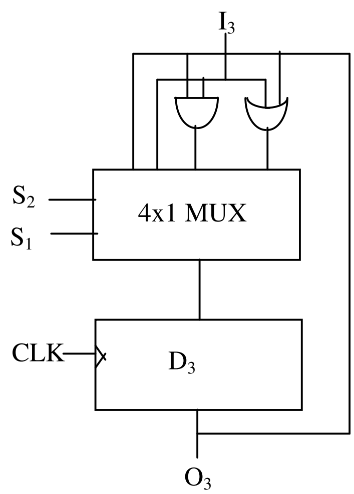
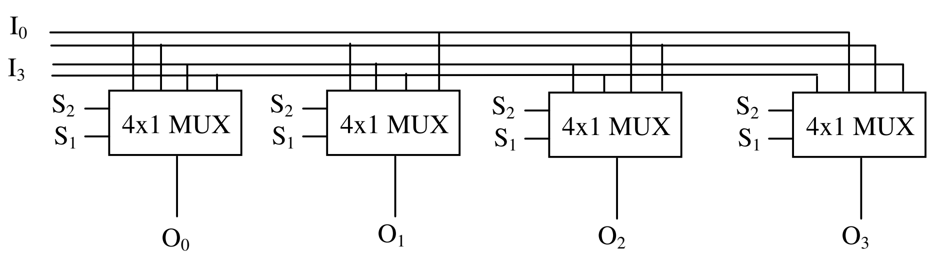
CMSC 311- Computer Organization

Fall 1995 - Assignment #6 (Solutions)

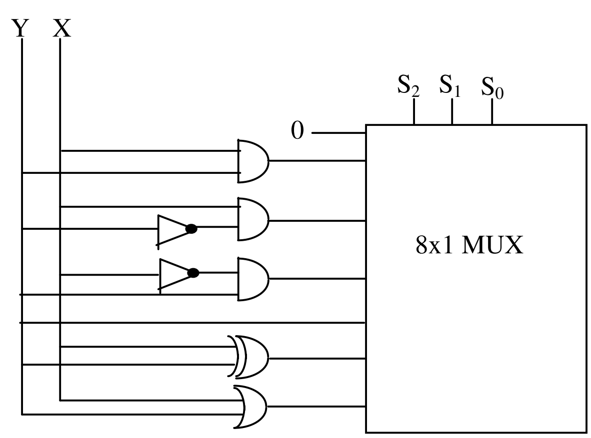
1)



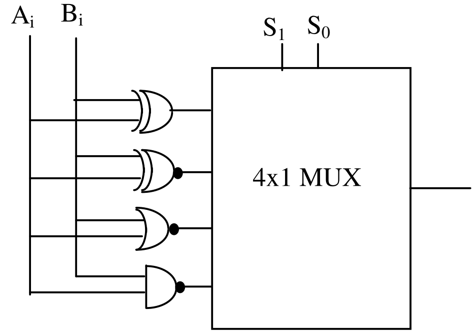
2)



3)



4)



5)

Loc	Value
000	LDA 009
001	CMA
002	STA 00B
003	LDA 00A
004	CMA
005	AND 00B
006	CMA
007	STA 00B
008	HLT
009	0101
00A	1010
00B	~~0001~~ ~~FEFE~~ 111

Step	PC	AC
0	0000	0000
1	0001	01010
2	0002	FEFE
3	0003	FEFE
4	0004	1010
5	0005	EFEF
6	0006	EEEE
7	0007	1111
8	0008	1111

6) $256K = 2^8 \times 2^{10} = 2^{18}$

$64 = 2^6$

a) Address: 18 bits
Register code: 6 bits
Indirect bit: 1 bit
Total 25 bites → 32-25 = 7 bits for opcode

b)

1	7	6	18
I	opcode	reg	addr

c) Data: 32 bits; Address: 18 bits

7)

Part	$S_2S_1S_0$	Load	Memory	Addr
a) AR ← PC	0 1 0	AR	-	-
b) IR ← M[AR]	1 1 1	IR	Read	-
c) M[AR] ← IR	1 1 0	-	Write	-
d) DR ← AC, AC ← DR	1 0 0	DR & AC	-	Transfer DR to AC