MANAGEMENT

e management system of an operating system takes care of file related activities such as accessing, naming, sharing and protection of file.

FILES

(i) A file is the smallest unit containing the information on a topic in a PC.

(ii) A file is a collection of related information.

(iii) Each file has its name, data and its attributes.

(iv) A file name is uniquely identifier for the user to use it and access it.

(v) Data is the contents of a file.

(vi) File is always stored in the secondary storage device such as harddisk.

Example- ABC.txt
xyz.bmp

DIRECTORY

(i) containers of the files.

(ii) Whenever we saved a typed letter in our PC and give it a nature, operating system (i.e DOS) will save it on our hard disk or secondary storage in the form of electronic file into an electronic folder or drawer called directory.

(iii) It works as a electronic drawer for the files.

TYPES OF FILES

File name extension (i.e the three characters appearing after the dots (.)) used in a file name to show the

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e of file. These are described below:-

- Text file(.txt)
- Backup file(.bak)
- Help file(.hlp)
- Document file(.doc)
- Graphics file(.bmp)
- Ms access file(.mdb)
- Powerpoint file(.ppt)
- Excel file(.xls)
- C file(.c)
- C++ file(.cpp)

- Text file(.txt)

A text file is a file which is created so that it can be used by any word processing program or software.

eg. XYZ.txt

- Backup file(.bak)

Extension name of a backup file is .bak. This indicates that the file contents of the named file are created as a separate copy for safety purpose. In case, the original file is deleted or get corrupt, we can open the backup file.

eg. XYZ.bak

- Help file(.hlp)

In every software package, for example MS-Office or Word Star, there is a help file which contain information to help the user for learning specific commands.

eg. ws.hlp

- Document file(.doc)

Every word processor create a file which contain some special symbols along with the typed text. It contains left space, right space, top margin, formatting etc.

eg. Kriti.doc

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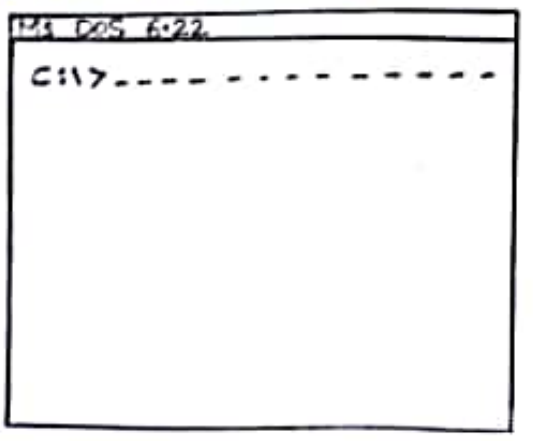
aphics file(.bmp)
hen we draw graphics or pictures using special graphic software such as MS-Paint, Corel draw etc. we use graphics file.
eg. Kriti.bmp

There are several other types of file available for the user for different task such as

- Ms PowerPoint (.ppt) → for the presentation of document
- Ms Excel (.xls) → used as a electronic separate sheet.
- C file(.c)
- C++ file(.cpp)
- Ms Access file(.mdb)
- foxfro file (.dbf)

Ms DOS (Microsoft Disk Operating System)

(i) It is a command line user interface.
(ii) Ms DOS 1.0 was released in 1981 from IBM computer.
(iii) The latest version of MsDos is MsDos 6.22 comes in 1994.
(iv) It still can be accessed from every version of Microsoft Window by clicking start → Run and typing "command" or by typing "cmd" in Windows NT, Windows 2000, Win' XP etc.



Interpreter work in it ←

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MANDS

instructions processed by DOS command interpreter.

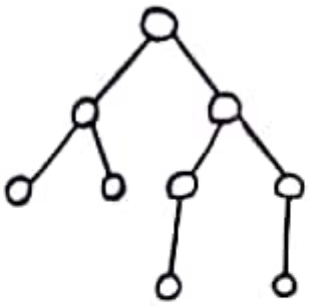
There are two types of command
(i) Internal command
(ii) External command

(i) Internal command
Internal command in DOS are such programs which get loaded in the memory of a PC automatically along with DOS at the time of booting.
Ex- dir, cd, md, Type, Del, Ren, edit, copy etc.

