3.) NOT gate

Name:- Abhinav Kaushik
Roll No.:- 2100290110003
Batch:- A-1

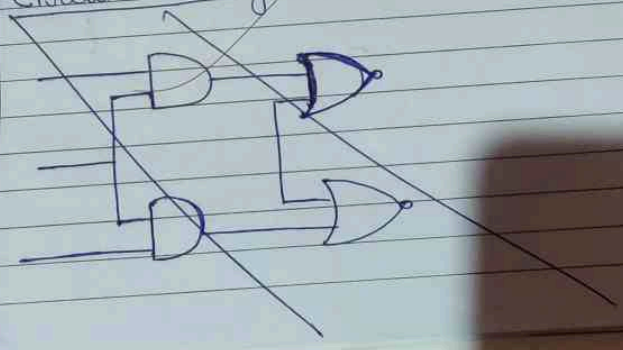
Flip-Flop

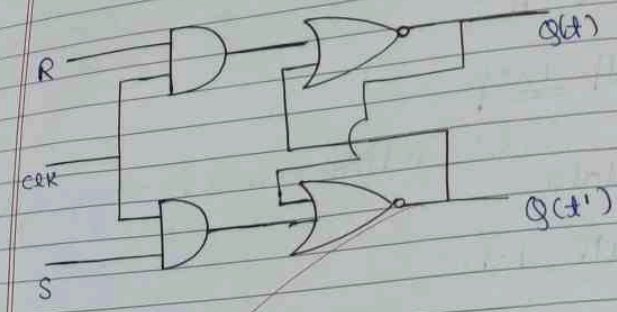
It is a device which stores a single bit of data.

Truth Table

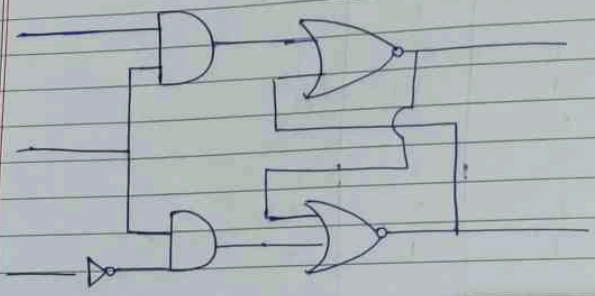
S	R	Qin	Qout
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	X
1	1	1	X

