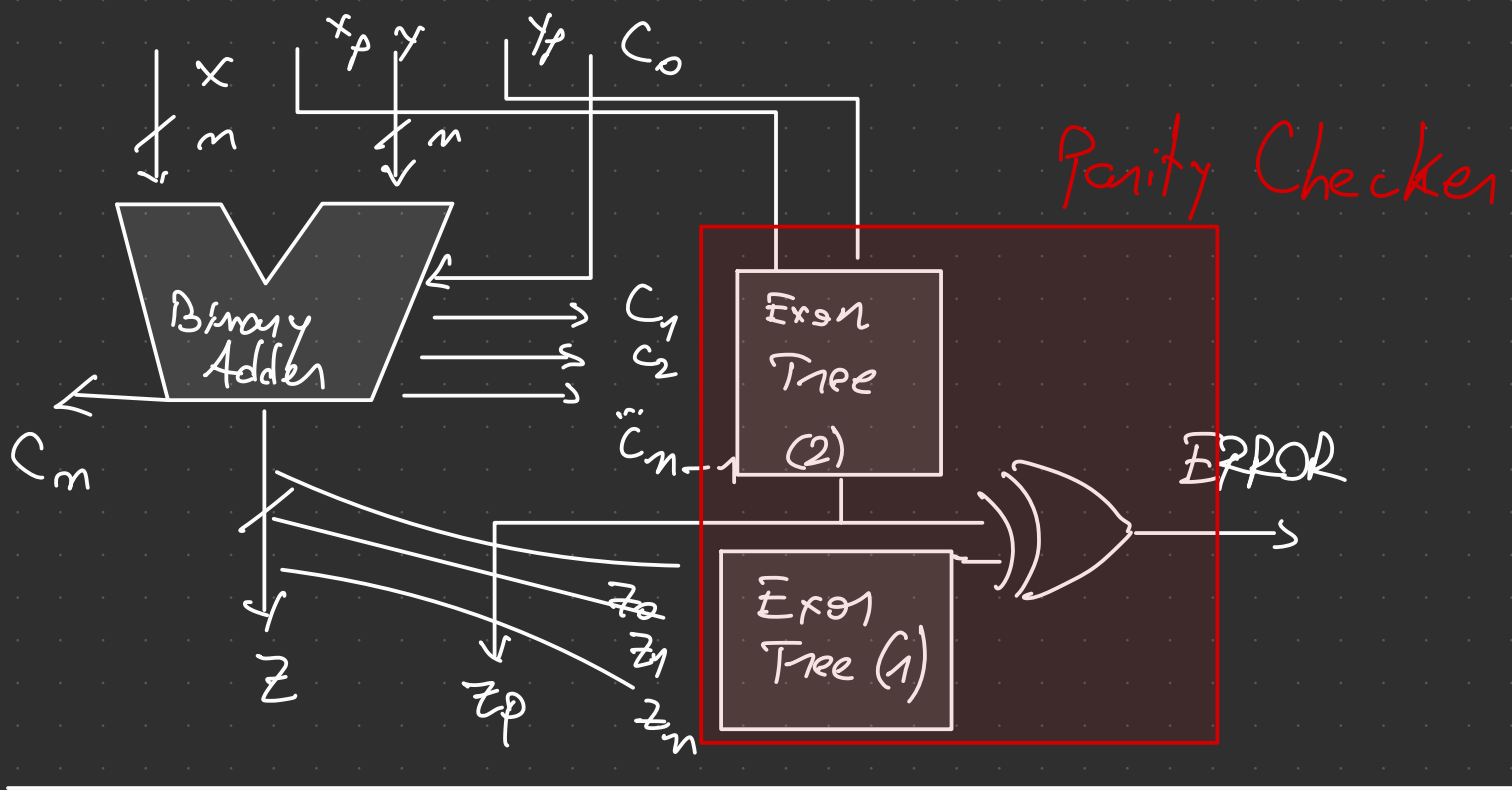