(ii) External command
External command files that do reside on disk.
Ex- command.com
Format.com
Xcopy etc.

PATH

A list of directories that DOS must go through to find a directory or files.



There are two types of path
(i) Absolute path
(ii) Relative path

(i) Absolute path → A path that start from the root directory is called absolute path.

(ii) Relative path → A path that start from the drive's current directory is called relative path.

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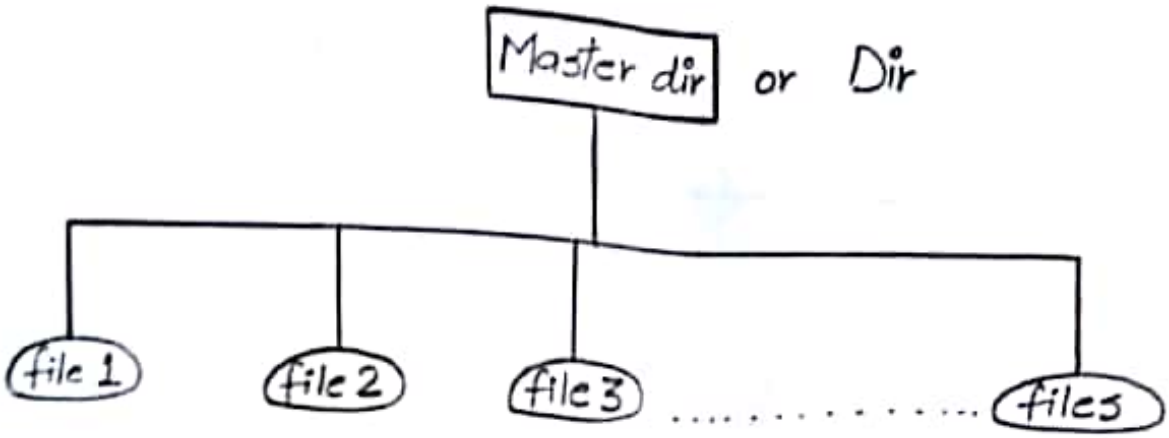
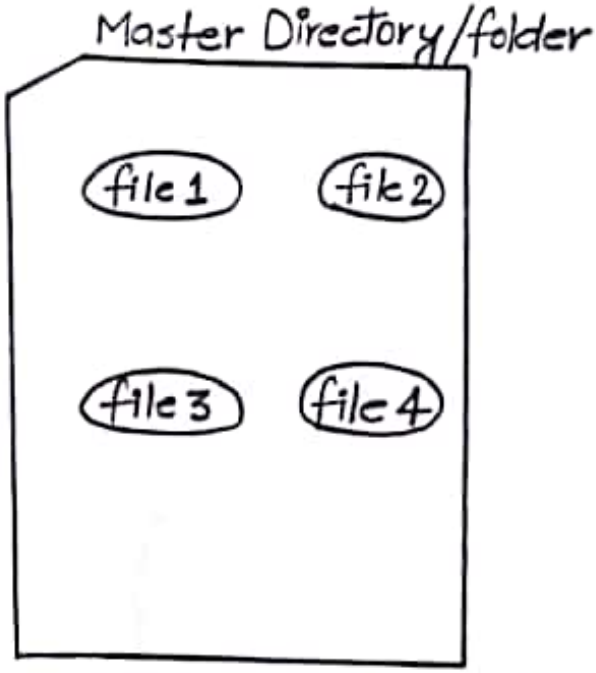
ECTORY STRUCTURE

Three types of Directory structure are

(i) Single level Directory
(ii) Two level Directory
(iii) Hierarchical Directory

(i) Single level Directory





In single level directory structure, there is only one directory which contains certain number of files.

