AMRITSAR GROUP OF COLLEGES
(AUTONOMOUS COLLEGE)
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

B. Tech. (CSE-I) 4th SEM
OPERATING SYSTEM
ACCS - 16402
Assignment-3

Total Marks: 24

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Section-A

(6*2=12)

Q1.

a) What is file and what are the various file operations?[CO6]

Ans: A file is a collection of logically related data that is recorded on the secondary storage in the form of sequence of operations. The content of the file are defined by its creator who is creating the file. The various operations which can be implemented on a file such as read, write, open and close are called file operation. There are many file operations :-
(i) create operation. (ii) open operation.
(iii) write operation. (iv) Read operation. (v) seek operation.
(vi) Delete operation. (vii) Truncate operation. (viii) Close operation.

b) What is the difference between protection and security?[CO8]

Ans:

	Protection	Security
(i)	while Protection deals with the access to the system resources.	Security grants the system access to the appropriate users only.
(ii)	while in protection, internal threats are involved.	In security, external threats are involved.
(iii)	In security, more convoluted queries are handled.	In security more convoluted queries are handled.
(iv)	whereas in protection, authorization mechanism is implemented.	In security, encryption and certification mechanisms are used.

c) What is Access matrix?[CO8]

Ans: The Access matrix is a security model for

a Computer System's protection state. It is described as a matrix. An access matrix is used to specify the permissions of each process running in the domain for each object. The rows of the matrix represent domains, whereas the columns represent objects. Every matrix cell reflects a set of access rights granted to domain processes. i.e., each entry (i,j) describes the set of operations that a domain Di process may invoke on object of.

d) What do you mean by Virus?[CO8]

Ans: A virus is a fragment of code embedded in a legitimate program. Viruses are self-replicating and are designed to infect other programs. They can wreak havoc in a system by modifying or destroying files causing system crashes and program malfunctions. on reaching the target machine a virus dropper inserts the virus into the system for more details, refer to this.

e) What do you mean Trojan horse?[CO8]

Ans: A trojan horse is a standel one malicious program which may give full control of infected pc to another PC. It may make copies of them, stal information or harm the host computer system. It actually appear to be useful software but will actually to damage one installed or run on our Computer. Most popular Trojan horse are Netbus, Subscreen, Beast etc.

f) What are various file allocations methods?[CO6]

Ans: The allocation methods define how the files are stored in the disk blocks. There are three main disk space or file allocation methods.

• (i) Contiguous Allocation · (ii) Linked Allocation.
(iii) Indexed Allocation.

(i) Contiguous Allocation:- In this scheme, each file occupies a contiguous set of blocks on the disk.

(ii) Linked Allocation:- In this scheme, each file is linked list of disk blocks which need not be contiguous.

(iii) Indexed Allocation:- In this scheme, a special block known as the Index block contains the pointers to all the blocks occupied by a file.

Section-B

(3*4=12)

Q2. Suppose that the head of moving head-disk with 200 tracks, numbered 0 to 199, has just finished a request at track 125. The queue of the requests is kept in FIFO order:

86, 147, 91, 177, 94, 150, 102, 175, 130.

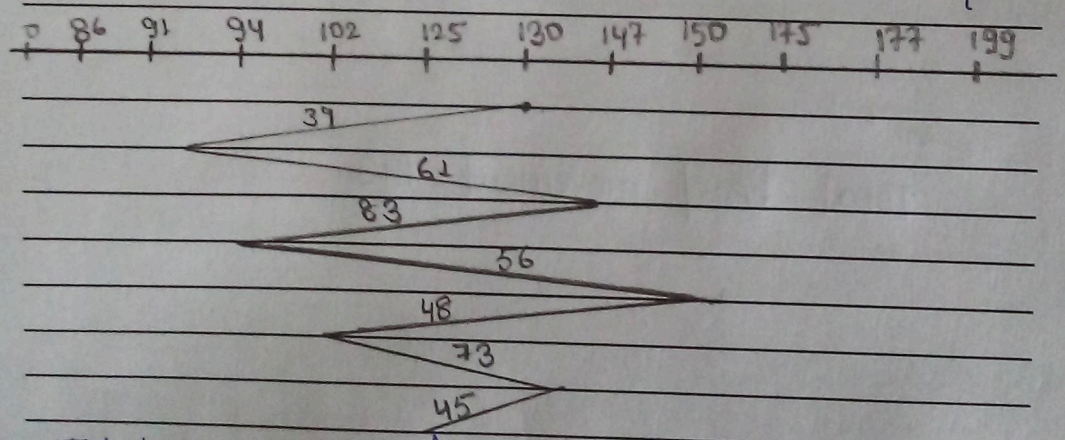
What is the total number of head movements needed to satisfy requests for the following disk Scheduling algorithms? [CO7]

(i) FCFS

(ii) SSTF

Ans: FCFS:- Requests are enter tained in the order they arrive. It doesnot provide fastest service.

Ques:- 86, 147, 91, 177, 94, 150, 102, 175, 130 Head starts at 125.

