1705045
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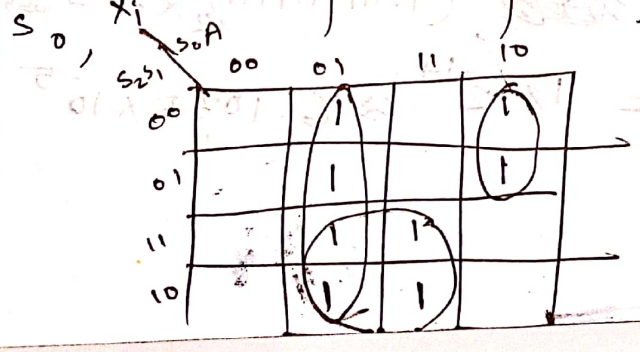
Pg-1

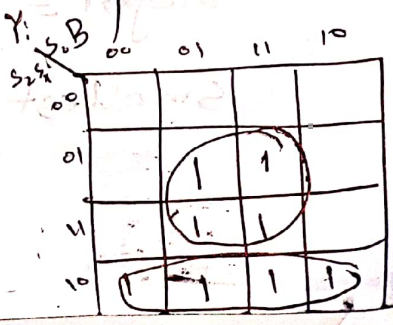
①

i) d
ii) d
iii) c
iv) b
v) a
vi) c
vii) c
viii) a
ix) b

②

S_2	S_1	S_0	X_i	Y_i	C_{in}	Z_i
0	0	0	A	0	0	$C_{out,i-1}$
0	0	1	$\overline{A}$	0	1	$C_{out,i-1}$
0	1	0	A	B	0	$C_{out,i-1}$
0	1	1	$\overline{A}$	B	1	$C_{out,i-1}$
1	0	X	$\overline{A}$	1	X	0 (for XOR)
1	1	X	A	B	X	0 (for XOR)





So,

$$X_i = S_0' A + S_2 A + S_2' S_0 A'$$

$$Y_i = S_1 B + S_2 S_1'$$

$$Z_i = S_2' C_{out,i-1}$$

$$Z_0 = S_2' C_{in}$$

(3)

a) If we add the bias, we set the exponent in non-negative value. Hence, we don't need to think about different signs of exponents for later calculation.

zero → exponent → 0, fraction → 0

INF → exponent → 255, fraction → 0

(4).

a) largest = $(1.11111111111)_{two} \times 2^{7} \approx 255.93$

smallest = $1 \times 2^{-6} \approx 0.015625$

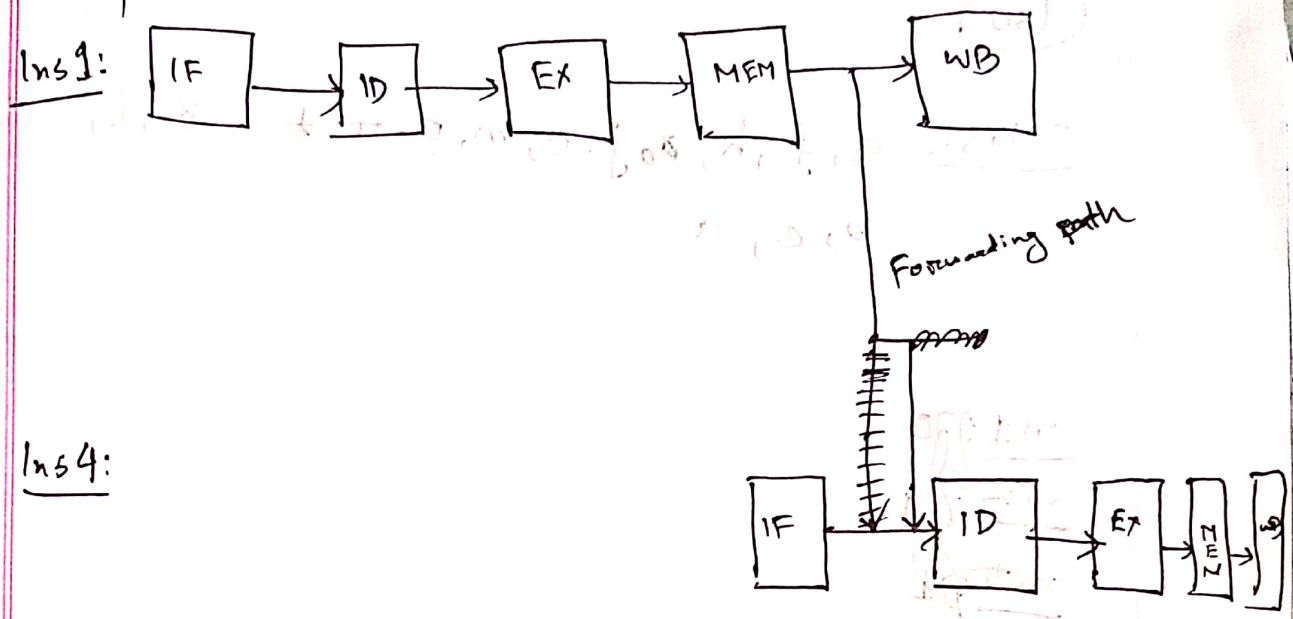
+7 to +8
-15 ↔ +16

b) largest = $(1.1111111111)_2 \times 2^{15} \approx 65528$

smallest = $1 \times 2^{-14} \approx 6.1035 \times 10^{-5}$

5.

a)



b)

if(D.regWrite and
stage2.registerRS ≠ 0 and
D.registerRD = stage2.registerRS)

~~forwardWD = 1~~ forwardA = 1

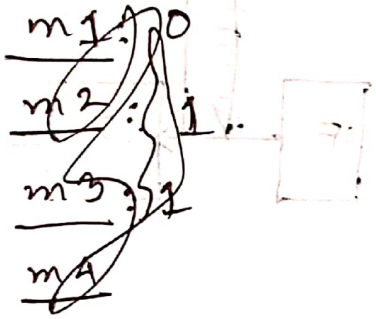
if(D.regWrite and
stage2.registerRt ≠ 0 and
D.registerRD = stage2.registerRt)

forwardB = 1

(6).

(10)

Paths:- e, f, h, o, j, o, m, p, r, t, u, K, l, b, c, a



m1: 0
m2: 0
m3: 1
m4: 1