(ii) Two level Directory

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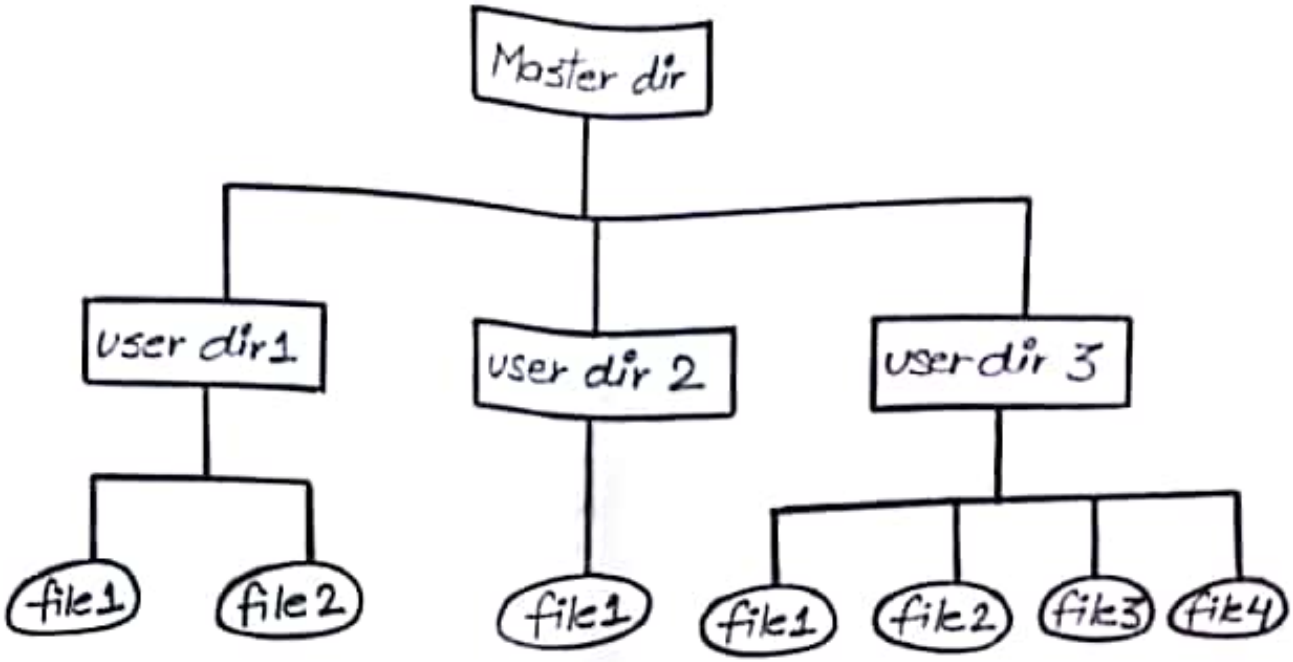

