ASSIGNMENT 4

2a i}

3072		Page 1
	…	
3081	2048	Page 9
3082	4608	Page 10
	…	
3110	1536	Page 38
	…	
3133	3584	Page 61
	…	

2a ii}

When 31000 is referenced,

31000/512 = 60. The 60^{th} page is gotten and since there are 512 entries in each page, there will be

[(31000/512) – 60] * 512 = 280. The 280 offset is accessed in page 60.

2a iii}

Virtual Address	Page Number	PFN	Offset	Physical Address
4608	9	2048	0	2048
5119	9	2048	511	2560
5120	10	4608	0	4608
31240	61	3584	8	3592

2b}

7 15 10 11 14 11 9 17 9 14

8	8	8	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11	11
1	1	1	1	1	14	14	14	14	14	14
7	7	7	7	7	7	7	9	9	9	9
15	15	15	15	15	15	15	15	17	17	17
			F		F		F	F		

LRU :

8 , 11 , 1 , 7, 15 --- 8 , 11 , 1 , 15, 7 --- 8 , 11 , 1 , 7, 15 --- 8 , 11 , 1 , 7, 15, 10 --- 8 , 1 , 7, 15, 10, 11

8 ,1,7,15,10,11,14 --- 8 , 1 , 7, 15, 10, 14, 11 --- 8 , 1 , 7, 15, 10, 14, 11, 9 ---8 , 1 , 7, 15, 10, 14, 11, 9, 17

8 , 1 , 7, 15, 10, 14, 11, 17, 9 --- 8 , 1 , 7, 15, 10, 11, 17, 9, 14

3a}

Largest File:

Direct: 8 * 512 = 4096 bytes.

Single Indirect: 512 * (512/8) bytes.

Double Indirect: 512 * ((512/8) ^ 2) bytes.

Triple Indirect: 512 * ((512/8) ^ 3) bytes.

Total bytes = 136351744 bytes.

3b}

How many discs blocks is needed to store

I} 512 bytes = 1-disc block. (By observation) – No Fragmentation

Ii} 516 bytes = 2 data blocks = 2-disc blocks. (By observation) - 1 Fragmentation

Iii} 10752 bytes: 10752/512 = 21 data block + 1 index block = 22-disc block. 21 block Fragments

Iv} 2134016 bytes: 21340168/512 = 4168 data blocks fragments + 66 Index blocks = 4234-disc blocks.

V} 8401408 bytes: 16409 data blocks fragments + 262 Index blocks = 16671-disc blocks.

3c}

How many disc operation to read 77824 bytes?

8 * 512 = 4096 bytes = 8 block access.

Single index = 1 access + (512/8 = 64 access) = 65 block access

Double index = 1 access + 1 access + (512/8 = 64) access + ((77824 – 69632)/512)access = 83 block access

Total = 156 block access.