Ahsanullah University of Science and Technology

Department of CSE

Course no: CSE 3110

Course title: Digital system Design lab.

Assignment no: 3

Submitted to : Dr. MD Raqibul Hasan and Anika Rahman

Submitted by:

Section : A

Group : A_2

ID:

202001040029

202001040032

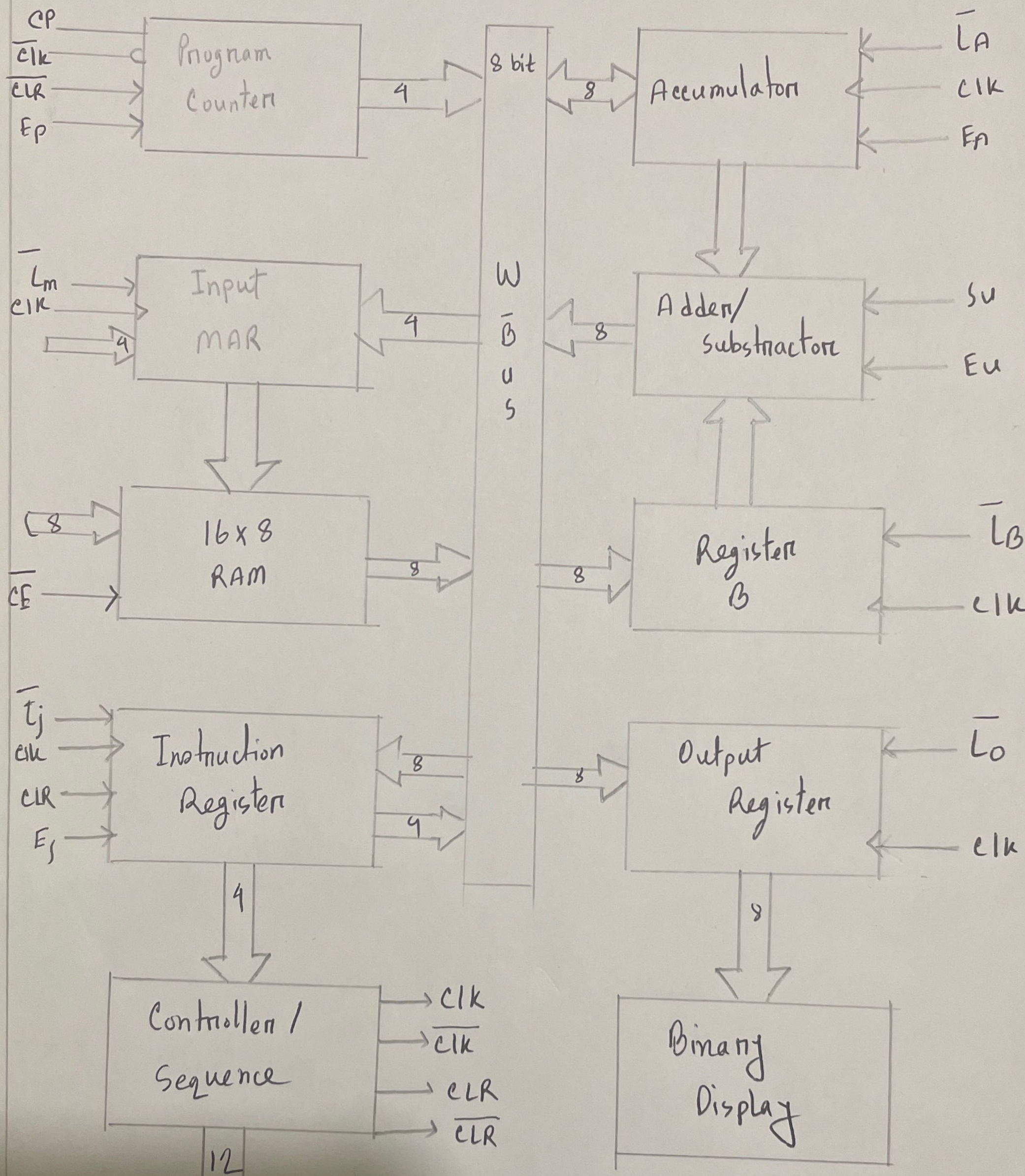
202001040041

202001040046

Introduction:

SAP-1 is the first stage in the evolution towards modern computer. The main purpose of SAP is to introduce all the crucial ideas behind computer operations. Being a simple computer, SAP-1 also covers many advanced concepts. SAP-1 is a bus organized computer. All registers are connected to W bus with the help of tri-state buffers. The full form of SAP is simple as possible.

Block Diagram : (SAP-1)

