RIPPLE CARRY ADDER

COMPUTER ORGANIZATION
PCC-CS302

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RIPPLE CARRY ADDER

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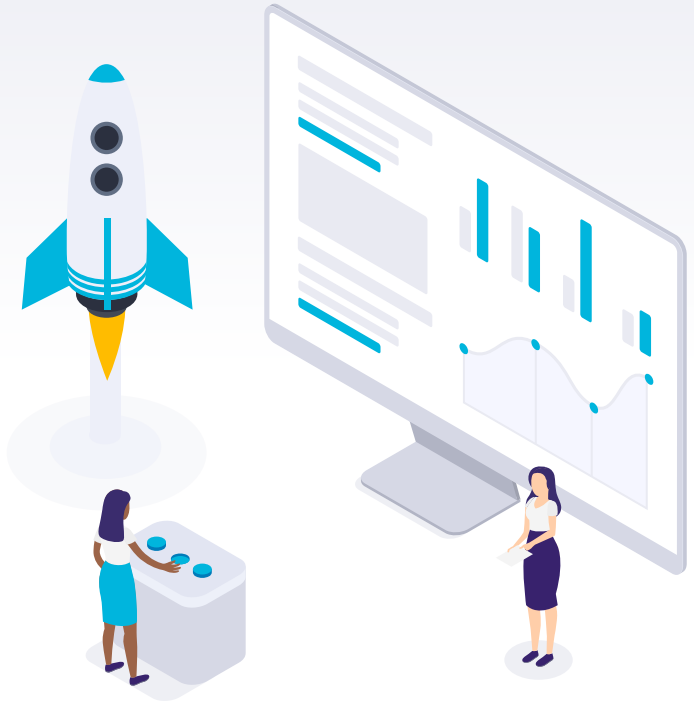
1 INTRODUCTION

Let’s start with the BASICS



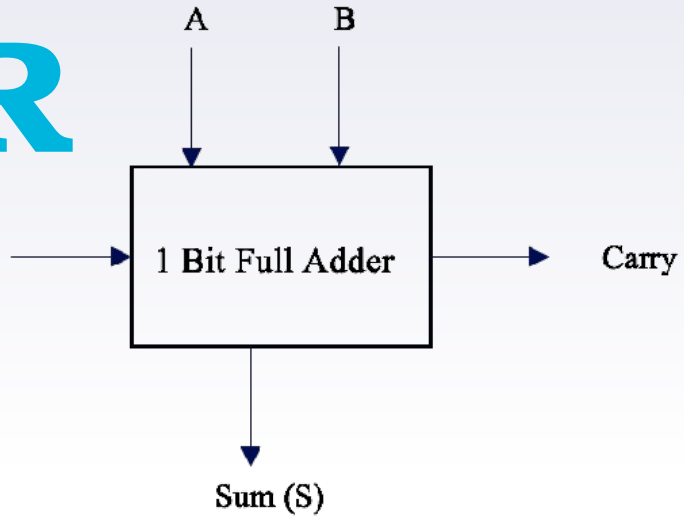
WHAT IS AN ADDER ?

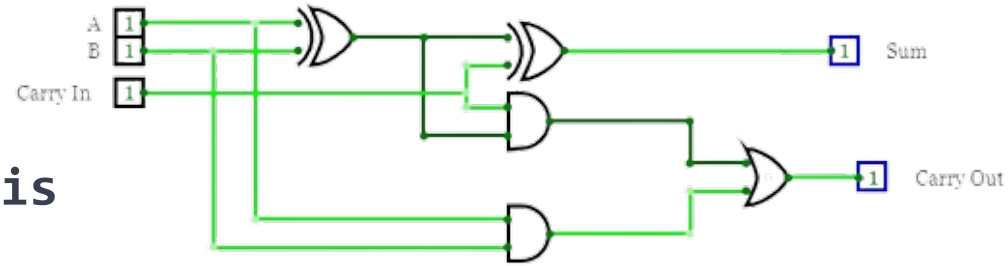
- An adder is a digital circuit that performs addition of numbers
- They are operated on binary numbers
- In processor it is used to calculate addresses, table operations

FULL ADDER

Used to add two input operand bits plus a carry in bit and outputs a carry out bit and sum bit

