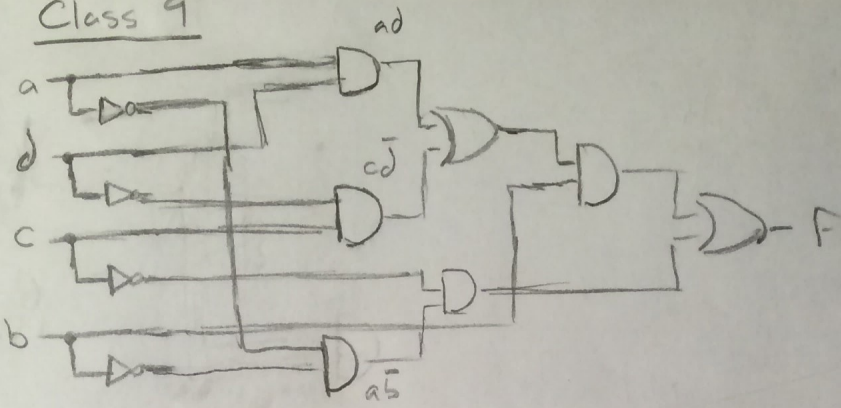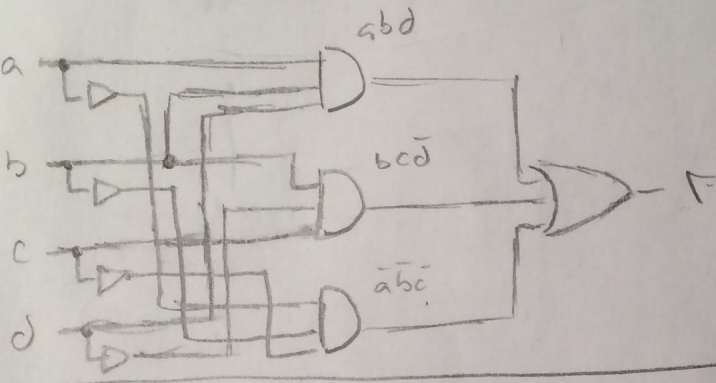Sean Gordon

1) a)
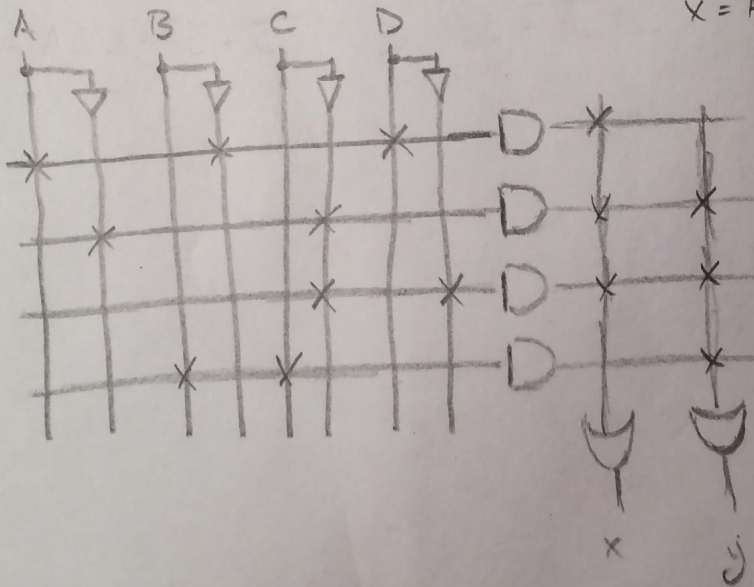

2) A k input
LUT has
2^k storage
cells

b)

$x = A\bar{B}D + \bar{A}\bar{C} + \bar{C}\bar{D} \mid y = BC + \bar{A}\bar{C} + \bar{C}\bar{D}$

3)

Class 10

1) a] $F(a) = \sum (0,1)$

a	0	1
	1	1

$F(a) = 1$

b] $F(w,x,y,z) = \sum m(0,4,8,12)$

yz \ wx	00	01	11	10
00	1	1	1	1
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$F(w,x,y,z) = \bar{y}\bar{z}$

$F(A,B,C,D) = PM(2,3,6,7,8,9,12,13)$

CD \ AB	00	01	11	10
00	1	1	0	0
01	1	1	0	0
11	0	0	1	1
10	0	0	1	1

$F(A,B,C,D) = \bar{A}C + AC$

Class 11

$F(a,b,c) = \bar{a}\bar{b}\bar{c} + \bar{a}b\bar{c} + \bar{a}bc + a\bar{b}\bar{c} + abc$

1) a] $\Rightarrow PM(0,4,6)$

c \ ab	00	01	11	10
0	0	1	0	0
1	1	1	1	1

$F(a,b,c) = (\bar{a}+c)(b+c)$

b] $F(x_1, x_0, y_1, y_0) = PM(1,2,3,4,6,7,8,9,11,12,13,14)$

missing 5, 10, 15

$y_1 y_0$ \ $x_1 x_0$	00	01	11	10
00	1	0	0	0
01	0	1	0	0
11	0	0	1	0
10	0	0	0	1

$F(x_1, x_0, y_1, y_0) =$
$(\bar{x}_0 + y_0)(\bar{x}_1 + y_1) \cdot$
$(x_0 + \bar{y}_0)(x_1 + \bar{y}_1)$

c] $F(A,B,C,D) = PM(0,2,3,8,9,12,13,15)$ Missing 1,4,5,6,7,10,11,14

CD \ AB	00	01	11	10
00	0		0	0
01			0	0
11	0		0	
10	0			

$F(A,B,C,D) =$
$(A+B+D)(A+B+\bar{C}) \cdot$
$(\bar{A}+\bar{B}+\bar{D})(\bar{A}+C)$