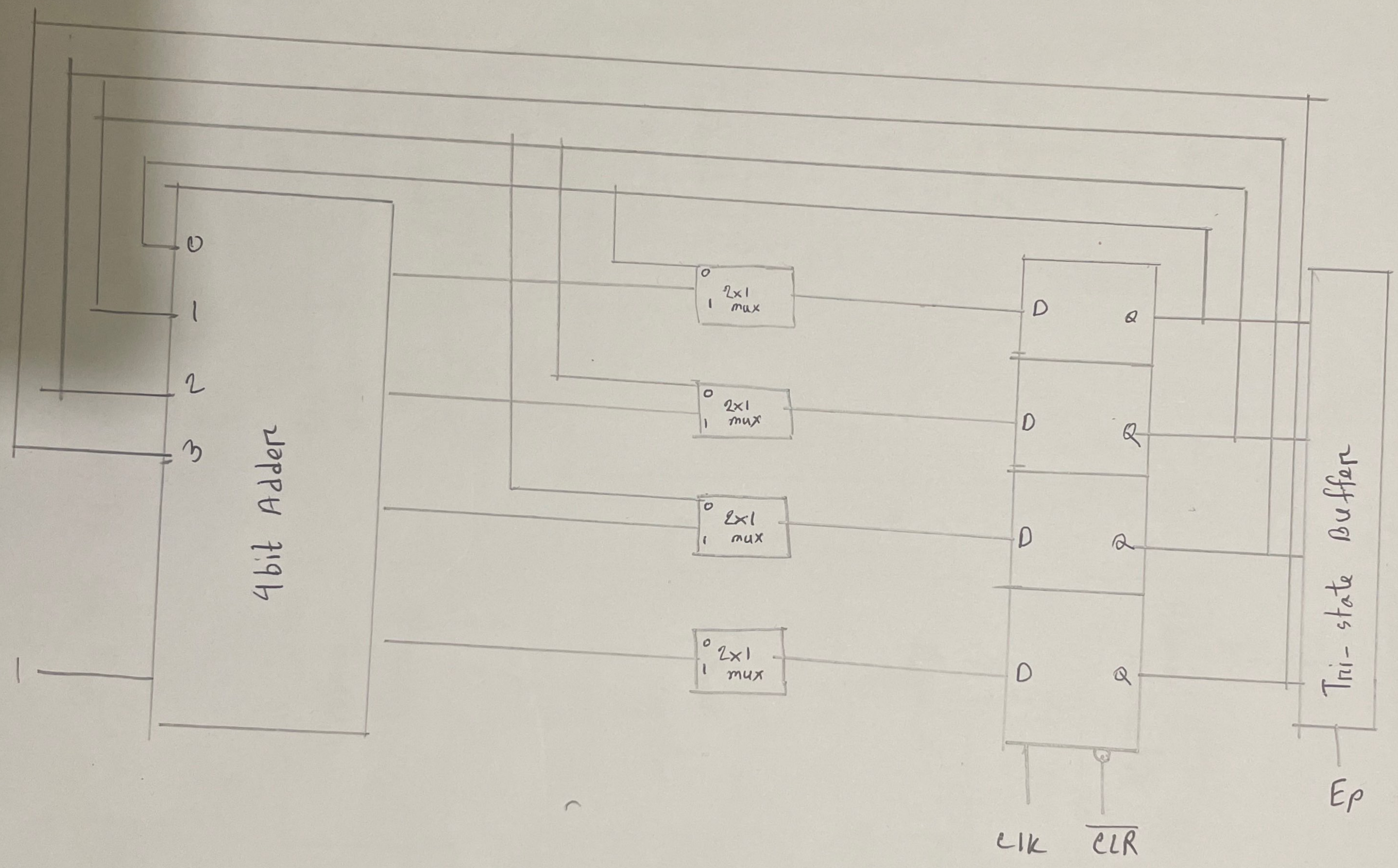


C_P, E_P, $\bar{L}_m$, $\overline{CE}$, $\bar{L}_I$, $\bar{E}_J$, $\bar{L}_A$, E_A, S_u, E_u, $\bar{L}_B$, $\bar{L}_O$

fig: SAP-1

Program Counter

8 Bus (8 bit)



Memory Adress Register (MAR)