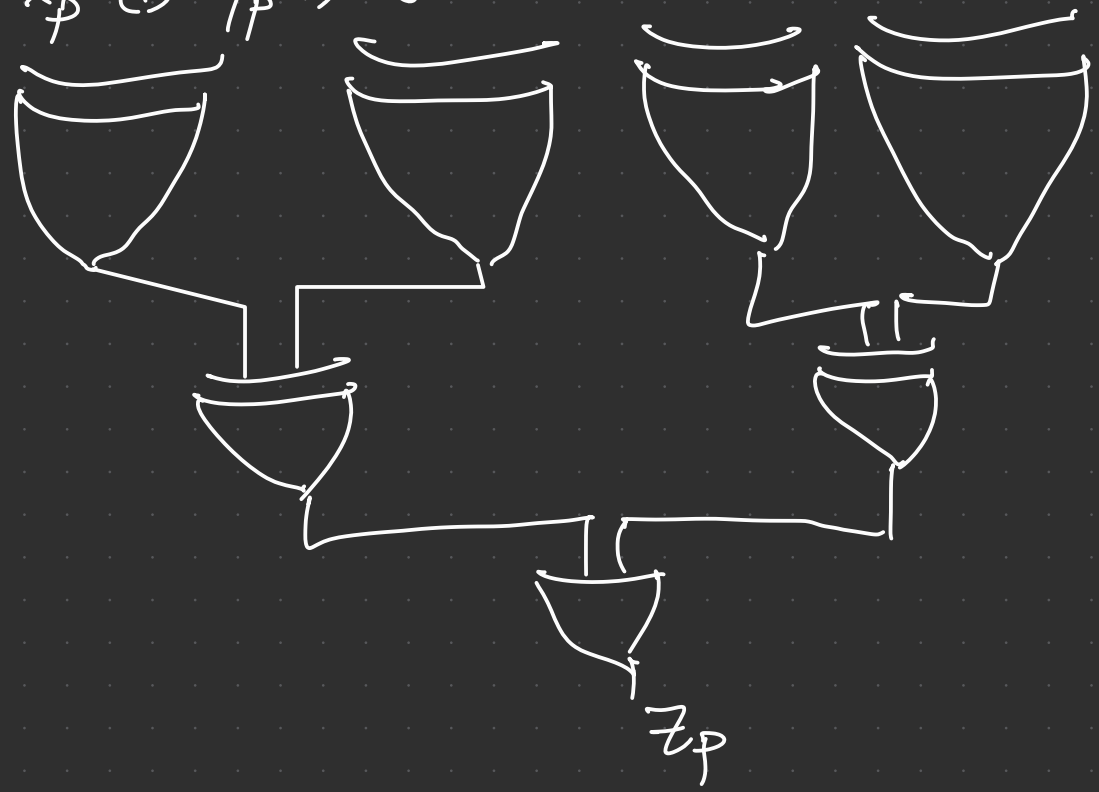


