Lab-3 CAO

Date: March 16 2019

Figure 6-15 Ripple carry Adder

FA1:
            A B Cin
    Input: 1.0 1/0
    Output: — (give output only when carry applied)

FA2
     A B Cin
    Input: 10 1/0
    Output: Gives opt only when FA1 gives carry to it.

FA3
      A B Cin
    Input: 1 0 1/0
    Output: Only when Cout by FA1 and Cout from FA2.

The delay is the worst case addition time.

The Look ahead carry adder:

Derivations

Fig 6-16

6|6(a)

Input: 110

Opt : 1 → Cout

6|6(b)

Input: 111

Opt : 1 → Cout

6|6(c)

Ipt : 101

Opt : 1 → Cout

6|6(d)

Ipt : 001

Opt : 1 → Cout

M. Hamza

Date: _____

Carry Propagation / Carry Generation.
C_p C_g

FA-1
Input: $A_1 B_1 Cin_1$ ⎫⟶ $Cg_1 = A_1 B_1$
Opt: $Cout_1$.   ⎬ $Cp_1 = A_1 + B_1$

FA2
Input: $A_2 B_2 Cin_2$ ⎫⟶ $Cg_2 = A_2 B_2$
Opt: $Cout_2$ ⎬ $Cp_2 = A_2 + B_2$

FA3
Ipt : $A_3 B_3 Cin_3$ ⎫⟶ $Cg_3 = A_3 B_3$
Opt : $Cout_3$ ⎬ $Cp_3 = A_3 + B_3$

FA4
Ipt : $A_4 B_4 Cin_4$ ⎫⟶ $Cg_4 = A_4 B_4$
Opt : $Cout_4$ ⎬ $Cp_4 = A_4 + B_4$

Seat No.	Name	Lab-2:
EP1749096	SHEIKH SAAD HUSSAIN	*Circuit Draw using Microsoft Visio Tool* *Submitted to:* *Sir Hussain Saleem (Assistant Professor / Course Incharge)* *Department of Computer Science, UBIT, University of Karachi.*

Derivations

FA-1 : $C_{out1} = C_{g1} + C_p C_{in1}$

FA-2 : $C_{in2} = C_{out1}$

$$C_{out2} = C_{g2} + C_{p2} C_{in2} = C_{g2} + C_{p2} C_{out1}$$
$$= C_{g2} + C_{p2} C_{g1} + C_{p2} C_{p1} C_{in1}$$

FA-3 :

$$C_{in} = C_{out2}$$

$$C_{out3} = C_{g3} + C_{p3} (C_{g2} + C_{p2} C_{g1} + C_{p2} C_{p1} C_{in1})$$
$$= C_{g3} + C_{p3} C_{g2} + C_{p3} C_{p2} C_{g1} + C_{p3} C_{p2} C_{p1} C_{in1}$$

FA-4 : $C_{in} = C_{out3}$

$$C_{out4} = C_{g4} + C_{p4} C_{g3} + C_{p4} C_{p3} C_{g2} + C_{p4} C_{p3} C_{p2} C_{g1}$$
$$C_{p4} C_{p3} C_{p2} C_{p1} C_{in1}$$