$\bar{L}_m$	Function
0	Load
1	hold

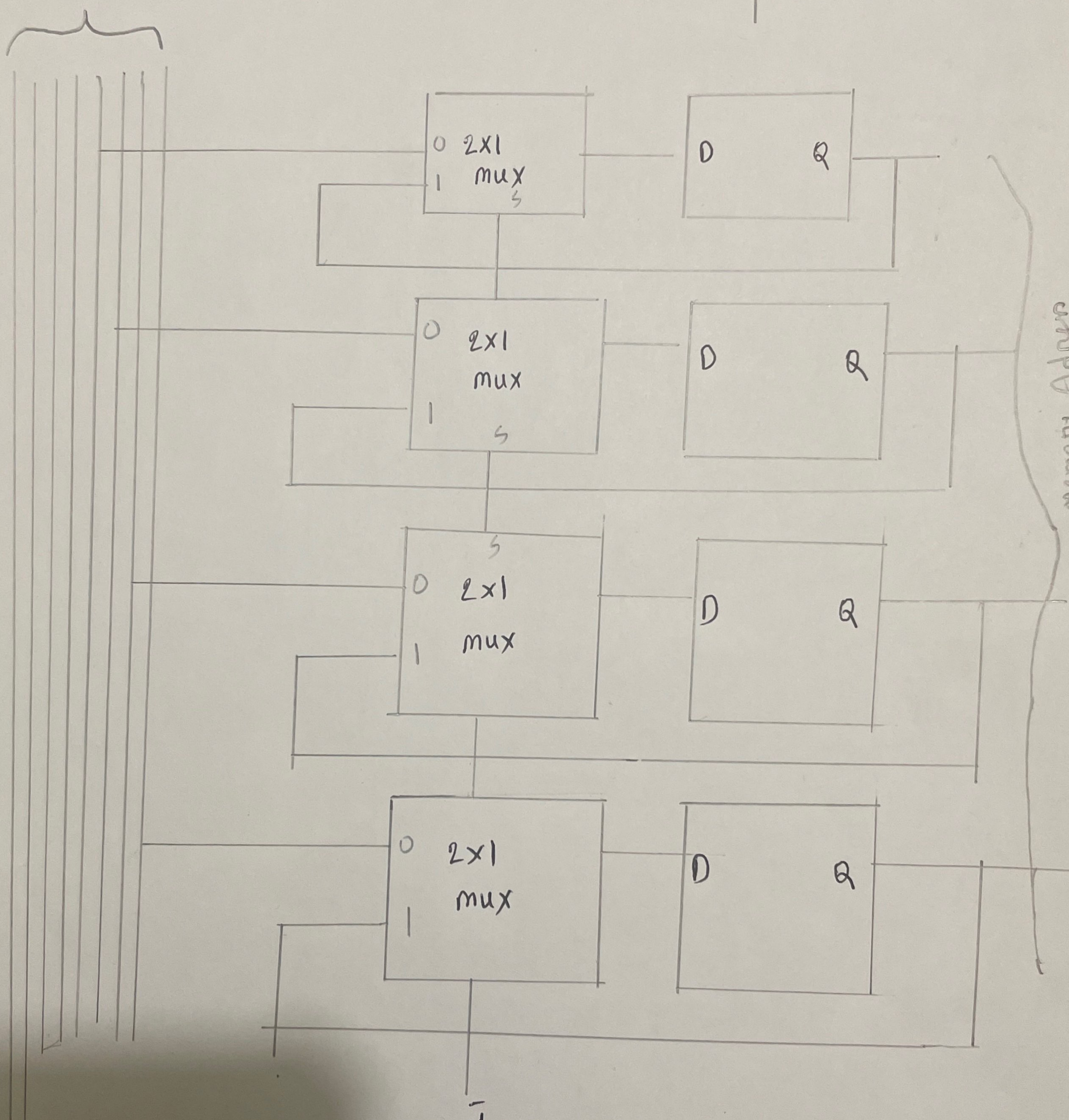