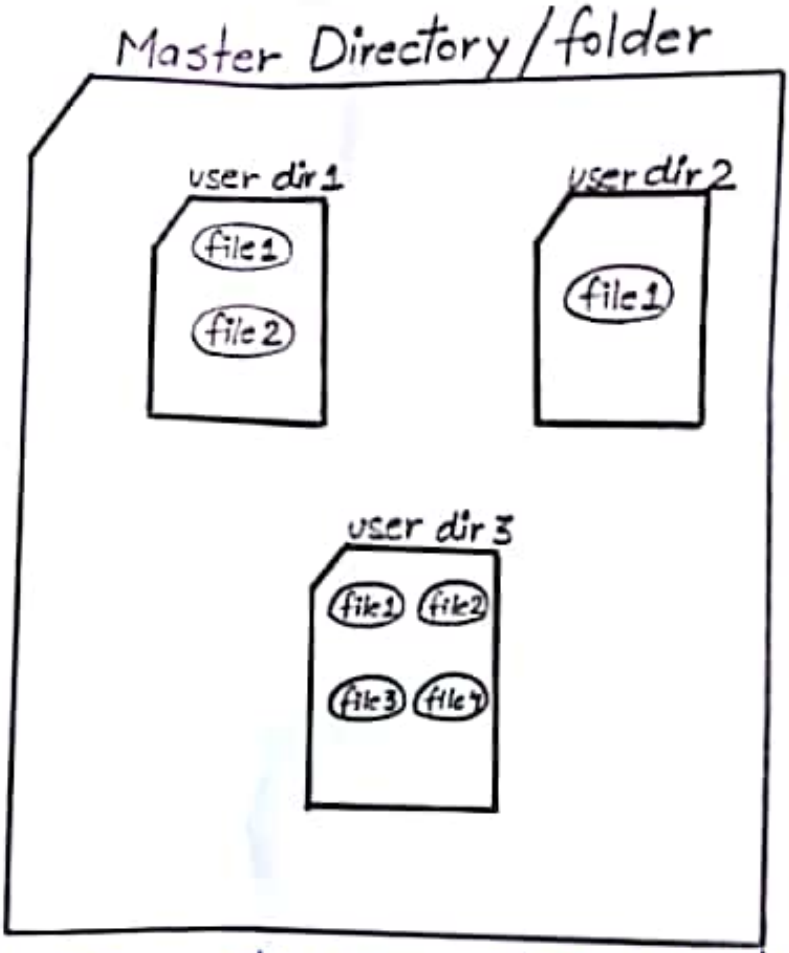

1) In two level directory structure, the master directory contains number of subdirectories.

2) In two level directory structure, the root directory contains number of branches with files as leaves.

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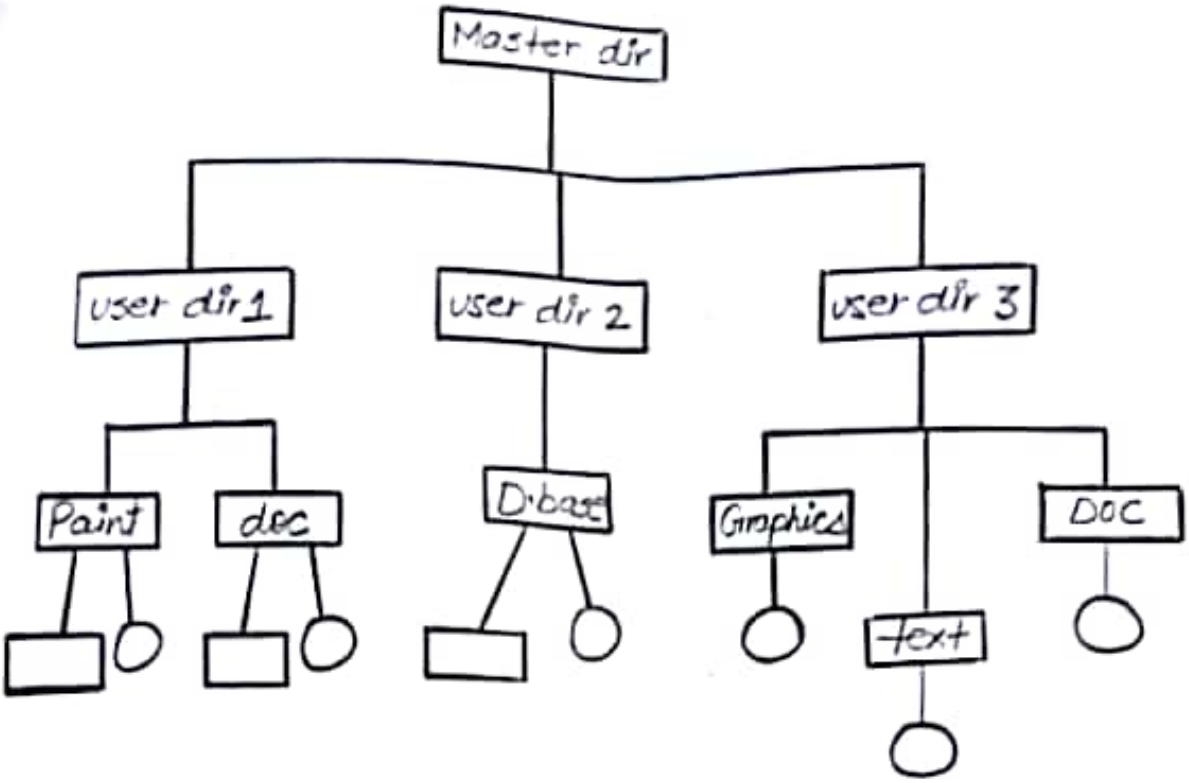
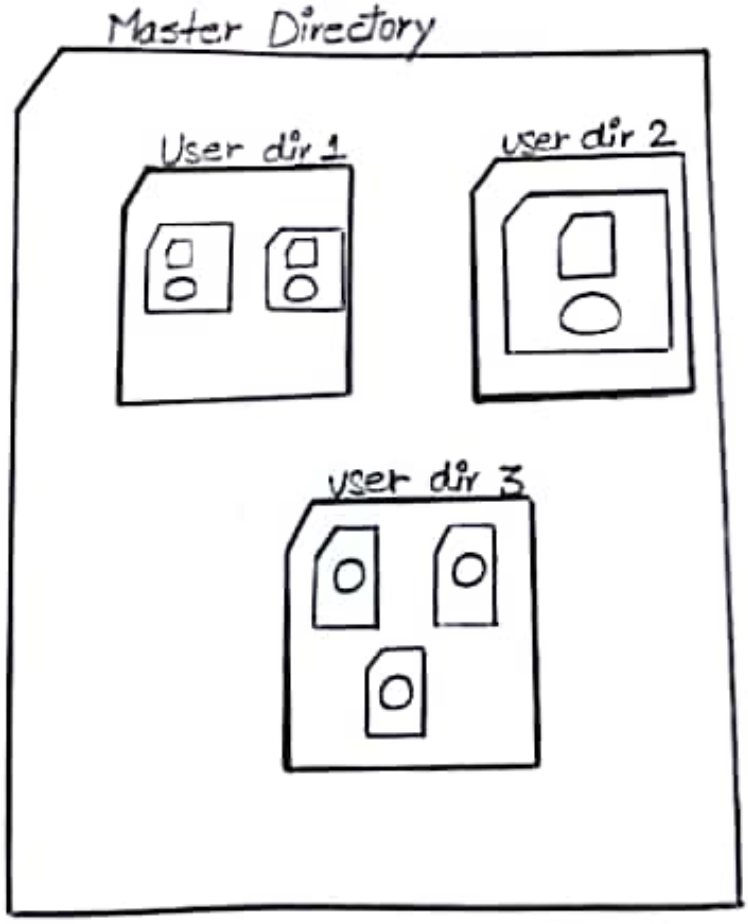
Hierarchical Directory





