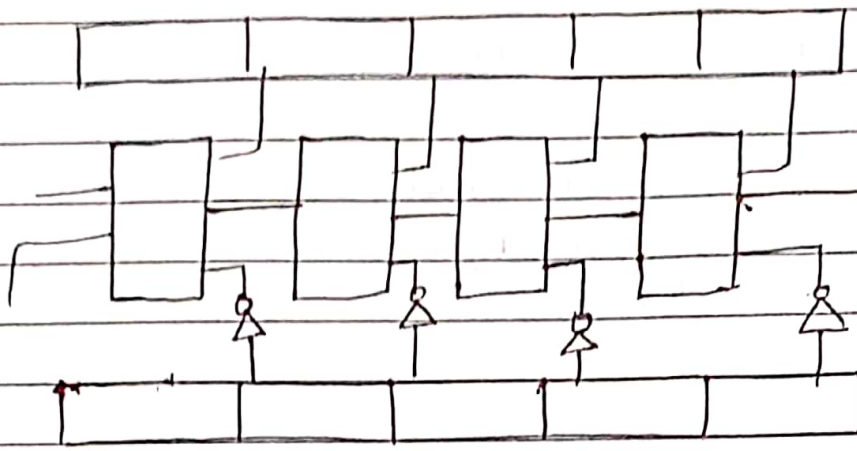
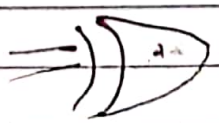
Dated:

ADDER / SUBTRACTION CIRCUIT:

* flag: The bit which include any special operation is known as flag.



By Adding not gate in the Register B we can convert adder circuit into substractor Byt As we know that;

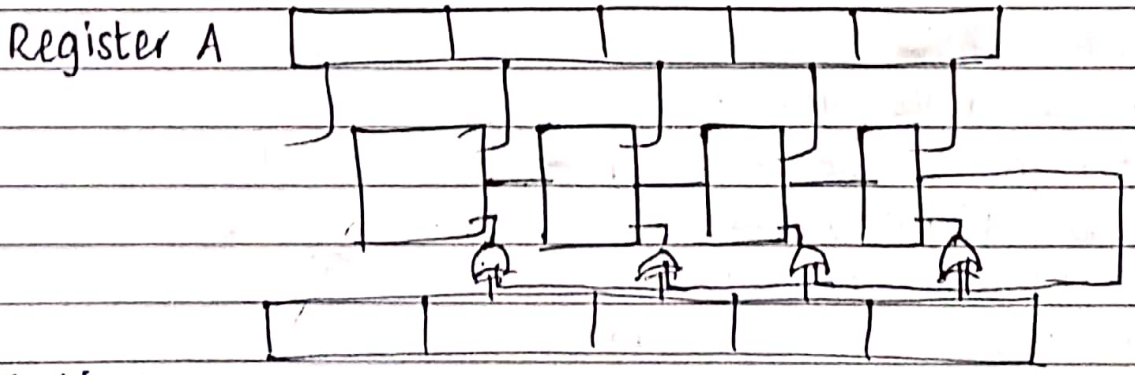


A	B	XOR
0	0	0
0	1	1
1	0	1
1	1	0

* if we fix bit A=0 the given input will be return without change.

* If we fix bit A=1 the given input will be return as inverted and behave as NOT

what if,
we replace NOT gate with XOR gate and interconnect the inputs we can automate the circuit and can be used as adder and substractor at a same time.



Application:
These circuit are used in ALU for performing logical operations.

Dated:

MACHINE LANGUAGE:

For example

we have to perform following operation in our 4bit computer

Add	15	14	13	12
Data	16 + 2	−3	+7	

} High level language

then, firstly it is converted in symbolic representation language which is known as Assembly language

Assembly Language

LDA	15
ADD	14
SUB	13
ADD	12
OUT	XX
ALT	XX

with the help of Assembler it is converted into Machine language →

Machine Language

0000	1111
0001	1110
0010	1101
0001	1100
1110	0000
1111	0000

	Memory Map	
0	0000	1111
1	0001	1110
2	0010	1101
3	0001	1100
4	1110	0000
5	1111	0001
⋮		
12	0000	0111
13	0000	0011
14	0000	0010
15	0001	0000

pagero in Binary

Data stored in Binary.

* Von neuman Architecture