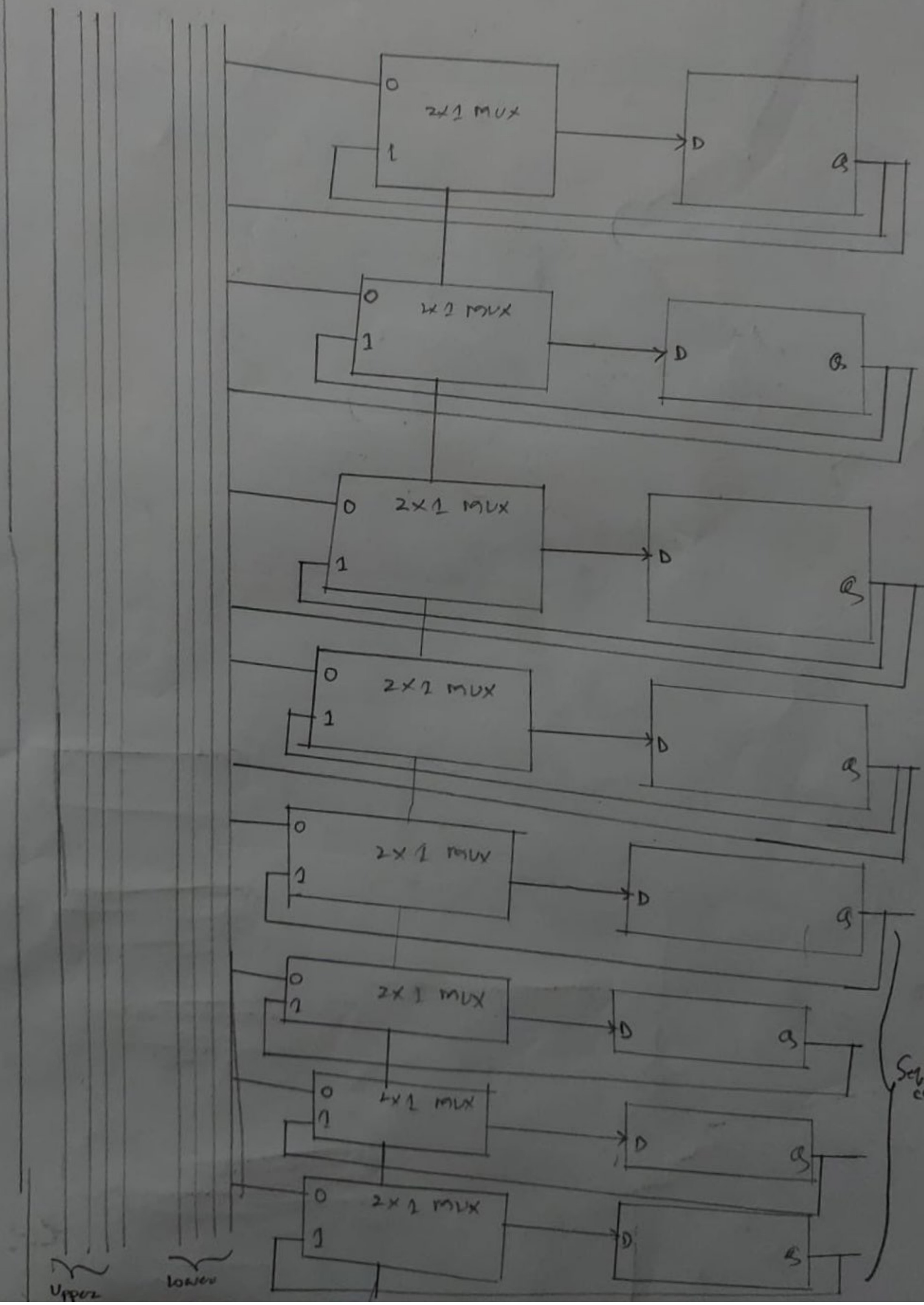
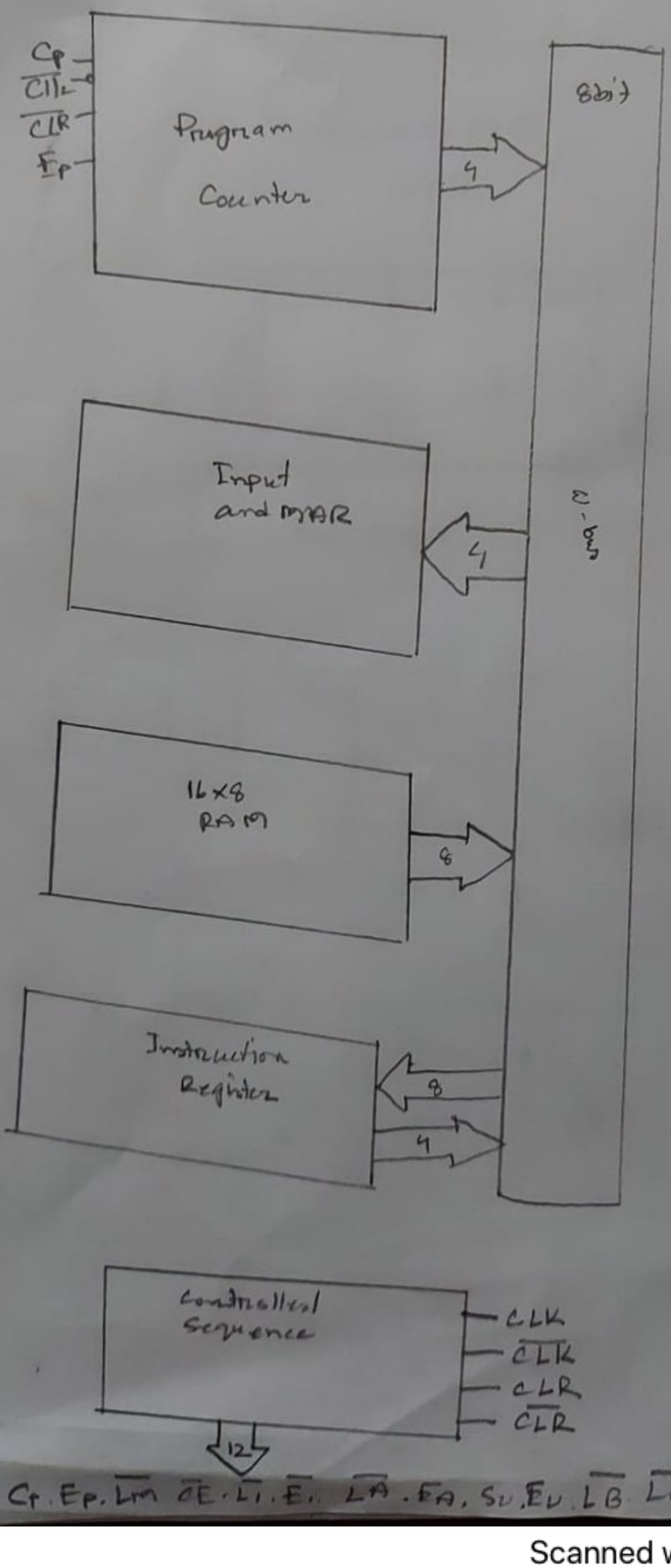