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The hierarchical directory structure works like a tree structure which has roots, branches and subbranches with leaves.

2) In case of hierarchical directory structure, the subdirectory of master directory also contain the directories.

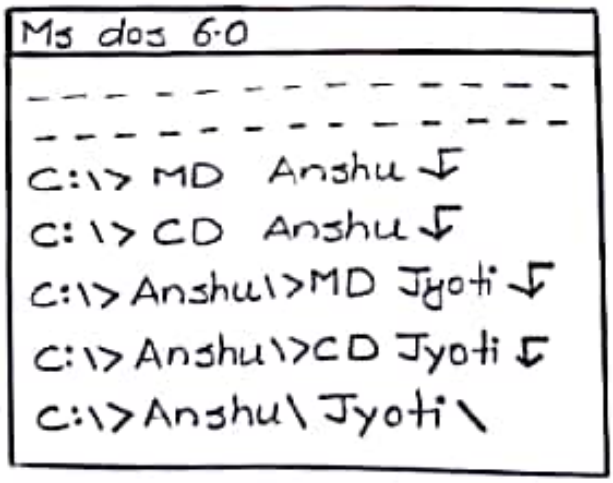
3) After two level directory structure, if any directory level is created then it is said to be hierarchical structure.

File Operation

The user manipulate file, various operation or commands. These operation vary from system to system and user operation on a file are by means of command language. In a DOS operating system, we use some operation such as creating a file, renaming a file, deleting a file etc.

File Management Commands

Start → Run Typed → cmd/command



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MD (Make Directory)

It is used to make directory.

C:\> MD kriti ↵

or

MD Dirname

CD (Change Directory)

(i) It is used to go to current directory.

Ex- C:\> CD Dirname ↵

or

C:\> CD kriti ↵

(ii) It is used to return that directory.

RD (Remove Directory)

It is used to remove that directory.