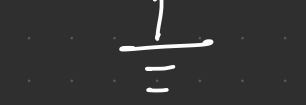
$x, y = 6$ bit

$z_p = x_p \oplus y_p \oplus c_0 \oplus c_1 \oplus c_2 \oplus c_3 \oplus c_4 \oplus c_5$

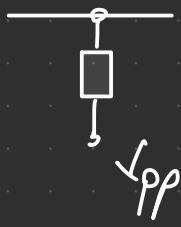


Erori → singulare (o singură locație este defectă)
→ multiple

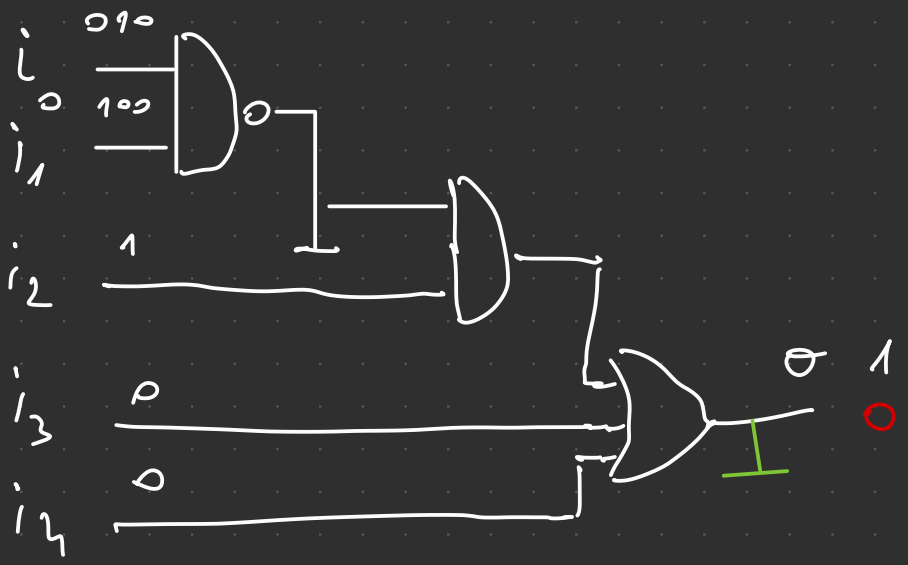
sa0
stuck at 0

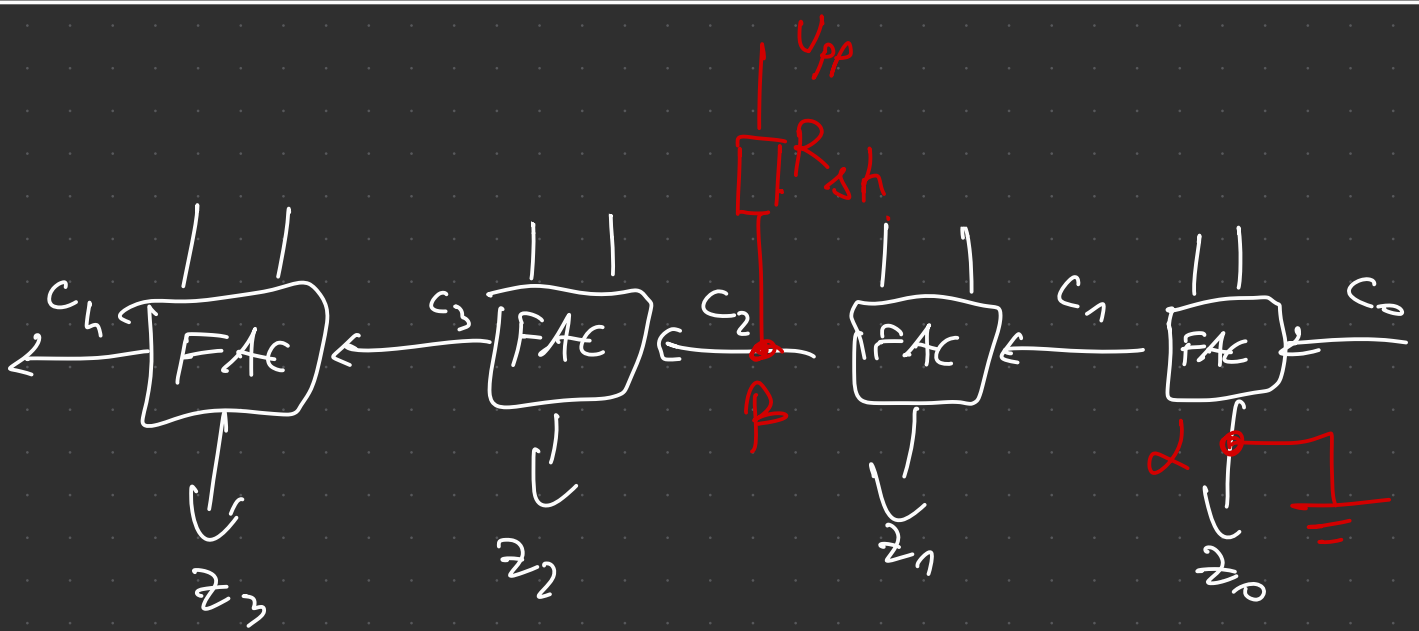


sa1



→ afectează cel puțin un semnal





C_2 modificat → z_2 mod.

c_2

$x_2 = y_2 = 1 \rightarrow c_3 = 1$ indifferent

$x_2 = \overline{y_2} \rightarrow c_3 = c_2$

fault-free

x	1	1	1	0	
y	1	0	0	0	
c	1	0	0	0	1
z	0	1	1	1	

c_0

$x_p = 1$
$y_p = 1$
$c_p = 1$
$\Big\} \; z_p(2) = 1$

$z_p(1) = 1$

$d: z_0$ 1 0 0

x	1	1	1	0	
y	1	0	0	0	
c	1	0	0	0	1
z	0	1	1	0	

$x_p = 1$
$y_p = 1$
$c_p = 1$
$\Big\} \; z_p(2) = 1$

!!!