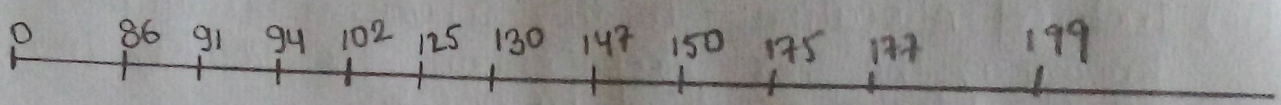


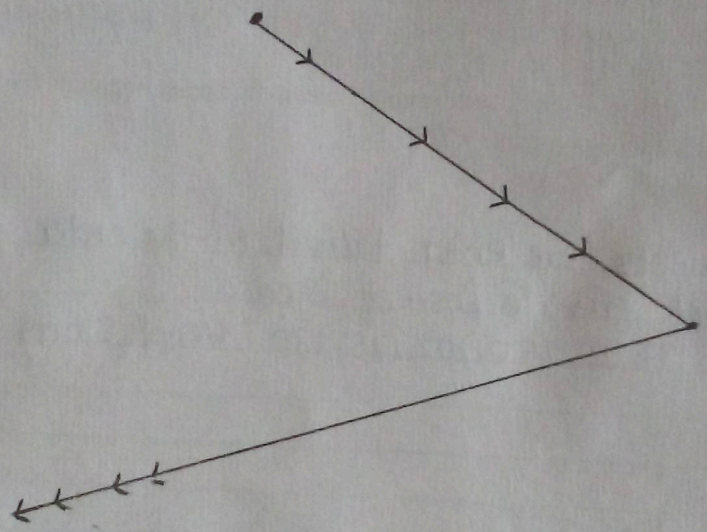
Total number of head movements = 547

SSTF:- Selects the request with the minimum seek time from the current head position. SSTF Scheduling is a form of SJF

Scheduling may cause starvation of some requests.

Queue :- 06, 147, 91, 177, 94, 150, 102, 175, 130



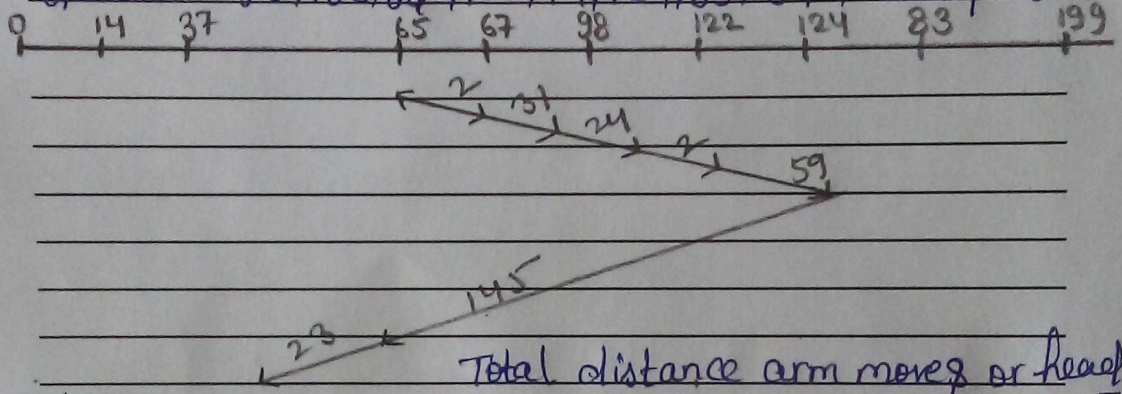


Total head movement = 143.

Q3. Consider an ordered disk queue with requests involving tracks 98, 183, 37, 122, 14, 124, 65, and 67. If the read/write head is initially at track 65. What is the total distance that the disk arm moves to satisfy all the pending requests for LOOK and C-LOOK? [CO7]

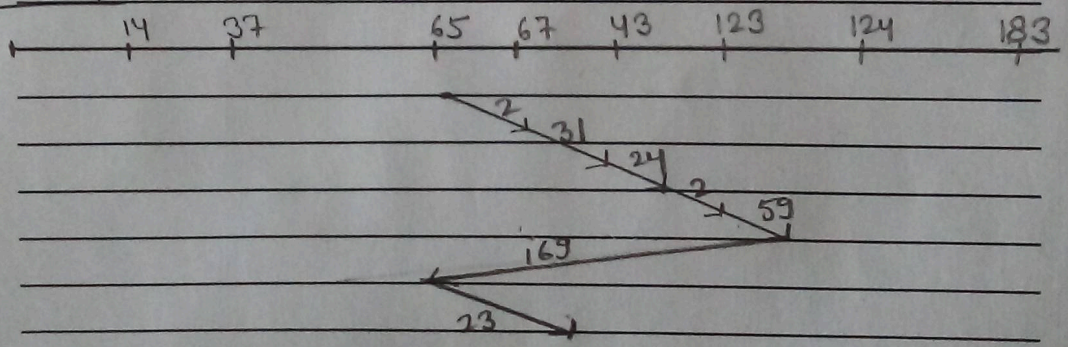
Ans: LOOK :- Look is same as SCAN, but instead of going till last track to till last request and then change direction

Queue :- 98, 183, 37, 122, 14, 124, 65, 67, Head start at 65.



Total distance arm moves or head movement = 287

C. LOOK :-



Q4. What are the different methods of accessing files? [CO6]

Ans: There are different methods of accessing files.

(i) Sequential Access :- In sequential access, the OS read the file word by word. A pointer is maintained which intially points to the base address of the file. If the user wants to read first word of the file then the pointer provides that word to the user and increases its value by 1 word. This process continues till the end of the file.

(ii) Direct Access:- The Direct Access is mostly required in the case of database system. In most of the cases, we need filtered information from the database. The sequential access can be very slow and inefficient in such cases. Direct access will give the required result despite of the fact that the operating system has to perform some complex tasks such as determining the desired block number.

(iii) Indexed Access:- In index accessing, searching in a large database became very quick and easy but we need to have some extra space in the memory to store the index value.