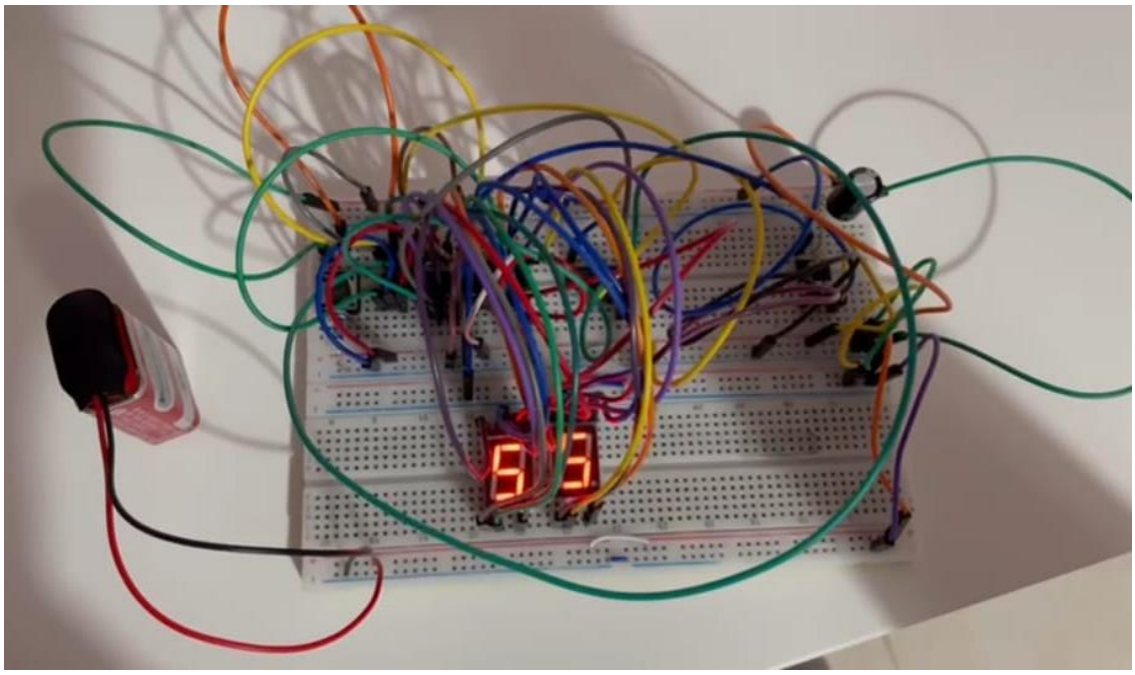

Figure 12: Photo 2 counter

2.0 Circuit Simulation