$z_p(1) = 0$ defect

B: C_2 1a 1

x	1	1	1	0	
y	1	0	0	0	
C	1	1	1	0	1
z	1	0	1	1	

C

$x_p = 1$
$y_p = 1$
$c_p = 1$

$z_p(1) = 1$???

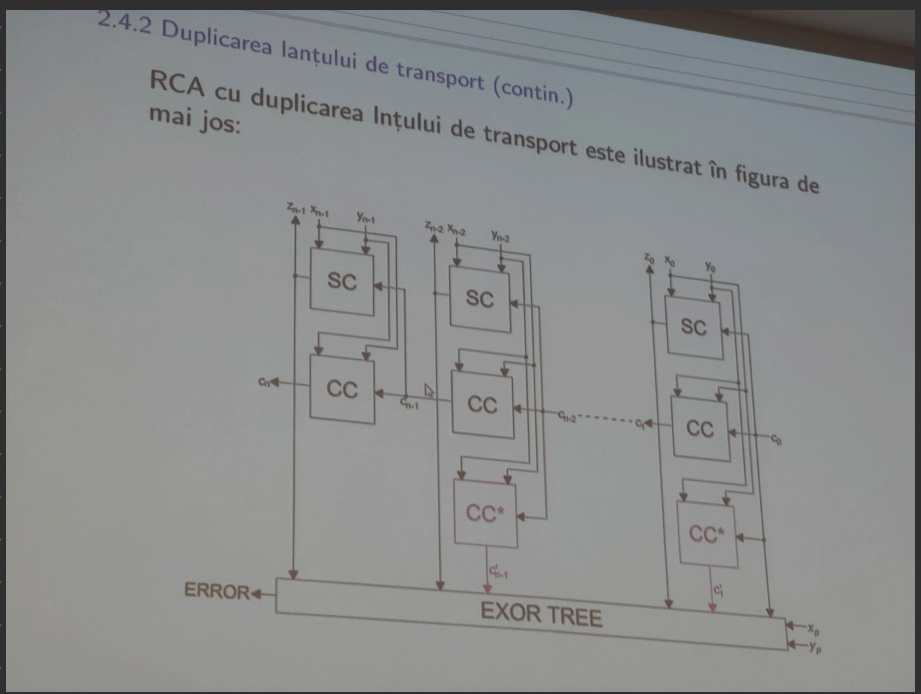
$z_p(2) = 1$

eroare nu este detectată

Carry dependent Sum Adder

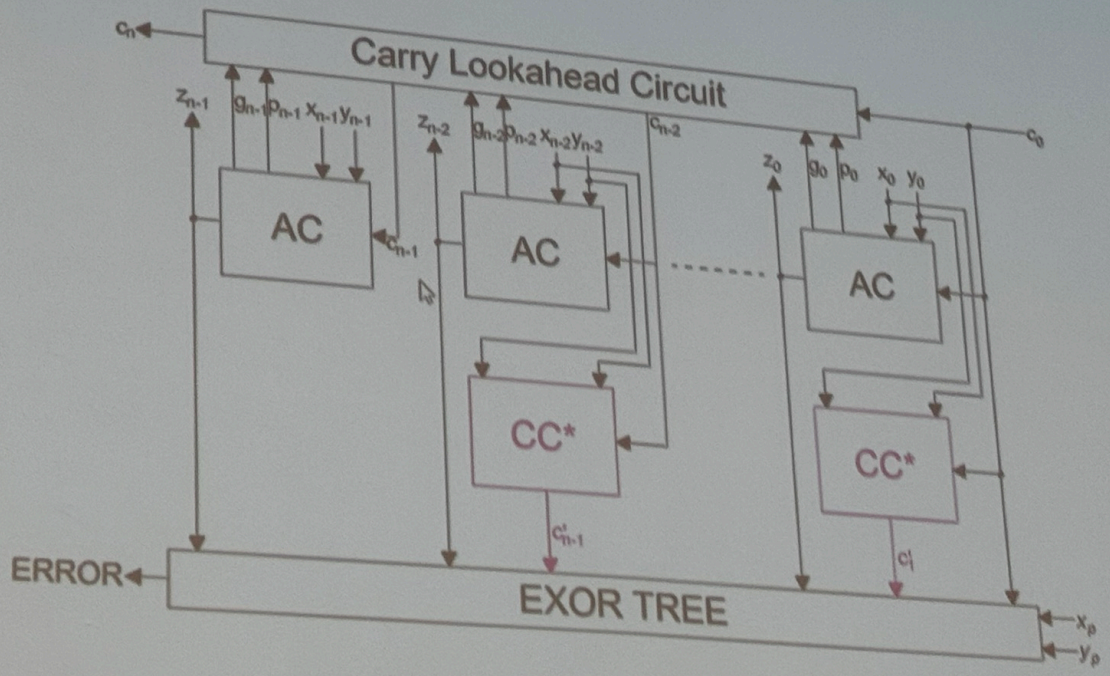
- duplicarea lanțului de transport
