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Lab assignment#01

Subject: Digital & Logic design

Presented to: Sir Sarmad Hassan

Question no:01

Design a logic circuit having 3 inputs A,B,C will have high output whenever majority of inputs are high.

Let Output is 'D'.

Now by applying OR operation on given inputs.

Truth table:

A	B	C	D	
0	0	0	0	
0	0	1	1	
0	1	0	1	
0	1	1	1	<-
1	0	0	1	
1	0	1	1	<-
1	1	0	1	<-
1	1	1	1	<-

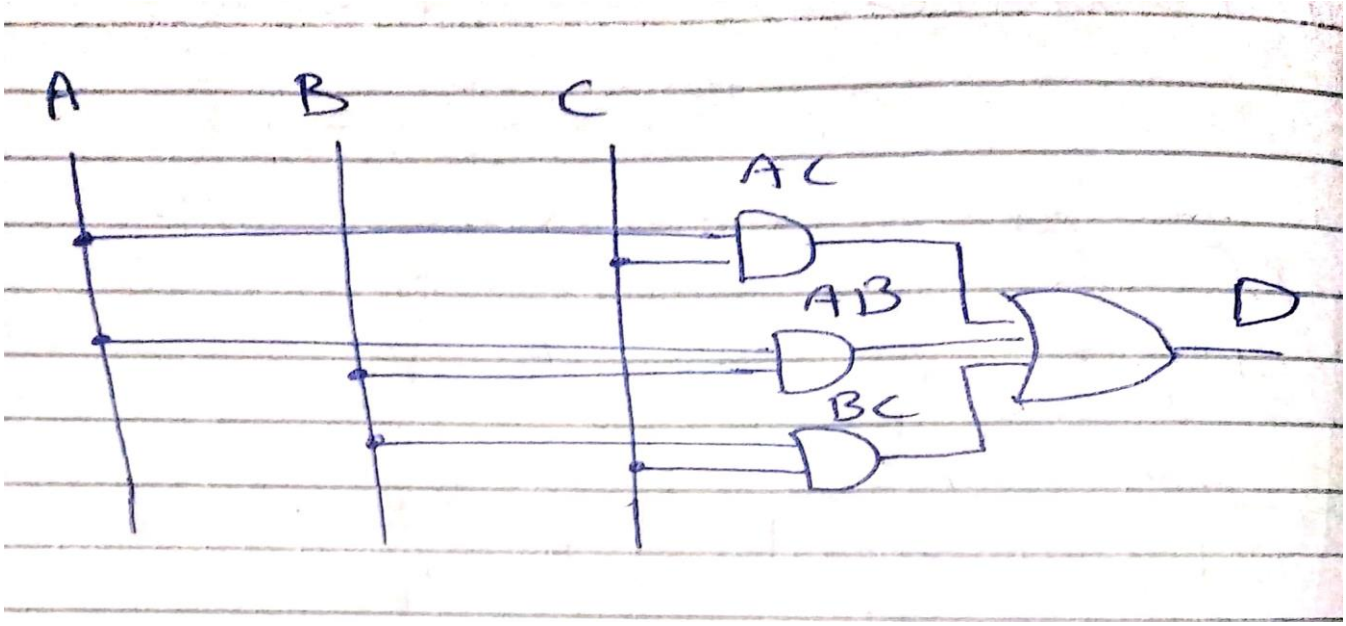
By considering columns containing more than one '1'.

K-map:

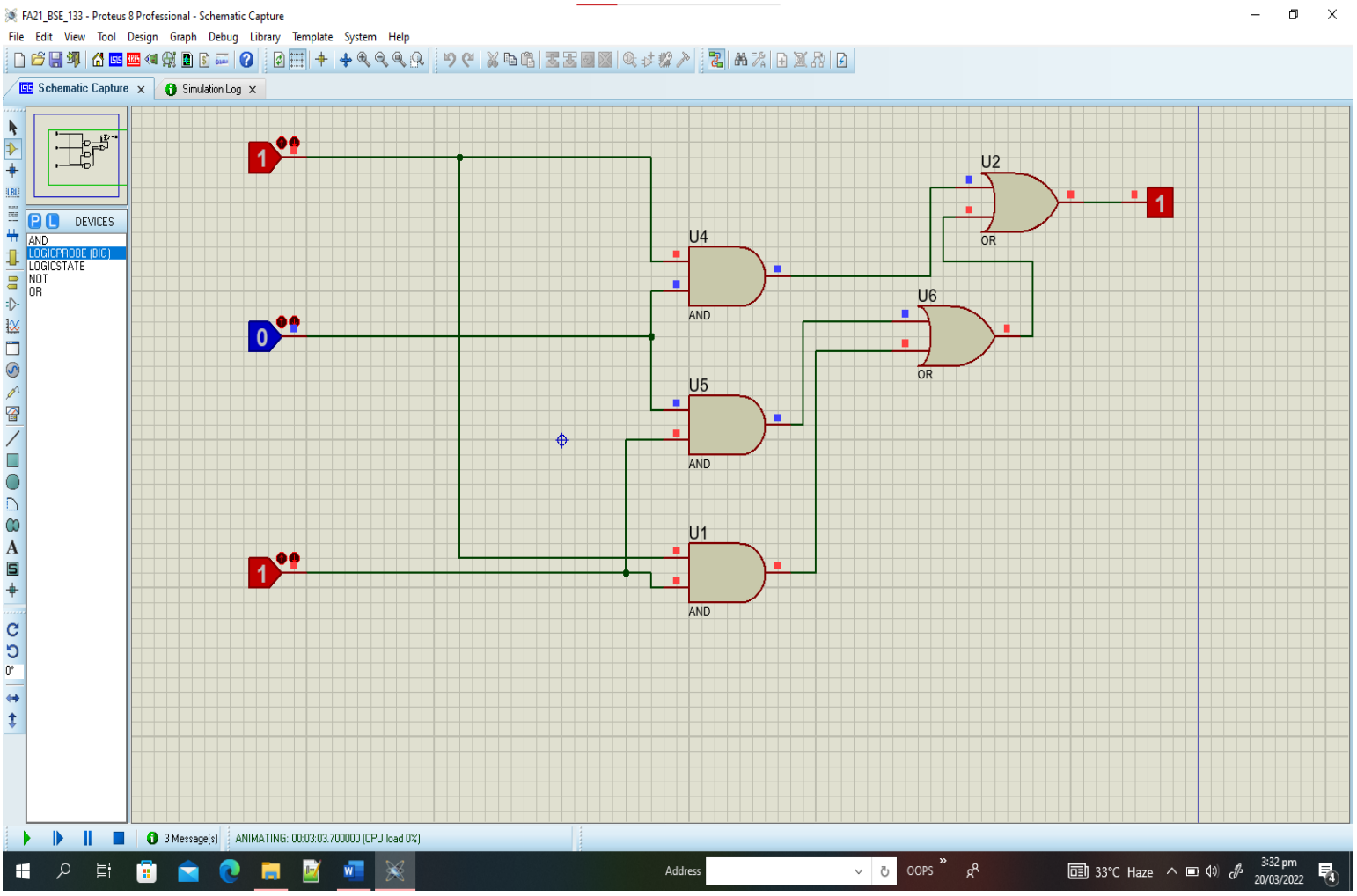
A \ **BC**	00	01	11	10
0	0	0	1	0
1	0	1	1	1

Equation: AC+BC+AB (In min-terms)

Logic Diagram:



Proteus Implemented circuit:



Question#02

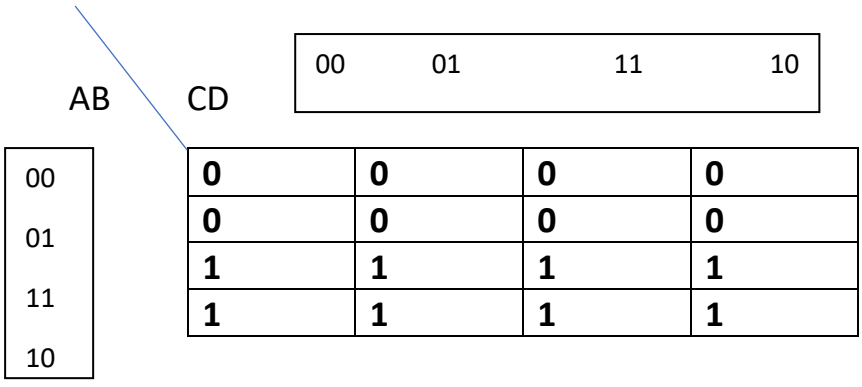
Design a logic circuit based on car alarm which will sound when car alarm is activated and either car is shaken or car lock open with key or someone tries to start the car doors are locked.