fig : MAR

Circuit Diagram of Instruction Register (IR):





Controll Unit :

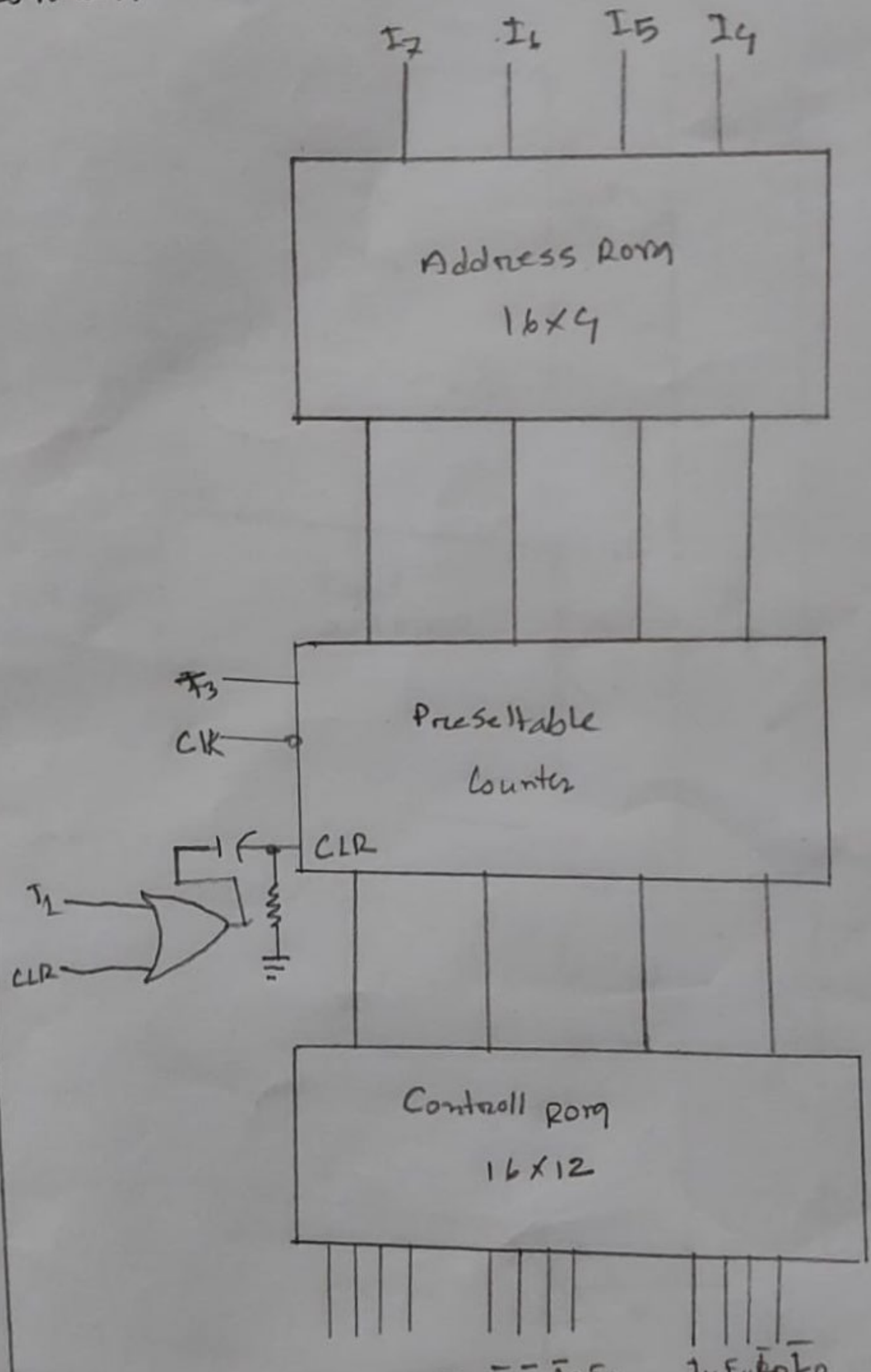