- SC (Sum Cell) $x_i, y_i, c_i \rightarrow z_i$
- CC (Carry Cell) $x_i\ y_i\ c_i \rightarrow C_i$

RCA cu duplicarea lanțului de transport

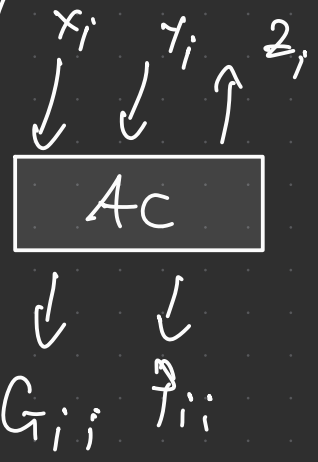


2.4.2 Duplicarea lanțului de transport (contin.)

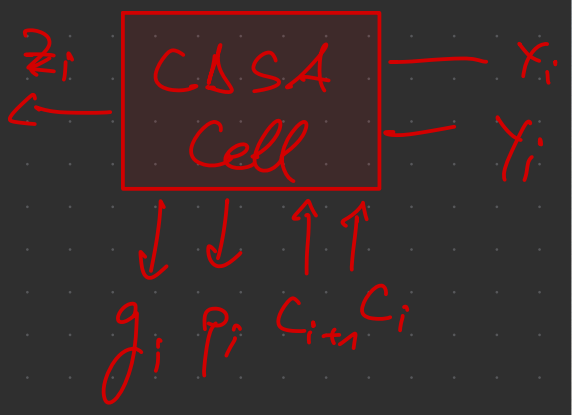
(B) Duplicarea lanțului de transport aplicată pentru Carry Lookahead Adder