Circuit Diagram





D- Type



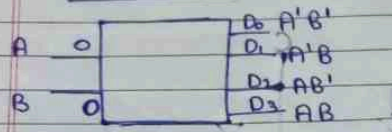
Name:- Abhinav Kaushik

Page No.
Date

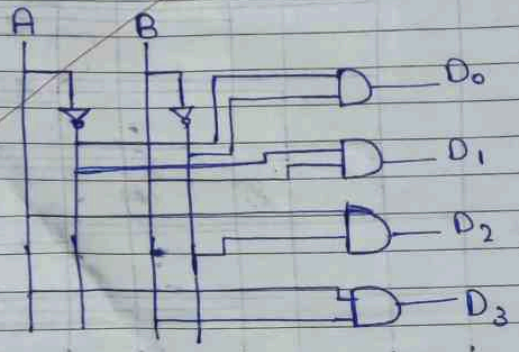
Abhinav Kaushik
21002901l0003
Batch A1

2X4 and 3X8 Decoder

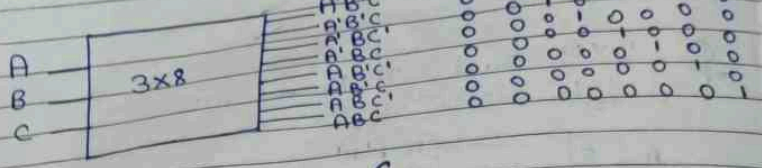
2X4 Decoder

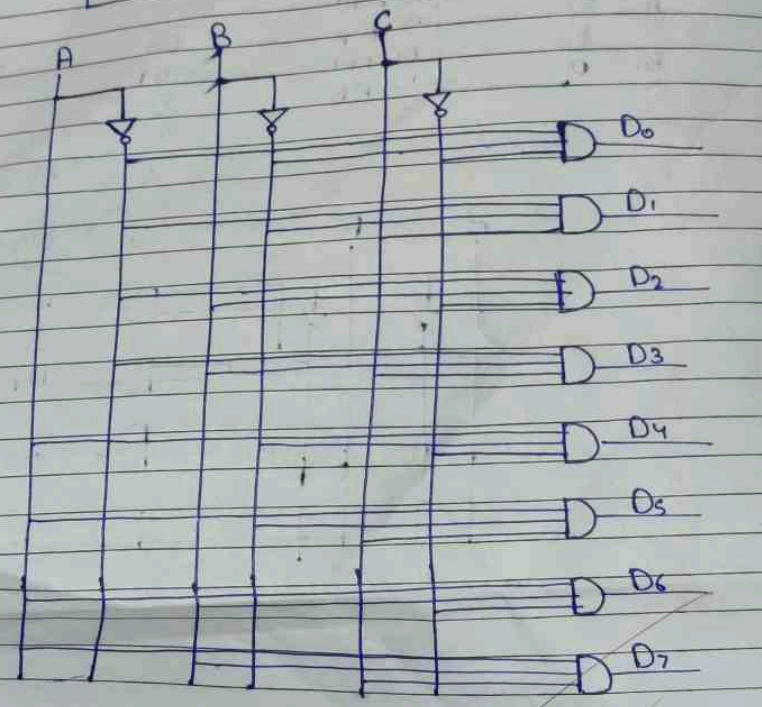


	00	01	10	11
	1	0	0	0
	0	1	0	0
	0	0	1	0
	0	0	0	1



3X8 Decoder

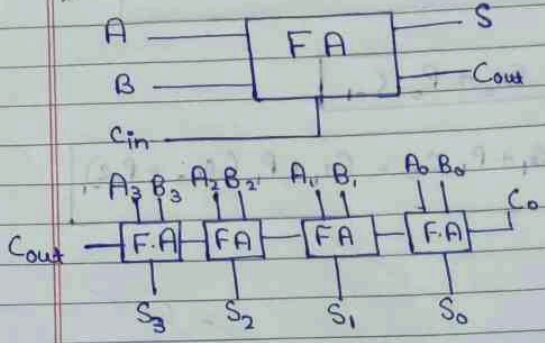




⇒ Abhinav Kaushik
⇒ 2100290110003
⇒ A

Date: 1 1
Page No.

CARRY LOOK-AHEAD ADDER



A = A_3 A_2 A_1 A_0
B = B_3 B_2 B_1 B_0
Cout S_3 S_2 S_1 S_0

A	B	Cin	Cout	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

$$C_i = A_i B_i + (A_i \oplus B_i) C_{i-1}$$

$$C_0 = G_0 + P_0 \cdot C_{-1}$$

$$C_1 = G_1 + P_1 C_0 = G_1 + P_1 (G_0 + P_0 C_{-1})$$

3.) NOT gate

Name:- Abhinav Kaushik

Roll. No:- 21002901100003

Batch:- A-1

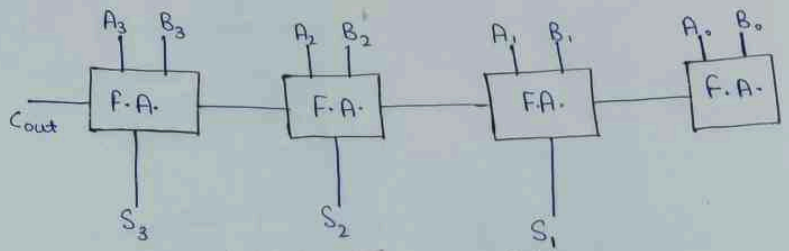
Experiment:- 4bit binary Adder/subtractor.

C_1 C_{in}

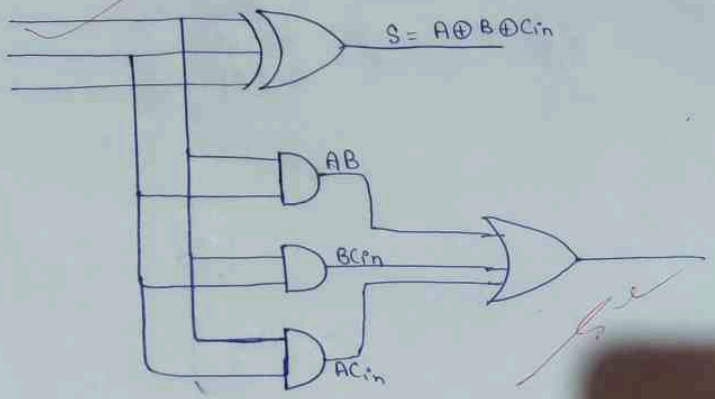
A = A_3 A_2 A_1 A_0

B = B_3 B_2 B_1 B_0

C_{out} S_2 S_1 S_0



4-bit binary Adder



Full Adder

ASSIGNMENT-

3.) NOT gate

The logic gate that inverts the input

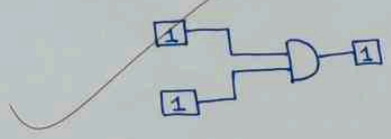
Name :- Abhinav Kaushik
Roll No :- 21002901100003
Group :- A1

1.) AND Gate

The logic And gate is a type of logic gate whose output goes high to a logic level 1 only when all of its inputs are high.

Truth Table

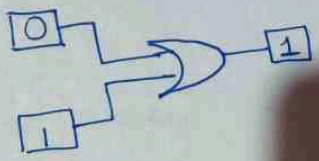
A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1



2.) OR Gate

It is a logic gate in which if both inputs are high then output is high, if either inputs are high output is high if both inputs are low output is low.