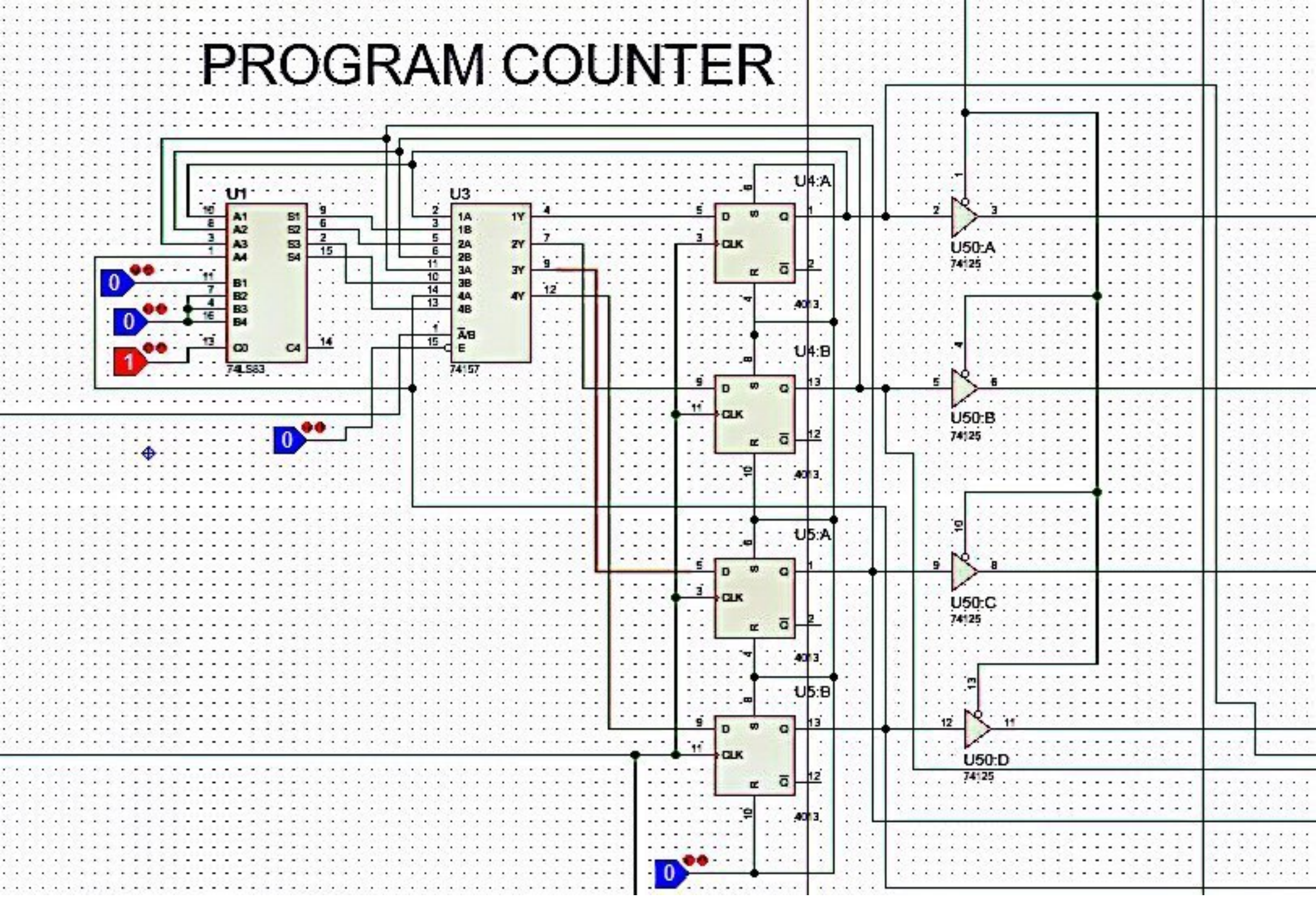
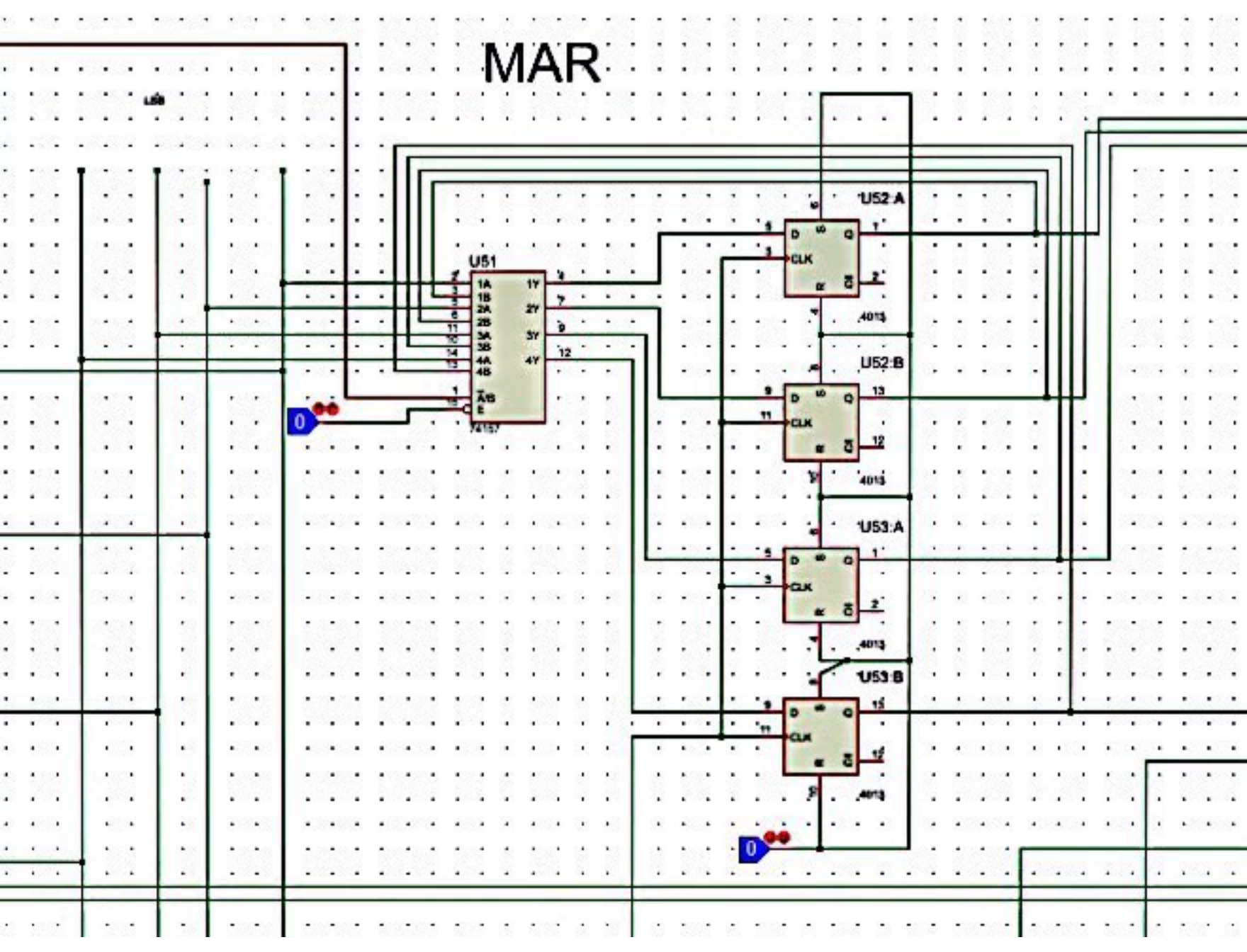
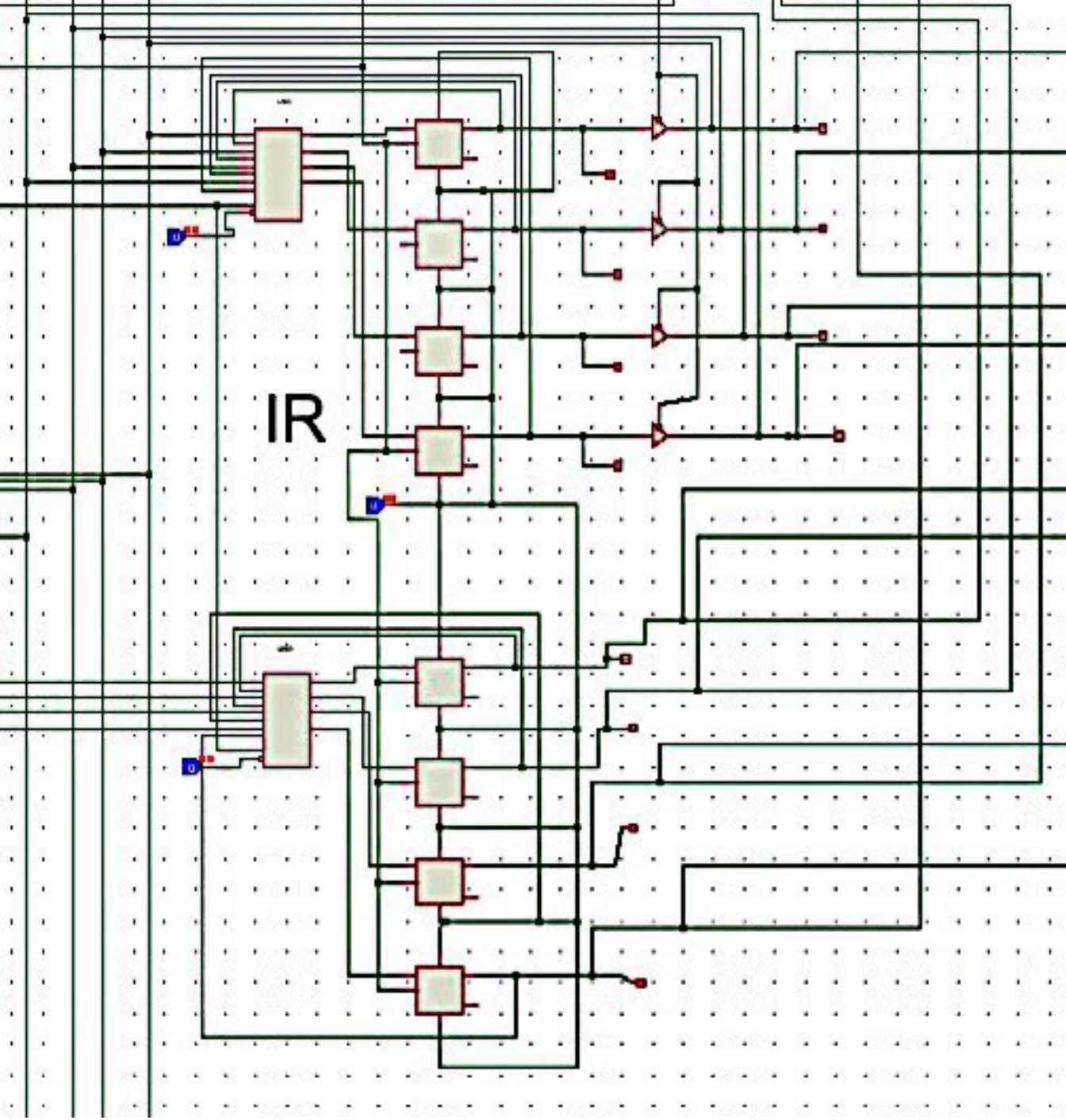