Ex- C:\> RD Dirname ↵

or

C:\> RD kriti ↵

Cls

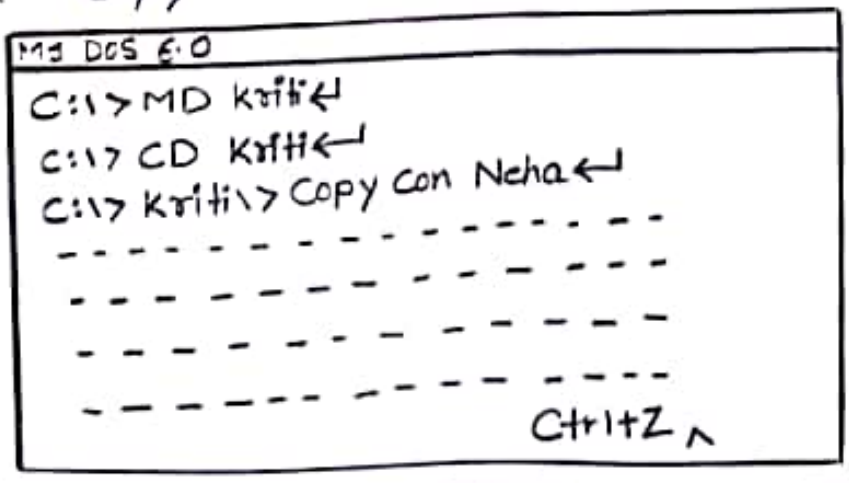
It is used to clear the screen

C:\> CLS ↵

Copy Con

It is used to create a file.

Syntax- Copy Con Filename



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ii+z → It is used to store the file.

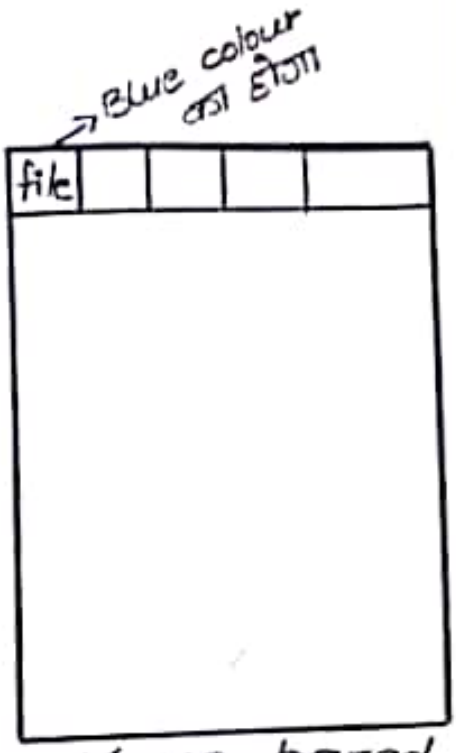
Edit command

(i) It is a menudriven text editor.

(ii) It is used to make corrections in a file.

Syntax edit filename ↵

It is not mouse-based



Mouse-based

Ren command

It is used to rename the file.

Syntax Ren oldfilename newfilename

Example C:\> kriti\> Ren Neha Priya ↵

Copy command

copy command copies the contents of a file (c-alled the source file) and produces a new file (called the destination, or target file).

Syntax

copy filename1 filename2

Example C:\> kriti\> Copy Priya Ruchi ↵

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command

It is used to see the contents of file.

Syntax - Type filename↵

Example - Type Priya↵

Type Ruchi↵

Move command

Move command moves one or more files to another drive, directory or drive and directory.

Syntax move source_filename destination_filename

Example move Ruchi Pooja↵

Del/Delete/Erase command

It is used to delete a file from the disk default to drive.

Syntax delete filename↵

Example

C:\>Kriti\> delete Pooja↵

Undelete command

undelete file are used only for external command.

Syntax undelete filename↵

Example undelete Pooja↵

It is used to review the file if it is deleting.

Date command

It is used to see the date and also change the date.