A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

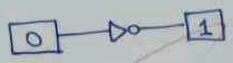


ASSIGNMENT-2 * Abhinav L

3.) NOT gate

The logic gate that inverts the input en

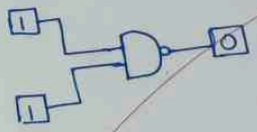
A	$\bar{A}$
0	1
1	0



4.) NAND Gate

A logic gate which produces an output which is false only if all its input are true.

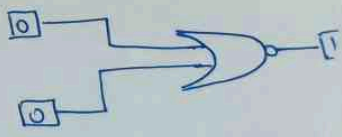
A	B	(A.B)'
0	0	1
0	1	1
1	0	1
1	1	0



5.) NOR Gate

A logic gate that provides high output if both inputs are low or either inputs are low and high if both inputs are then it gives low output.

A	B	(A+B)'
0	0	1
0	1	0
1	0	0
1	1	0

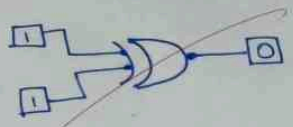


ASSIGNMENT-2

⑥ XOR Gate

A logic gate that gives a true output when the number of true input is odd.

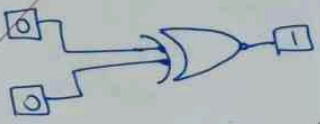
A	B	A ⊕ B
0	0	0
0	1	1
1	0	1
1	1	0



⑦ XNOR Gate

A logic gate that gives true output when the no. of inputs are even.

A	B	(A ⊕ B)'
0	0	1
0	1	0
1	0	0
1	1	1



ASSIGNMENT-2

Name:- Abhinav Kaushik
Roll No:- 21002901100003
Group:- A-1

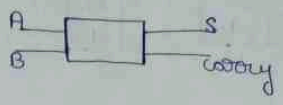
Experiment :- Study and verify the half adder and full adder.

Half adder : An electronic device that performs addition of numbers; It is able to add two single digit binary numbers.

Truth Table:-

A	B	C	S
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

Symbol:-



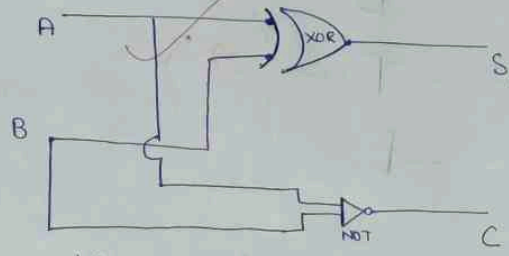
A \ B	B'	B
A'	0	0
A	0	1

C = AB

A \ B	B'	B
A'	0	1
A	1	0

S = A'B + AB'
= A ⊕ B

Circuit diagram



Full adder

It consists two XOR gates, two AND gates and one OR gate. It adds three inputs and produce two outputs.

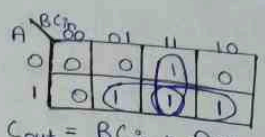
ASSIGNMENT-2.
UNIT-2

* Abhinav kaushik
* 21

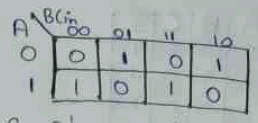
Page No:
Date

Truth Table

A	B	Cin	Cout	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1



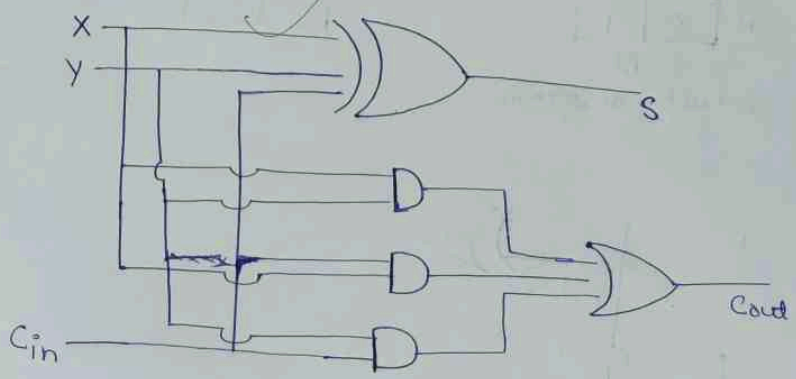
$C_{out} = BC_{in} + AC_{in} + AB.$



$S = A'BC_{in} + A'BC'_{in} + AB'C'_{in} + ABC_{in}$

$S = A \oplus B \oplus C$

Circuit Diagram



Abhinav Kaushik
2100290110003
Batch A1

2*2 Binary multiplier.

$A = A_1 \; A_0$
$B = B_1 \; B_0$
$A_1B_0 \quad A_0B_0$
$A_1B_1 \quad A_0B_1$
$P_2 \quad P_1 \quad P_0$