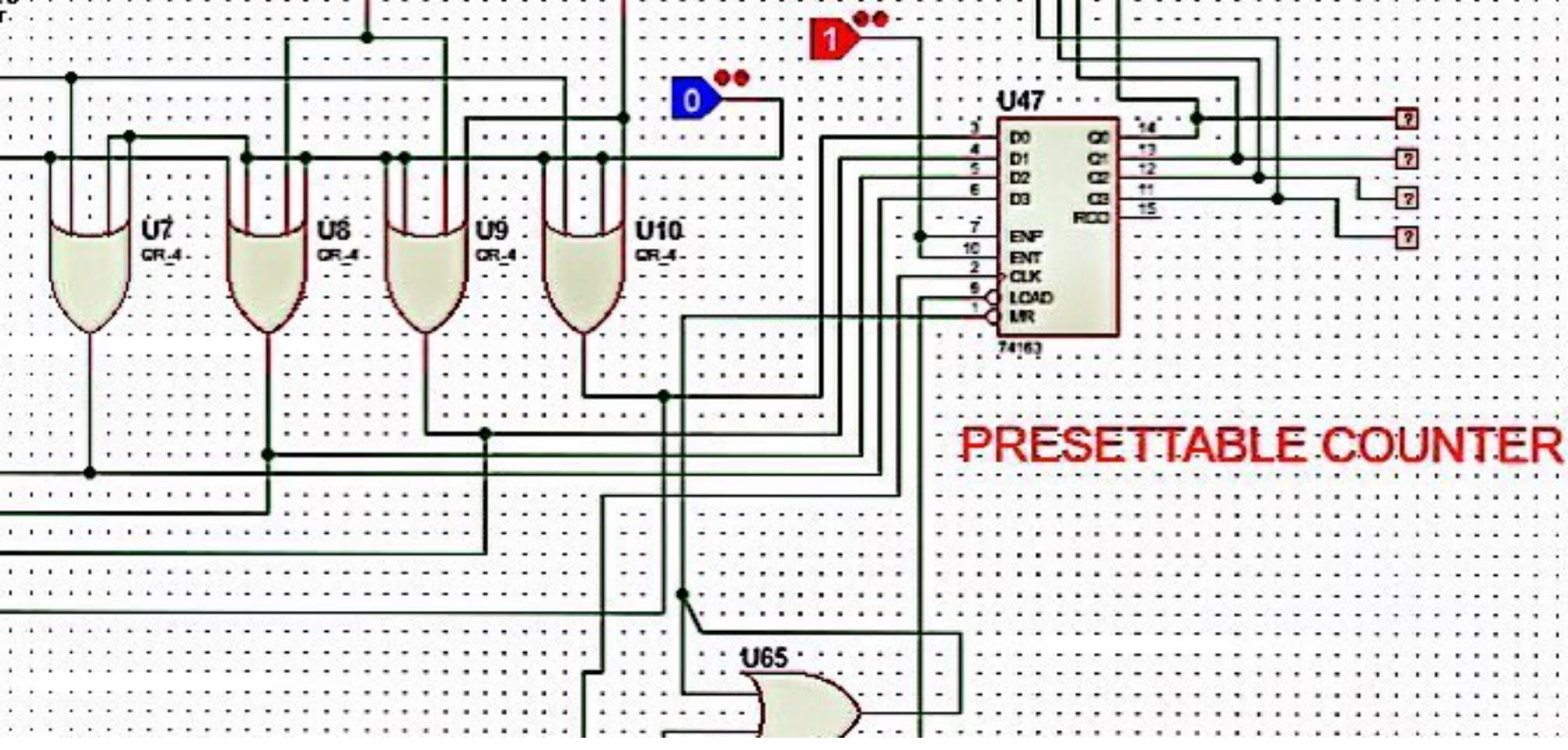
Fig: Microprogrammed Control of SAP 1

PROGRAM COUNTER

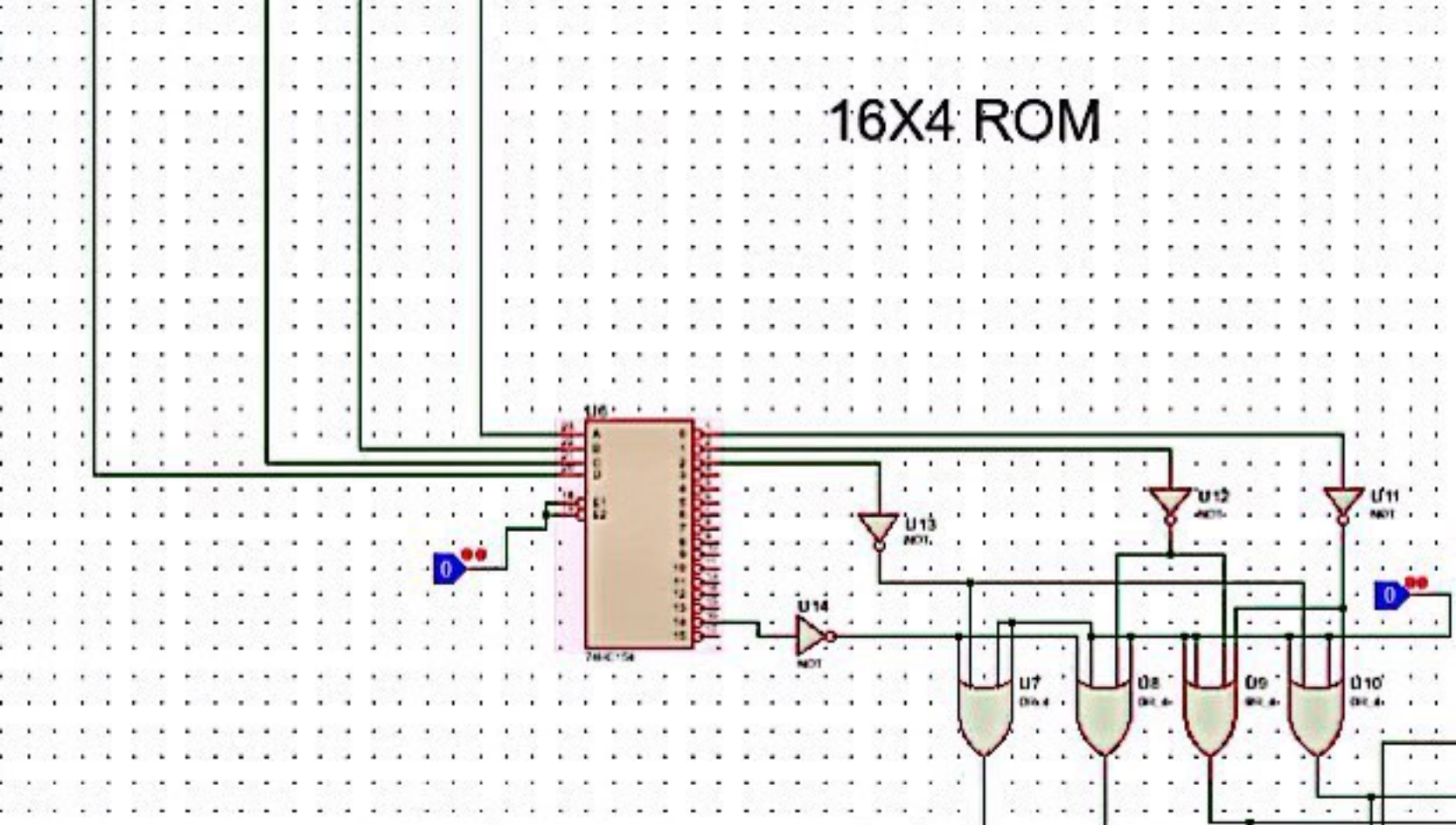


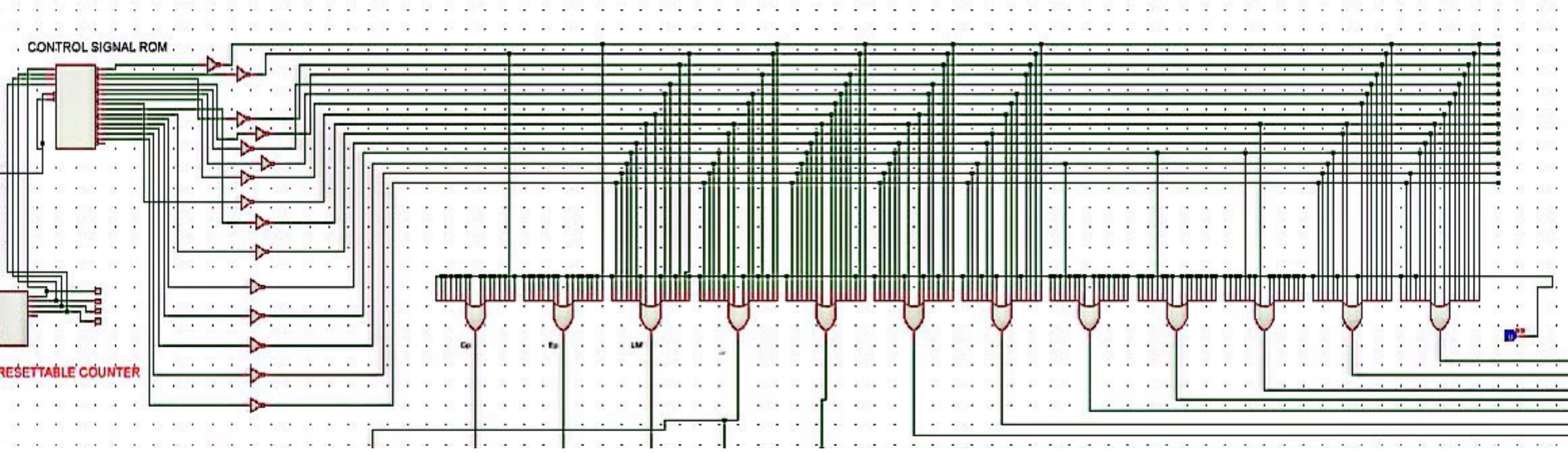




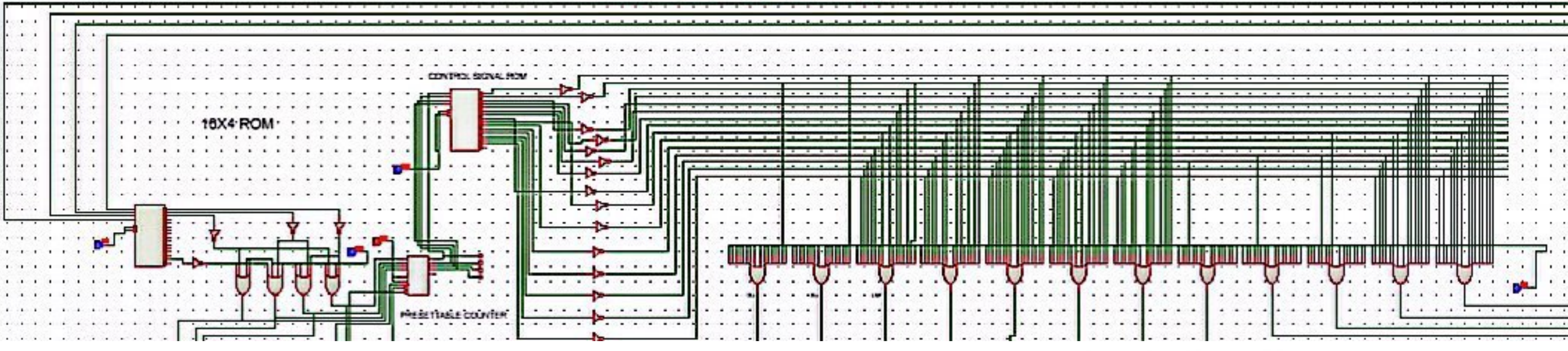


16X4 ROM





Controller/Sequencer



Conclusion :-

There are some advantages of SAP-1 like flexibility. The architecture of SAP-1 is 8 bits of data bus and compromised of 16x8 memory. Therefore 16 memory location having 8 bits in each location. It needs 4 adress lines which either comes from PC during computer run phase or may come from the 4 adress switches during the program phase. These features of SAP-1 allows to make complex operations done.