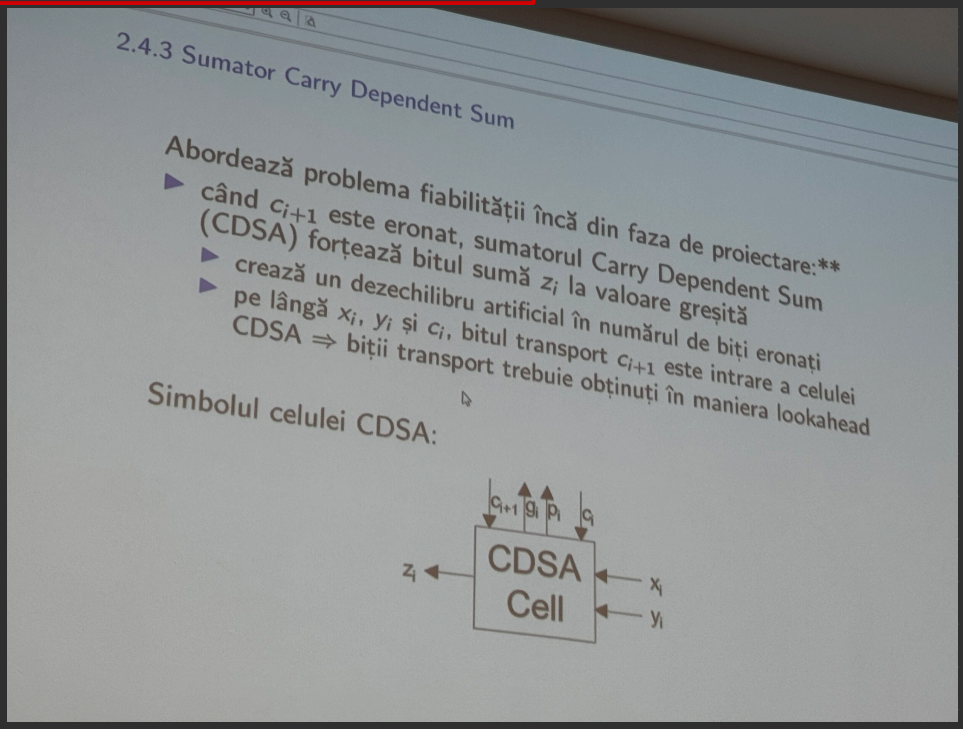


→ facilitează detecția erorilor pt. sumatoarele Carry Lookahead



Carry Dependent Sum Adder



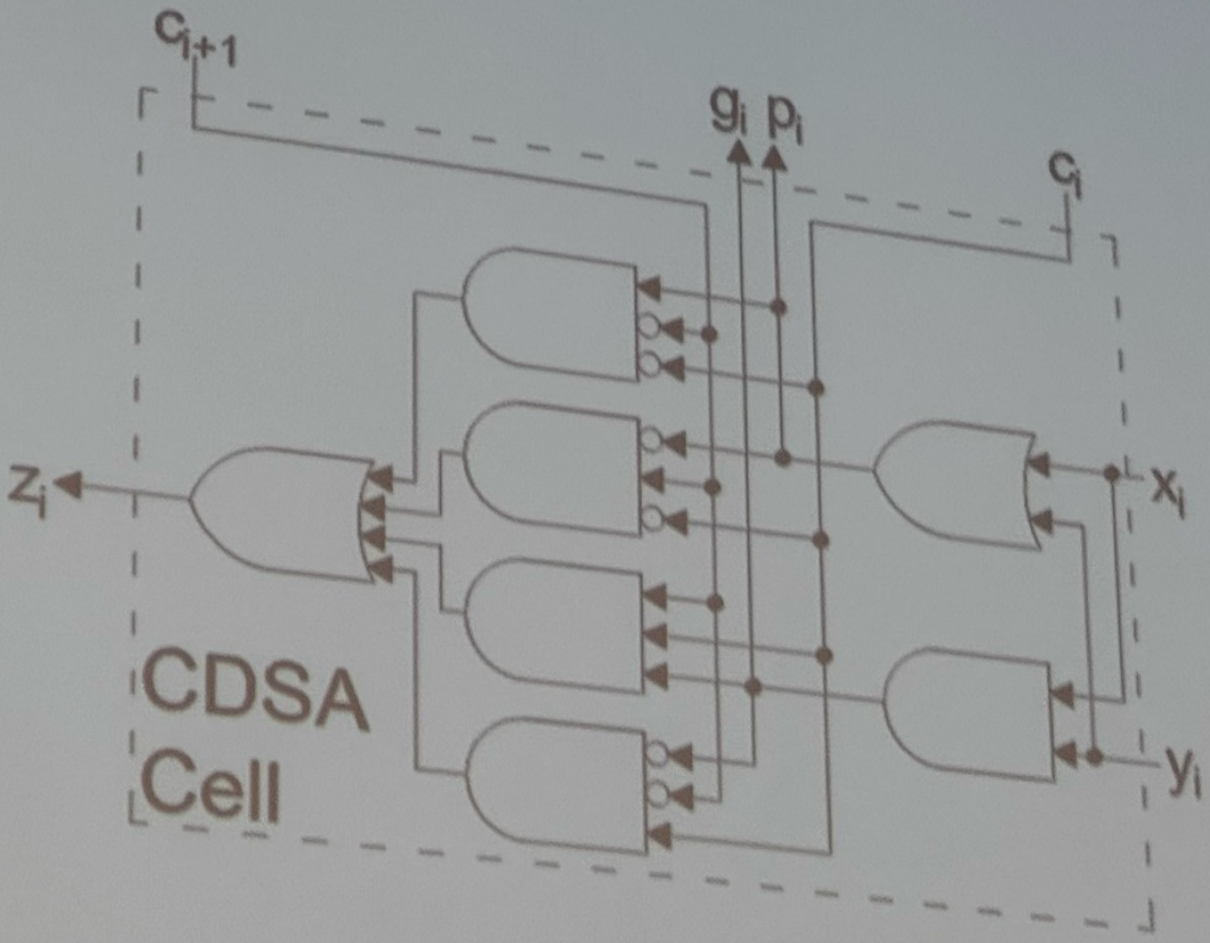


