ISLAMIC UNIVERSITY OF TECHNOLOGY

ORGANIZATION OF ISLAMIC COOPERATION (OIC)

COURSE CODE: EEE 4308

COURSE TITLE: DIGITAL ELECTRONICS I

OPEN ENDED LAB: DESIGNING AN ATM BOOTH SYSTEM

. GROUP NAME: LOGIC BOT

SECTION: C

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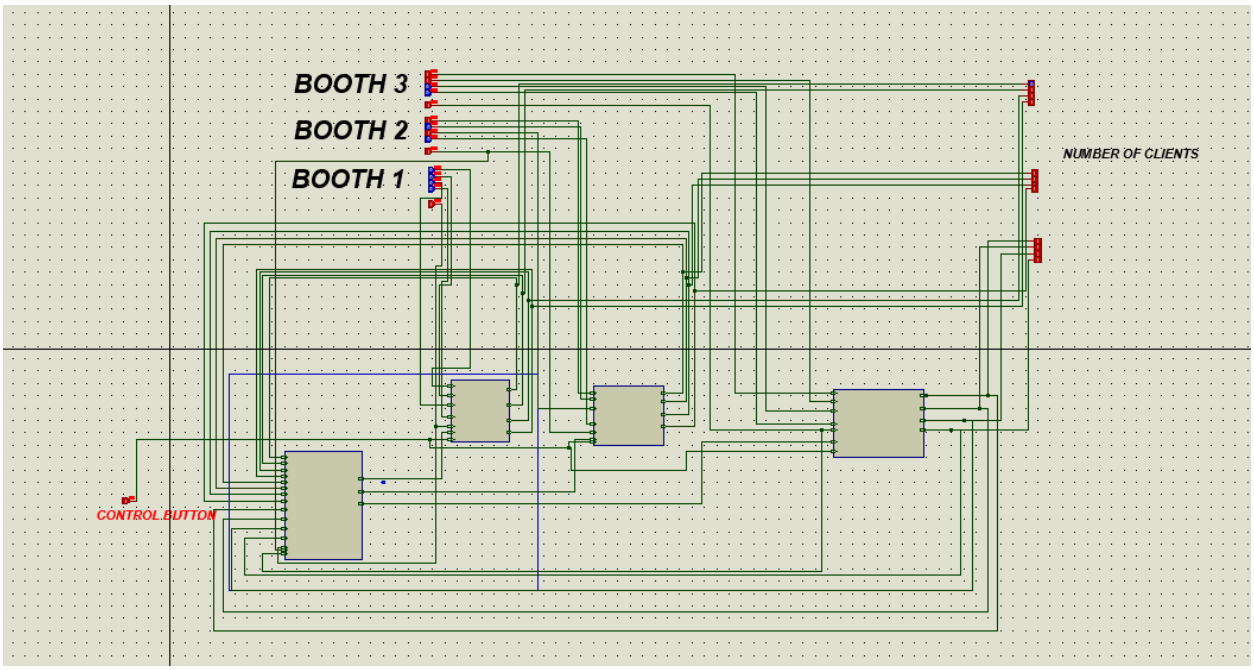
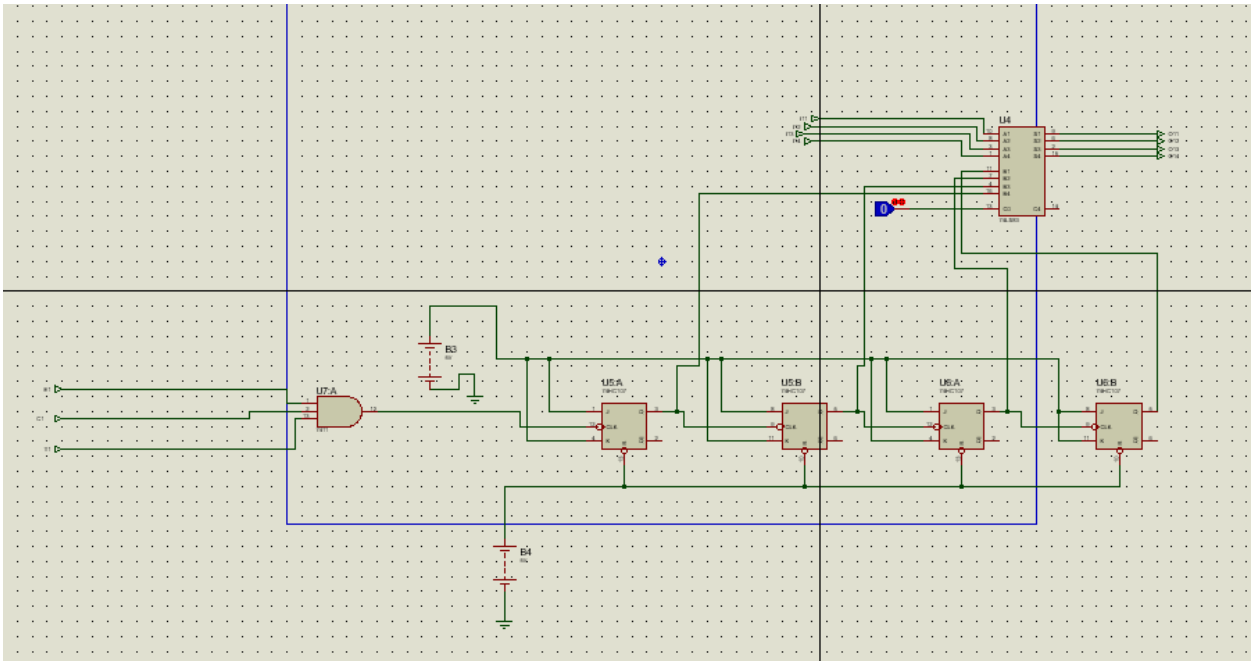
PROBLEM DESCRIPTION:

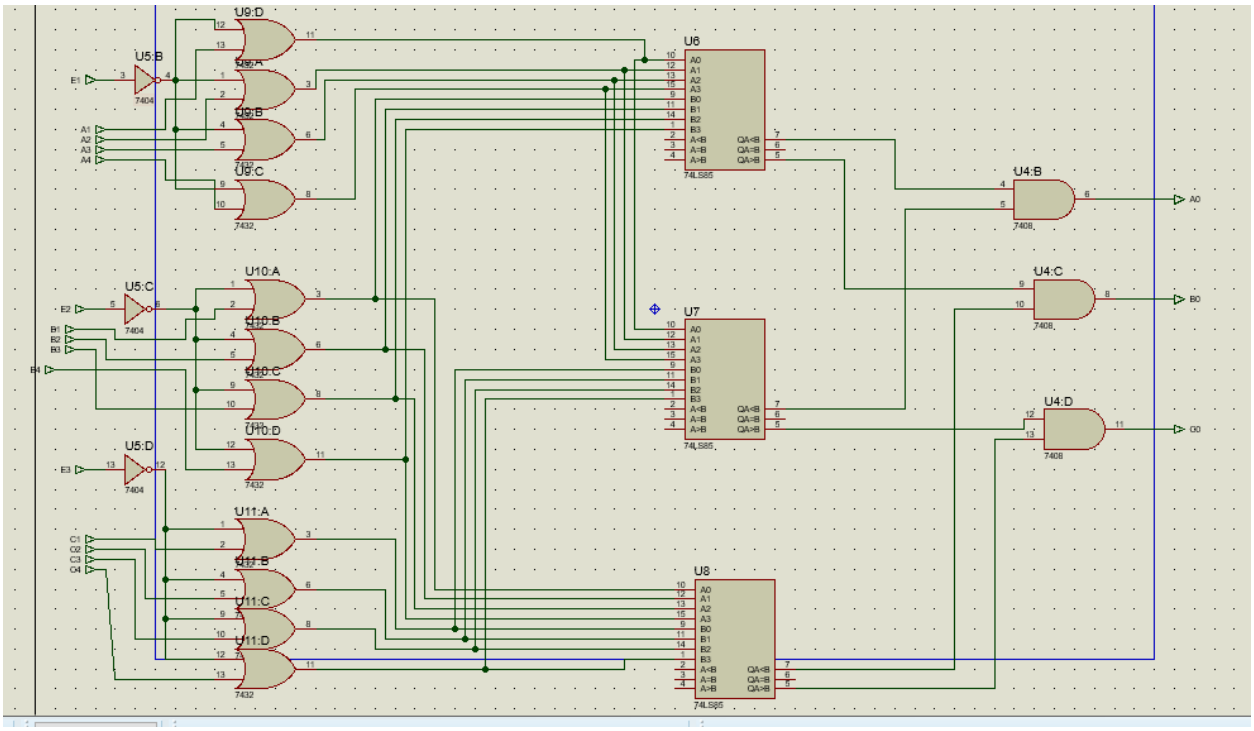
In this problem we were assigned to design a system where there are three deposit booths , from there the clients accomplish there transactions.The system is to be designed in such a way that the crowd will be reducd and managing system will be efficient. There will be a token system by which the system will assign every new in coming client to the least crowded booth.Theauthority can forcefully stop the entire process b its own. For the design recquirement,there will be 4 input terminals so that the instructor can set the initial crowd at each booth manually.Using an input terminal the instructor can set the booh status .The system will be initialized pressing a button to ensure the entrance of a new client.

