

May 2023

01 Monday

121 - 244) Wk 19

May ◀

Su	Mo	Tu	We	Th	Fr	Sa
•	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	•	•	•

08:00

Ripple Carry Adder (RCA) :

09:00

10:00

11:00

12:00

13:00

14:00

15:00

16:00

17:00

18:00

19:00

Eve.

It is used for adding binary numbers. it is called ripple carry because the carry output from each full adder in the chain is passed to the next higher-order full adder in sequence.

→ This propagation of the carry signal causes a delay that limits the speed of the circuit.

Working:

1. The LSB of the two numbers is added using the first full adder.

2. The carry-out from the first full adder is fed as the carry-into the next full adder, which adds the next bit and so on.

3. This process continues until the MSB is added and the final carry-out is the carry from the MSB addition.

June

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.	.	.	.	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	.

May 2023

Tuesday 02

(122 - 243) Wk 19

08:00 Ex: A - 1011

B - 1101

09:00

1. Add LSB (1+1) — sum is 0

10:00 carry is 1

Add next bits

11:00

(1+0+1) — Sum is 0

12:00

carry is 1

Add next bits

13:00

(0+1+1) — Sum is 0

carry is 1

14:00

Add MSB (1+1+1)

Sum = 1

15:00

carry-out = 1

16:00

result = 11000

17:00

pros — simple and easy to implement.

18:00 RCA are easy to scale to larger bit widths by adding more Full adders

19:00 Cons -

Slow carry propagation — The carry-out from each full adder must ripple through all subsequent stages, which results in delays with the no. of bits.

May 2023

03 Wednesday

(123 - 242) Wk 19

May

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19:00

Eve.

→ To overcome the delay in RCAs, faster adders like Carry-Lookahead Adders (CLA) or carry-skip Adders are used in modern designs, which aim to reduce the Carry Propagation delay

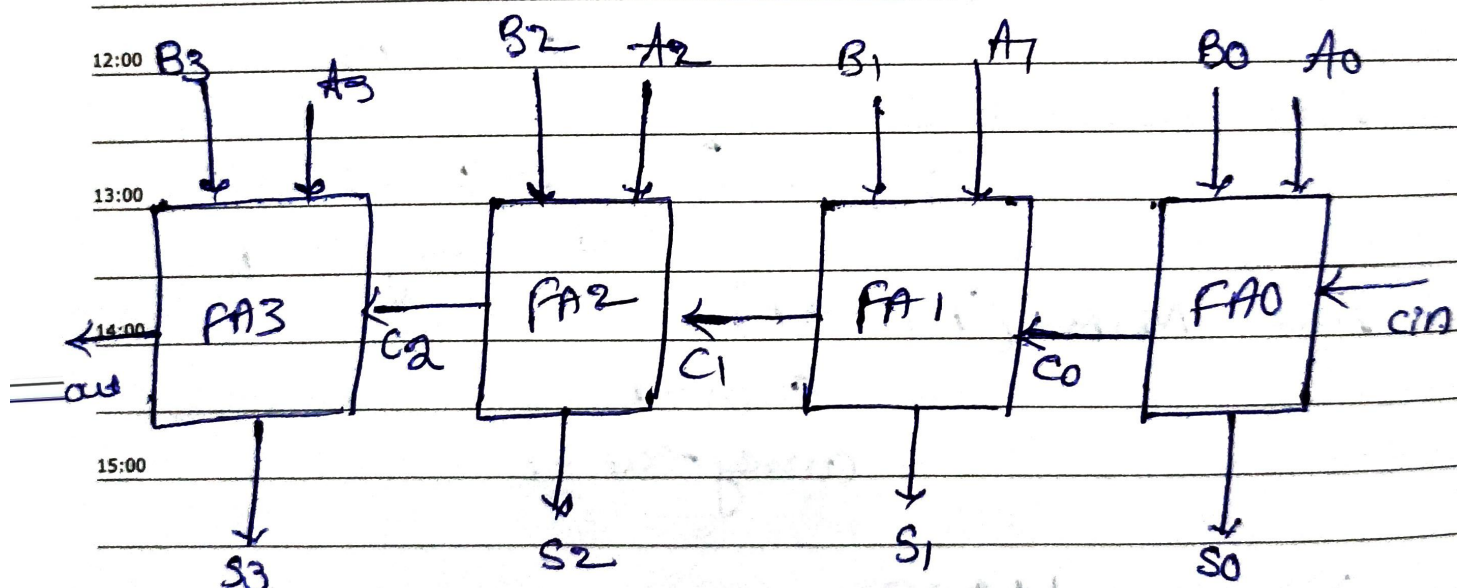


fig. 4-bit RCA