ECEN 5623 Homework 4

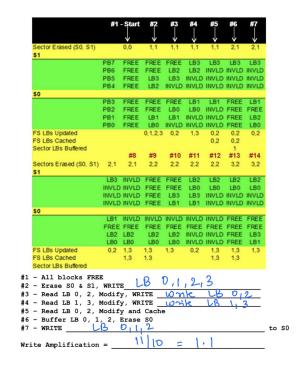Dhiraj Bennadi

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Problem 1

Please refer to the excel sheet attached Solution in cells C:36 and C37

Problem 2

Please refer to the excel sheet attached Solution in cells C:36 and C37

Problem 3

Please refer the images below for solution

	#1 - Start	#2	#3	#4	#5	#6	#7
Sector Erased (S0, S1)	0,0	1,1	1,1	1,1	1,1	2,1	2,1
S1							
PB7	FREE	FREE	FREE	LB3	LB3	LB3	LB3
PB6	FREE	FREE	LB2	LB2	INVLD	INVLD	INVLD
PB5	FREE	LB3	LB3	INVLD	INVLD	INVLD	INVLD
PB4	FREE	LB2	INVLD	INVLD	INVLD	INVLD	INVLD
S0							
PB3	FREE	FREE	FREE	LB1	LB1	FREE	LB1
PB2	FREE	FREE	LB0	LB0	INVLD	FREE	FREE
PB1	FREE	LB1	LB1	INVLD	INVLD	FREE	LB2
PB0	FREE	LB0	LB0	INVLD	INVLD	FREE	LB0
FS LBs Updated		0,1,2,3	0,2	1,3	0,2	0,2	0,2
FS LBs Cached					0,2	0,2	
Sector LBs Buffered						1	

		#8	#9	#10	#11	#12	#13	#14
Sectors Erased (S0, S1)	2,1	2,1	2,2	2,2	2,2	2,2	3,2	3,2
S1								
	LB3	INVLD	FREE	FREE	LB2	LB2	LB2	LB2
	INVLD	INVLD	FREE	FREE	LB0	LB0	LB0	LB0
	INVLD	INVLD	FREE	LB3	LB3	INVLD	INVLD	INVLD
	INVLD	INVLD	FREE	LB1	LB1	INVLD	INVLD	INVLD
S0								
	LB1	INVLD	INVLD	INVLD	INVLD	INVLD	FREE	FREE
	FREE	FREE	FREE	FREE	FREE	FREE	FREE	FREE
	LB2	LB2	LB2	LB2	INVLD	INVLD	FREE	LB3
	LB0	LB0	LB0	LB0	INVLD	INVLD	FREE	LB1
FS LBs Updated	0,2	1,3	1,3	1,3	0,2	1,3	1,3	1,3
FS LBs Cached		1,3	1,3			1,3	1,3	
Sector LBs Buffered								

#1 – All blocks FREE
#2 – Erase S0 & S1, WRITE **LB 0,1,2,3**
#3 – Read LB 0, 2, Modify, WRITE **write LB 0,2**
#4 – Read LB 1, 3, Modify, WRITE **write LB 1,3**
#5 – Read LB 0, 2, Modify and Cache
#6 – Buffer LB 0, 1, 2, Erase S0
#7 – WRITE **LB 0,1,2** to S0

Write Amplification = **11/10 = 1.1**

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#8 - Read LB 1, 3, Modify and Cache
#9 - Erase S1
#10 - WRITE  -back  LB  1,3  to  S1
#11 - Read LB 0, 2, Modify, WRITE  LB  0,2
#12 - Read LB 1, 3, Modify and Cache
#13 - Erase S0
#14 - WRITE  LB  1,3

Write Amplification =  17/16  =  1.0625
Total sector erases for both S0 and S1 =
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3+2 = 5 sector

erases