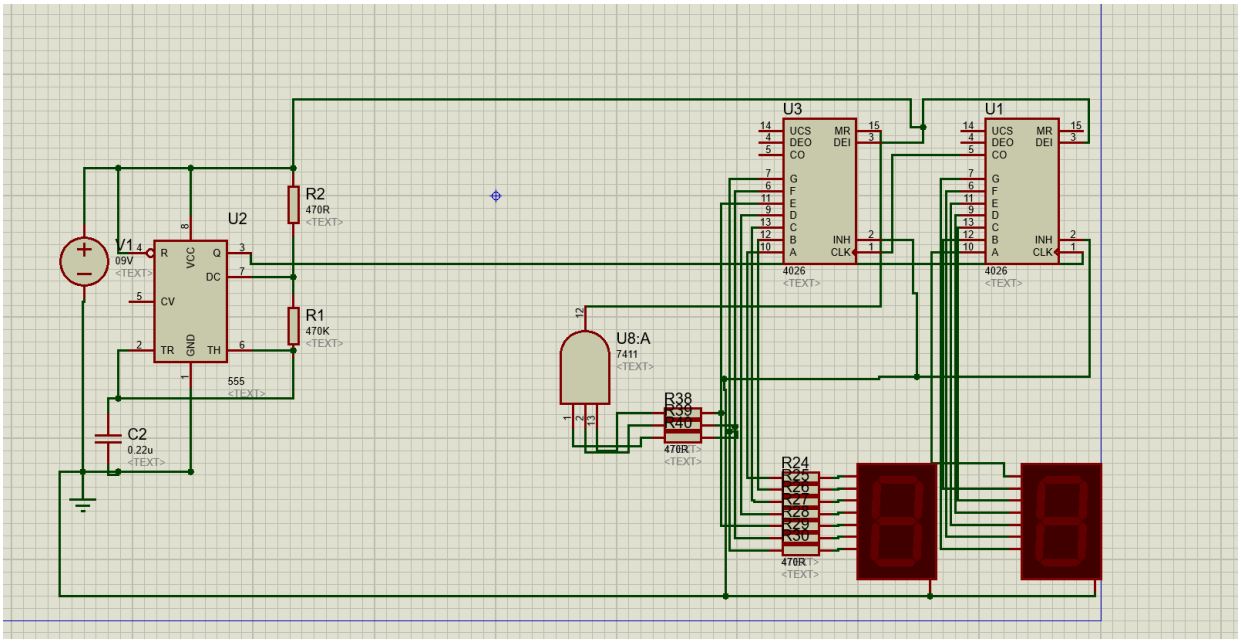

Figure 13: Simulation 1

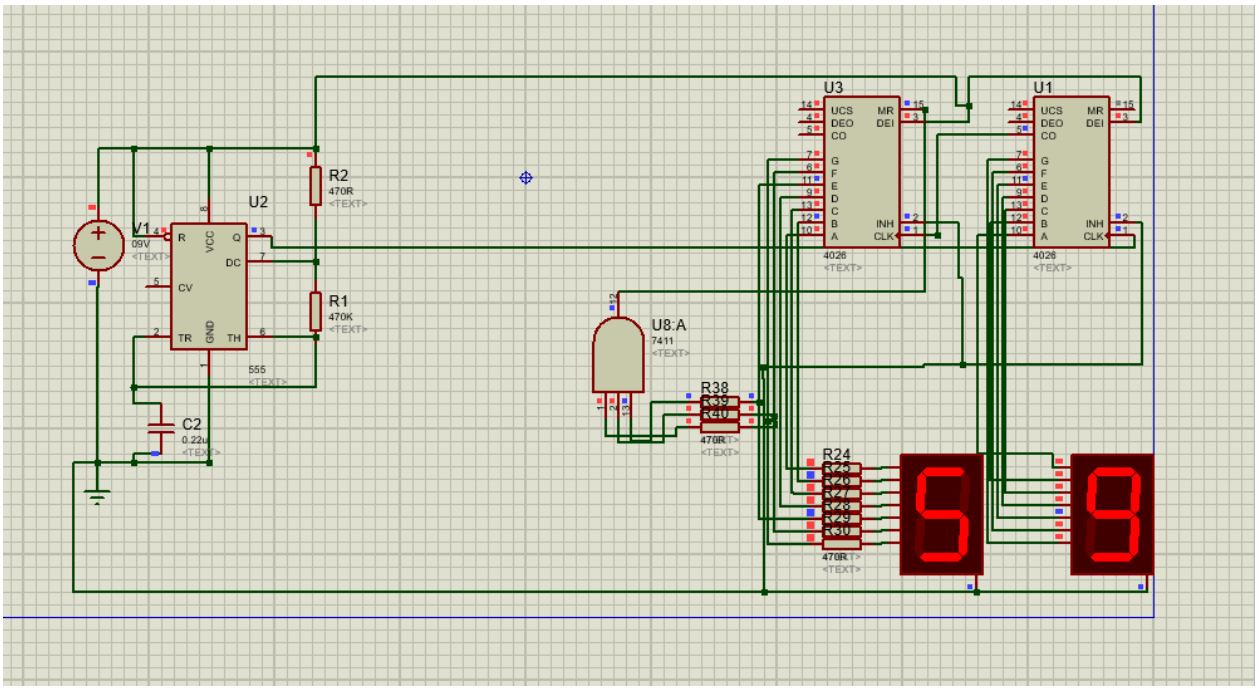

Figure 14: Simulation 2