CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
Devang Patel Institute of Advance Technology and Research
Department of Computer Engineering/Computer Science and Engineering

SEMESTER: 4TH OPERATING SYSTEM

UNIT NO: 5 Memory Management	
1	What is paging and swapping?
2	With a diagram discuss the steps involved in handling a page fault.
3	What is address binding? Explain the concept of dynamic relocation of addresses.
4	Define external fragmentation. What are the causes for external fragmentation?
5	What is paging? Explain the paging hardware?
6	Memory partitions of 100kb,500 kb,200 kb,300kb,600 kb are available how would best, worst, first fit algorithm to place processes 212,417,112,426 in order. Which is the best algorithm?
7	Differentiate between internal and external fragmentation.
8	Consider the reference stream 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. How many page faults while using FCFS and LRU using 2 frames?
9	What are the methods of handling the page faults?
10	What is thrashing? What are the causes for thrashing?
11	What is virtual memory? Explain Suppose we have a demand paged memory. The page table is held in registers. it takes 8ms to service a page fault if an empty page is available or the replaced page is not modified, and 20ms if the replaced page is modified. memory access time is 100ns. Assume that the page to be replaced is modified 70% of the time. what is the maximum acceptable page fault rate for an effective access time of no more than 200ns?
12	What is demand paging? Explain
13	What is segmentation? Explain. what is demand segmentation?
14	Differentiate between global and local replacement algorithms
15	Explain the difference between Physical and logical address
17	Describe the action taken by the operating system when a page fault occurs.
18	Explain the best fit, first fit and worst fit algorithm
19	What is dynamic storage allocation problem? Mention the names of different methods used to solve the above problem
20	Consider a logical address space of 8 pages of 1024 words each, mapped on to a physical memory of 32 frames. how many bits are there in the logical address? How many bits are there in the physical address?
21	Explain in detail the implementation of paging.
22	What is virtual memory and give its advantages.
23	Explain the term locality of reference and elaborate on its usefulness in presenting thrashing.
24	What is page fault and how it is handled?
25	Describe the LRU page replacement algorithm, assuming there are 3 frames and the page reference string is: 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1. Find total page hit and fault.
26	Explain with the help of supporting diagram how TLB improves the performance of a demand paging system.
Note:	**Refer all the paging Example which was already done in classroom studies.**

27.	A process references 5 pages A, B , C, D, E in the following order A, B, C, D, A, E, B, C, E, D Assuming that the replacement algorithm is LRU and FIFO, find out the number of page faults during the sequence of references, starting with an empty main memory With 3 frames.
	The available space list of a computer memory is specified as follows: Start address block address in words 100 50 200 150 450 600 1200 400 Determine the available space list after allocating the space for the stream of requests consisting of the following block sizes: 25,100,250,200,100,150 Use i) FIRST FIT ii) BEST FIT and iii) WORST FIT algorithms.
Unit 6- Input Output Management	
1	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. the drive currently services a request at cylinder 143, and the previous request was at cylinder 125. the queue of pending request in FIFO order is 86,1470,913,1774,948,1509,1022,1750,130 Starting from the current position, what is the total distance(in cylinders) that the disk arm moves to satisfy all pending requests, for each of the following algorithms i)FCFS ii) SSFT iii) SCAN iv) LOOK v) C-SCAN.
2	What are the different disk scheduling algorithms explain
3	The queue of requests in FIFO is 86,147,91,177,94,150,102,175,130 What is the total head movement needed to satisfy the requests for the following Scheduling algorithms FCFS, SJF, SCAN, LOOK, C-SCAN
4	Differentiate between protection and security in file system. How they are implemented?
5	What are the three methods for allocating disk space? Explain.
6	What is disk scheduling? Explain FCFS and SCAN disk scheduling algorithms.
7	Suppose that the head of moving head disk with 200 tracks numbered 0 to 199 is currently serving the request at track 143 and has just finished a request at track 125. If the queue request is kept in FIFO order, 86, 147, 91, 177 , 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for i) FCFS II) SSTF disk scheduling algorithm.
8	What is polling? What is interrupt? List three types of interrupt.
9	What is system bus?
10	Explain Direct Memory Access mode of data transfer
11	Suppose that a disk drive has 200 cylinders, numbered from 0 to 199. The disk head is initially at

	cylinder 53. The queue of pending requests, in FIFO order, is: 98, 183, 37, 122, 14, 124, 65, 67 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms? a) FCFS c) Scan (Elevator) b) SSTF d) C-Scan
UNIT-7 File system	
1	What is file and file system with respect to Operating System? Enumerate different types of the files in operating system.
2	List file allocation methods. Explain any one in brief.
3	Explain Non-contiguous (Linked) file allocation method with proper diagram. Give its advantages and disadvantages.
4	Explain types of file access method.
5	What is Directory? Explain single level and two-level directory structure with advantages and disadvantages.
6	Explain types of space allocation method in file system.
7	Explain File system layout of Unix Operating System.
8	Explain directory structure of Unix Operating System.
9.	Explain contiguous allocation and linked list allocation for implementing file storage.
10.	List and explain different file attributes.
11	11. How to Organize Files by Index?
12	Explain any two File Allocation Methods from the following: (i) Contiguous Allocation (ii) Linked Allocation (iii) Indexed Allocation
13	Explain different file operations in brief.
14	Write short notes on “File Types and File Access (sequential access and random access)”
15	Explain the purpose of the open () and close () operations.
16	Some systems provide file sharing by maintaining a single copy of a file; other systems maintain several copies, one for each of the users sharing the file. Discuss the relative merits of each approach.
17	What are the advantages of the variant of linked allocation that uses a FAT to chain together the blocks of a file?
UNIT-8 UNIX/LINUX FILE SYSTEM	
1	What is kernel in UNIX operating system?
2	List any four features of UNIX system.
3	Draw architecture diagram of UNIX operating system.
4	What is “inode”? Explain File and Directory Management of Unix Operating System.
5	What is buffer header? Draw block diagram of buffer header with proper labels.
6	Explain system call.
7	Explain cat and chmod commands of Unix with example.
8	What is the purpose of buffer cache?
9	Which are two parts of buffer?

10	Justify "The buffer is the in-memory copy of the disk block".
11	Why a disk block can never map into more than one buffer at a time?
12	List any two advantages of buffer cache.
13	List any one disadvantages of buffer cache.
14	Describe any one algorithm from following in detail. a) ialloc, b) namei, c) ifree

Prepared By: Binal S.Kaka
Institute: DEPSTAR
Department: Computer Engineering