BRAC University, Dhaka Department of Computer Science and Engineering
CSE321: Operating Systems
Quiz - 5

Marks: 15 **Time: 20 Min**

Name:	ID:	Section:

1. Determine if the following sentences are true or false. For any false sentence, write its correct form. 3*1 = 3

   i. A page fault will occur when the page is in the virtual memory. (T)

   ii. Indexed allocation is a contiguous allocation method. (F)

   It is a non-contiguous allocation method.

   iii. Valid-invalid bit is maintained in the page table. (T)

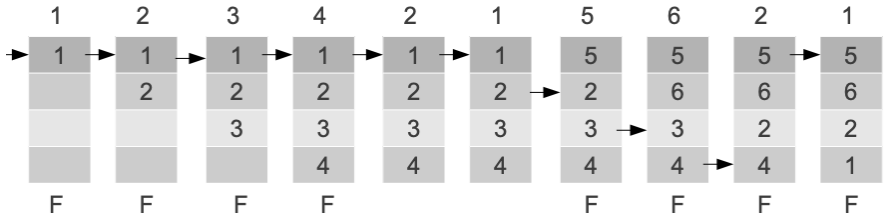
2. Why is it difficult to extend a file in a contiguous allocation method? 2

   Once particular contiguous blocks are allocated for a file, if the file needs to be extended, it cannot be done if there are no other free contiguous blocks.

3. Assume the following page references as per the time. Apply the FIFO and Optimal page replacement algorithms. Determine which one is better with respect to the number of page faults. Consider there are 4 frames in your memory. 3 + 3 + 2

Time	1	2	3	4	5	6	7	8	9	10
Page	P1	P2	P3	P4	P2	P1	P5	P6	P2	P1

FIFO:



OPT:

1	2	3	4	5	6	7	8	9	10
P1	P2	P3	P4	P2	P1	P5	P6	P2	P1
P1	P1	P1	P1	P1	P1	P1	P1	P1	P1
	P2	P2	P2	P2	P2	P2	P2	P2	P2
		P3	P3	P3	P3	P5 (P3)	P5 (P6)	P5 (P6)	P5 (P6)
			P4	P4	P4	P4 (P5)	P6 (P5)	P6 (P5)	P6 (P5)

An alternative solution is possible when choosing between P3/P4 at time 7. This solution is given in the brackets.

Since OPT has 6 faults and FIFO produces 8 faults, OPT is better.

4. In a disk, there are 5 platters where only upper surfaces are being used. On each surface there are 128 tracks, and 256 sectors are within each track. Each sector can store 64 kb data. What is the total size of disk? 2

Since there was a confusion you can do can any of the following:

Considering 65K bits

Disk size = 5 x 128 x 256 x 64 x 1024 b = 5 x 2^7 x 2^8 x 2^6 x 2^{10} = 5 x 2^{31} bits

Considering 65K bytes

Disk size = 5 x 128 x 256 x 64 x 1024 byte = 5 x 2^7 x 2^8 x 2^6 x 2^{10} = 5 x 2^{31} bytes

= 5 x 2^{34} bits