Applying "OR" operation on inputs in given truth table.

A	B	C	D	Output
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

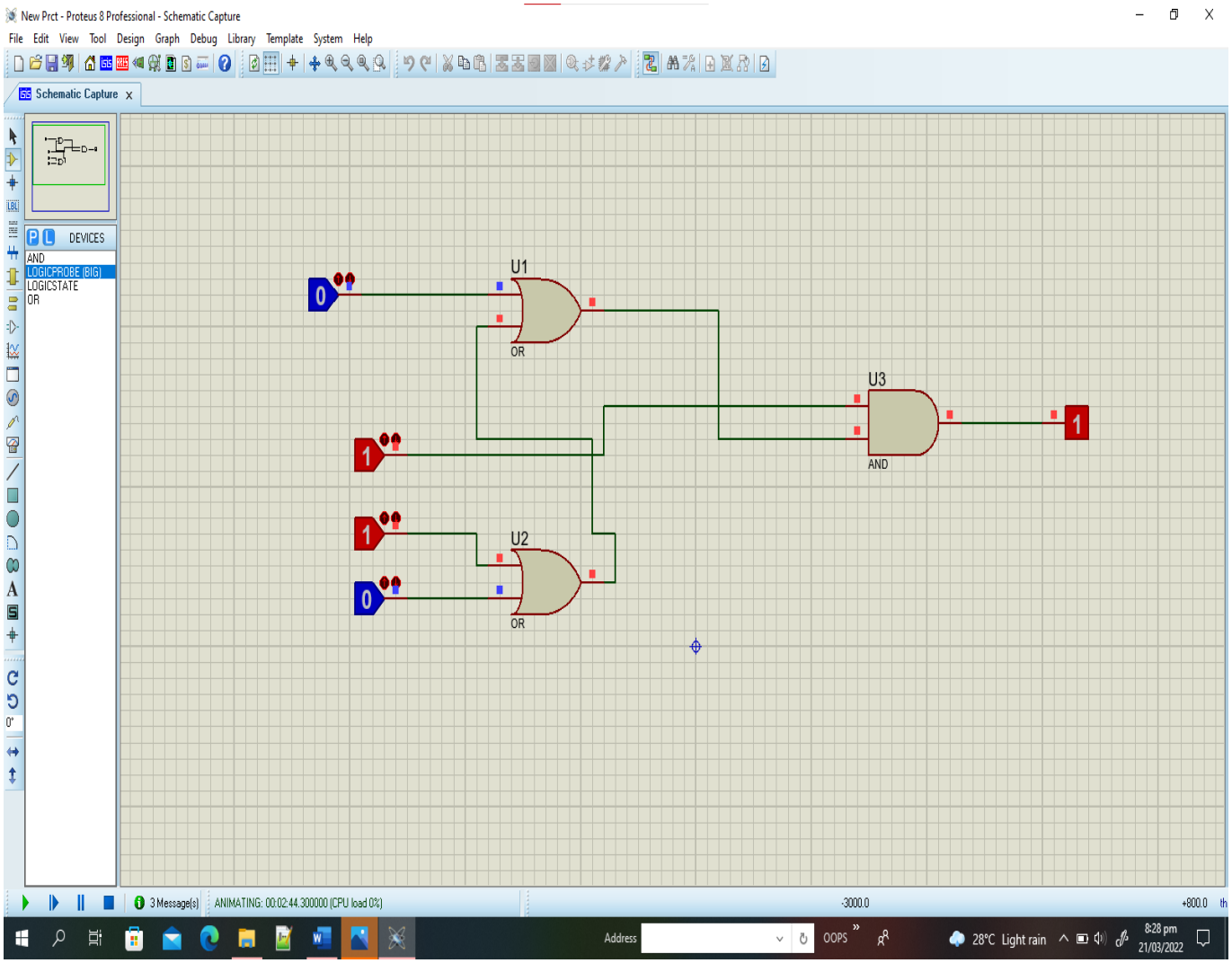
Considering only such rows containing A as '1'.

K-map:



Equation: A

Logic Diagram:



THE END

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