DESIGNED CIRCUIT:



INTERNAL DIAGRAM:





DESCRIPTION OF CIRCUIT:

To keep track of the number of the client of each booth , asynchronous counter using JK flip flop has been introduced, by which the number of clients in each group can be counted in a chronological manner. In the asynchronous counter, an external clock pulse is provided for only the first flip flop, thereafter the output of the 1st FF acts as a clock pulse for the second FF and so on .A basic Asynchronous counter used as decade counter configuration using 4 JK Flip-Flops and one NAND gate 74LS10D. The Asynchronous counter count upwards on each clock pulse starting from 0000 (BCD = 0) to 1001 (BCD = 9). Each JK flip-flop output provides binary digit, and the binary out is fed into the next subsequent flip-flop as a

clock input.In each booth subcircuit there is a binary adder(74LS83),where the initial number of client is stored up and added with the stored number of clients whenever a new client is assigned into the booth.Thus in every booth the number of client is stored and incremented gradually, and these data of the number of client in each booth are send to a Ccomparator, where all the number of clients are compared with one another individually and then the least number of client in a booth is tracked. The 74LS85 is a 4-Bit Magnitude Camparator which compares two 4-bit words (A, B), each word having four Parallel Inputs (A0 – A3, B0 – B3); A3, B3 being the most significant inputs.Here such types of three comparators have been used. One for comparing the number of booth 1 and 2 and the other to compare the count of booth 2 and 3 and the rest one is for comparing the counts of booth 3 and 1.Each comparator is controlled by its enable pin which are connected to the corresponding booth subcircuit.The output of the comparators are also connected corrspondingly to the booths as the manner of least umber of clients .It means when the output of the comparator subcircuit scrutinizes the booth 1 having the least number of clients,then booth 1 will be activated to take more clients and similarly other two booths acts in this same technique.A common activation controll pin is connected with all the booth subcircuit ,when this button is pushed entrance of a new client in the booth is ensured.From each booth there is a enable pin to give the full controll of the system operation to the instructor, whenever these pins are

turned off ,then the operation of that corresponding booth gets stopped. Thus instructor can manually takeover the control of the system.At the end, the number of all counts in eacth booth as well as the booth with the least number of clients is also indicated with the number of clients.And thus the system is being operated.