

Advanced Level
Information and Communication Technology

Time

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Year

Rev/Eng/05

1. Consider a system which has 10 bit as logical address and 12 bit as physical address. Page size is 8 bit. Calculate the number of pages and number of frames.
2. Assume a computer system virtual memory address space is 4GB and page size is 2GB. Calculate the number of pages in virtual memory.
3. Assume that we have a computer that can use 16 bit virtual address from 0 to 64 KB. This computer has only 32KB of physical memory and that the page size in this computer is 4 KB.
 - i. How many bits in the address are required to store a page number in this computer.
 - ii. How many bits in the address are required to store a frame number in this computer.
 - iii. User runs a particular program having a size of 64KB on this computer. A few selected fields of the page table of that process at a particular time are shown in the figure below.

Page number	Frame number	Present/absent
0	101	1
1	000	0
2	000	0
3	110	1
4	011	1
5	000	0
6	111	1
7	000	0

- (a). What is the first and the last address in the first page.
- (b). What is the first and the last address in the second page.
- (c). What is the first and the last address in the first page and the last page.
- (d). Assume that in the above process CPU request following virtual addresses. What are the physical address will be.

Virtual Address	Physical Address
0000 0000 0001 1000
0001 0000 0001 0001
0011 0000 0001 1100

4. What is the main task of Memory Management Unit.
5. Draw the image to display the working procedure of the CPU, virtual memory, page table and the physical memory.
6. The block size of a disk is 8KB. A portion of its File Allocation Table (FAT) starting from block 400 at a particular time, is shown below. It gives the blocks of xyz.doc file as well.

	400	403
401		400
402		
403		404
404		-1

The last block of a file is indicated by -1

What is the important number that will be stored in the directory entry for ABC file that will help an operating system to locate the blocks in that file.

Assume user has been modify the above file and result of this modification file capacity increase by the 6KB. What changes are needed in FAT for this purpose ?

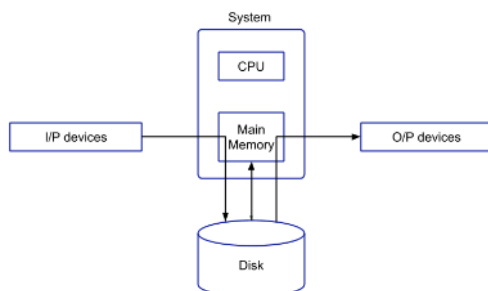
7. Assume that operating system saved the file inside the harddisk according to the index allocation. Following are the details related with the file.

File name : ABC.doc
 File Capacity : 10240KB
 Sector Capacity : 1024KB
 FAT Details : Sector 1, 4, 5, 7, 8,9,0,10,12,13
 Index Sector : 16

6.1 Draw the FAT table according to the above details

6.2 What is the important number that will be stored in the directory entry for ABC file that will help an operating system to locate the blocks in that file.

8. Write down the purpose of the File Control Block.
9. Following image is related with spooling techniques. What is the spooling and why it is important ?



10. Draw the image and explain about Context switching techniques.