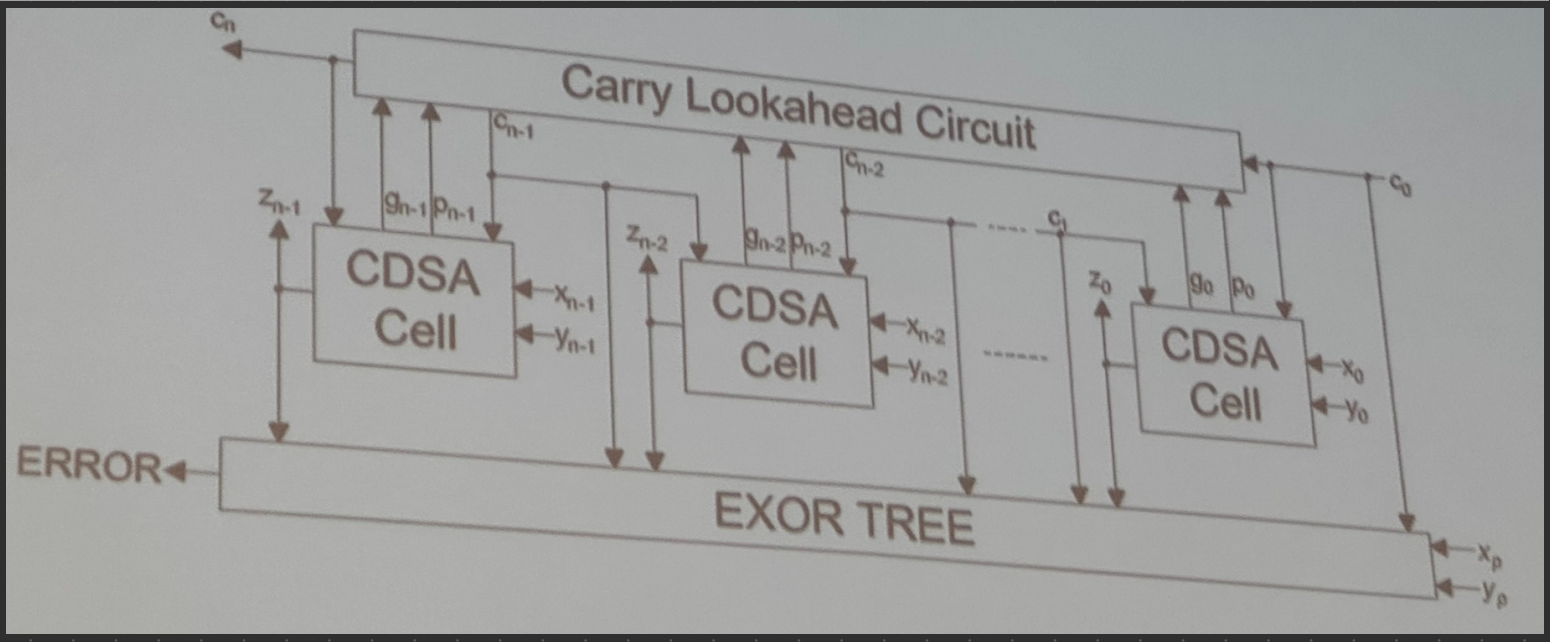
intrare de control

x_i	y_i	c_i	c_{i+1}	z_i
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0

karnaugh -> z_{i+1} = . _ _

Sinteza celulei CDSA:



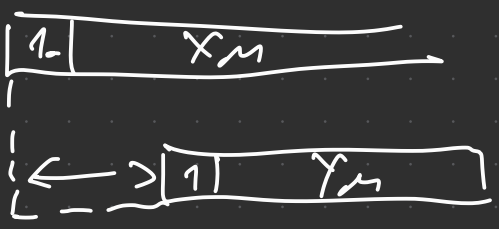


Realizarea unităților aritmetice de virgulă mobilă

→ IEEE 754
→ împachetate (normalizate)
→ despachetat (pentru calcule) (adăugarea hidden bit)

$x, y \qquad x = x_M \cdot 2^{x_E}$

$x + y = \underbrace{(x_M + y_M \cdot 2^{y_E - x_E})}_{\text{mantisă}} \cdot \underbrace{2^{x_E}}_{\text{bază + exp}}$, dacă $x_E \geq y_E$



$|y_E - x_E|$

$x \circ y = x_M \; y_M \cdot 2^{(x_E + y_E)}$ exp.

$x \frac{\circ}{\circ} y = (x_M \div y_M) \cdot 2^{(x_E - y_E)}$

mantisa → în. de virgulă fixă

$X_S = 1.\ x_{-1}\ x_{-2} \dots x_{-23}$

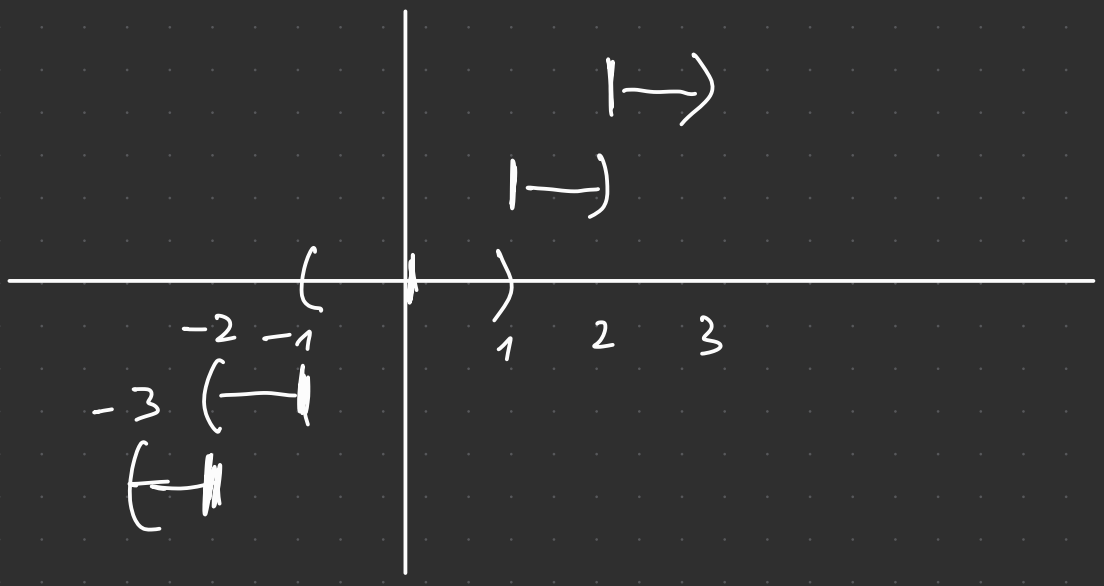
Rotunjire → spre $-\infty$ / $+\infty$ / cel mai apropiat nr. par

$X = x_{n-1} \dots x_0 . x_{-1} \dots x_{-m}$

X^* → rotunjit

$X^* = x^*_{n-1}\ x^*_{n-2} \dots x^*_1\ x^*_0$

(A) Rotunjire spre 0



$-3.25 = 1011.\not{A} = 1011 = \underline{\underline{-3}}$