The sum is the XOR of the input bits and the carry is the AND of the input bits





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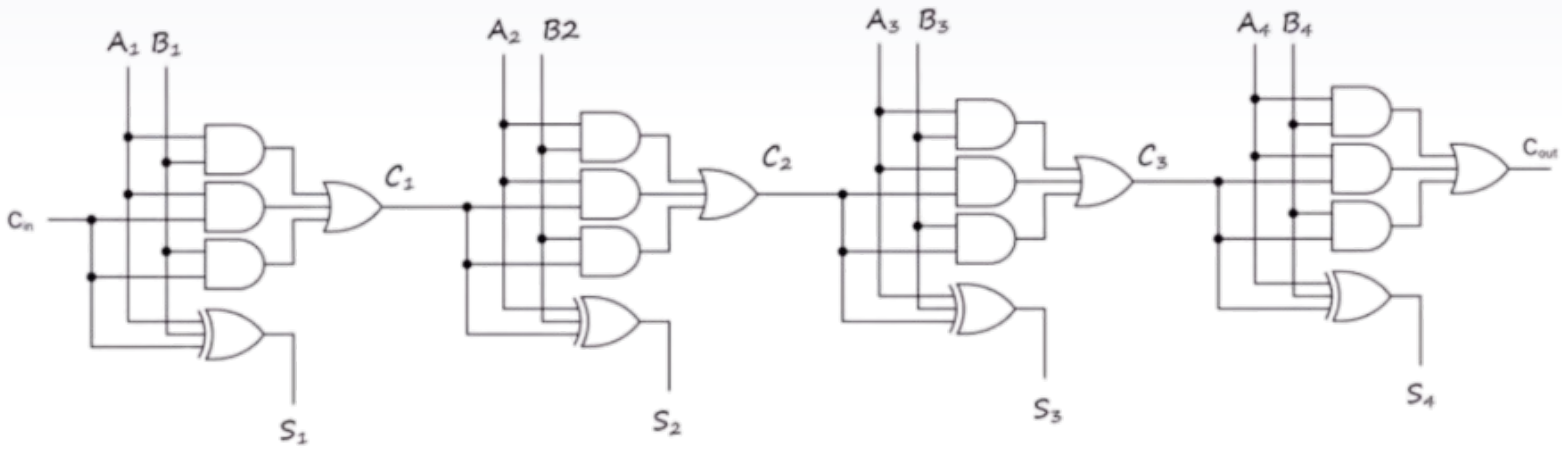
RIPPLE CARRY ADDER

Definitions and representations

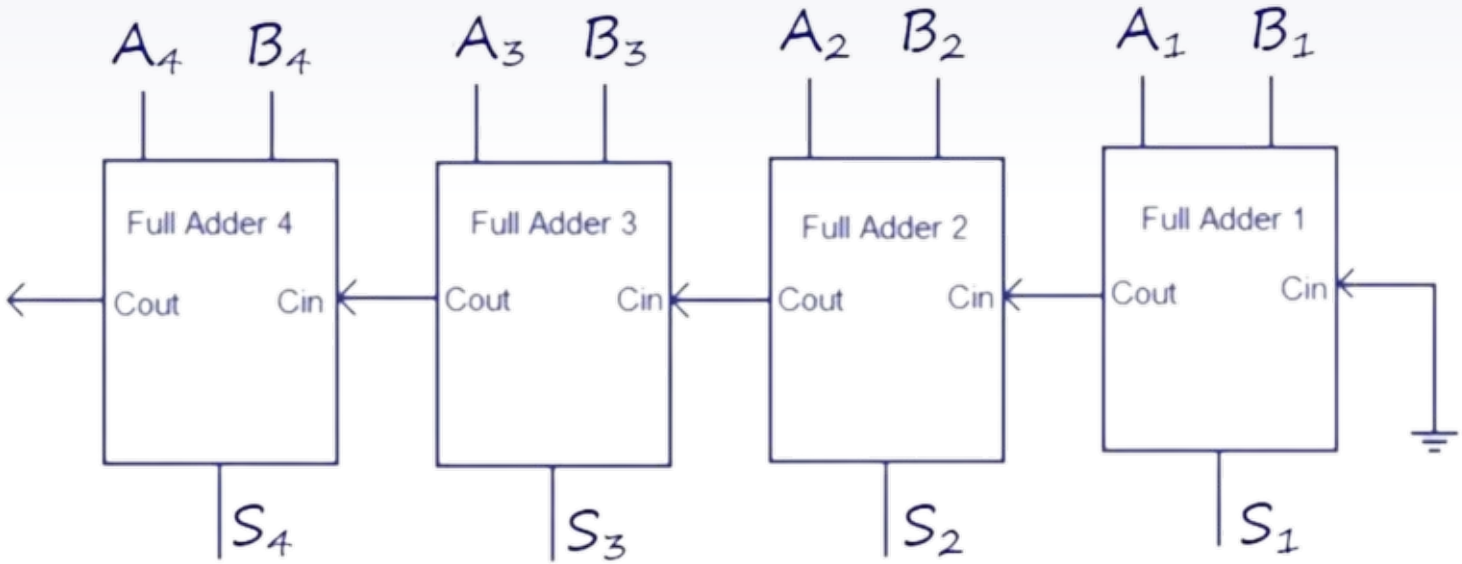
DEFINITION

- It is constructed by cascading full block adders in series
- Each carry bit gets rippled into the next stage
- For two n-bit inputs we need n full adders

CIRCUIT DIAGRAM



LOGIC DIAGRAM



TRUTH TABLE

A_1	A_2	A_3	A_4	B_4	B_3	B_2	B_1	S_4	S_3	S_2	S_1	Carry
0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	1	0	0	0	0
1	0	0	0	1	0	0	0	0	0	0	0	1
1	0	1	0	1	0	1	0	0	1	0	0	1
1	1	0	0	1	1	0	0	1	0	0	0	1
1	1	1	0	1	1	1	0	1	1	0	0	1
1	1	1	1	1	1	1	1	1	1	1	0	1


THANK YOU