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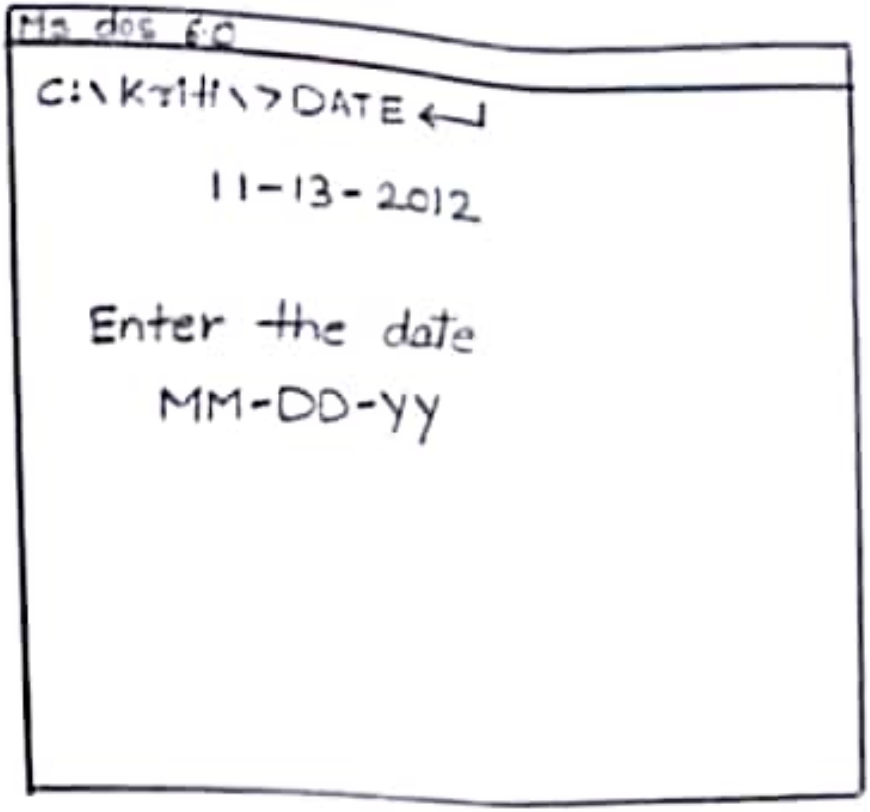
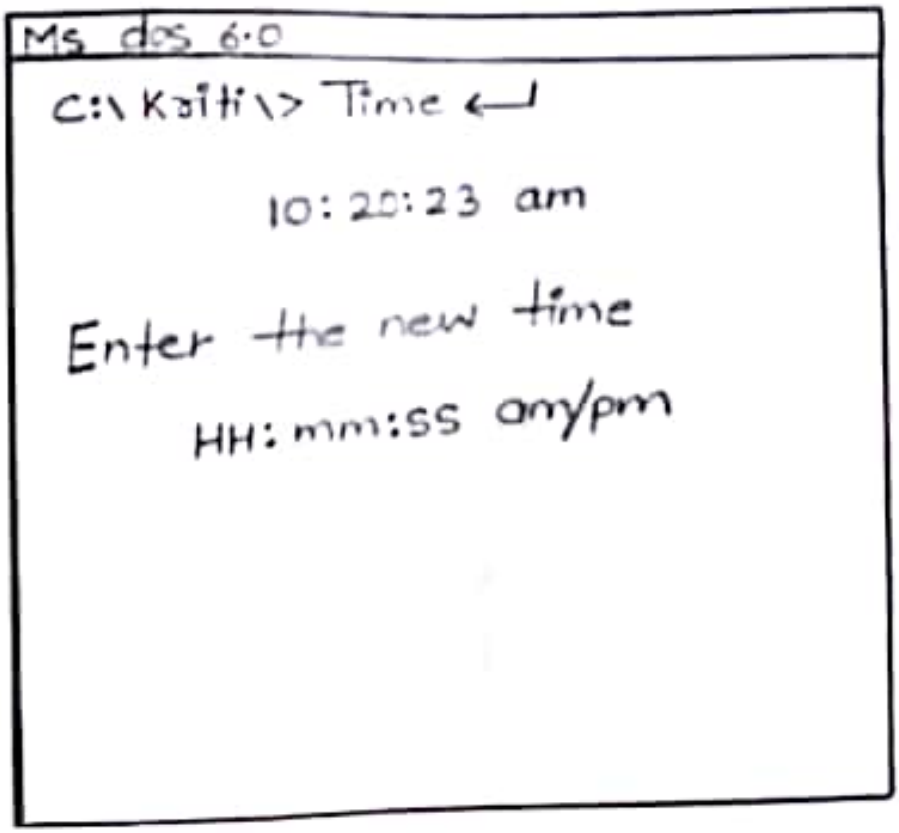


Time command



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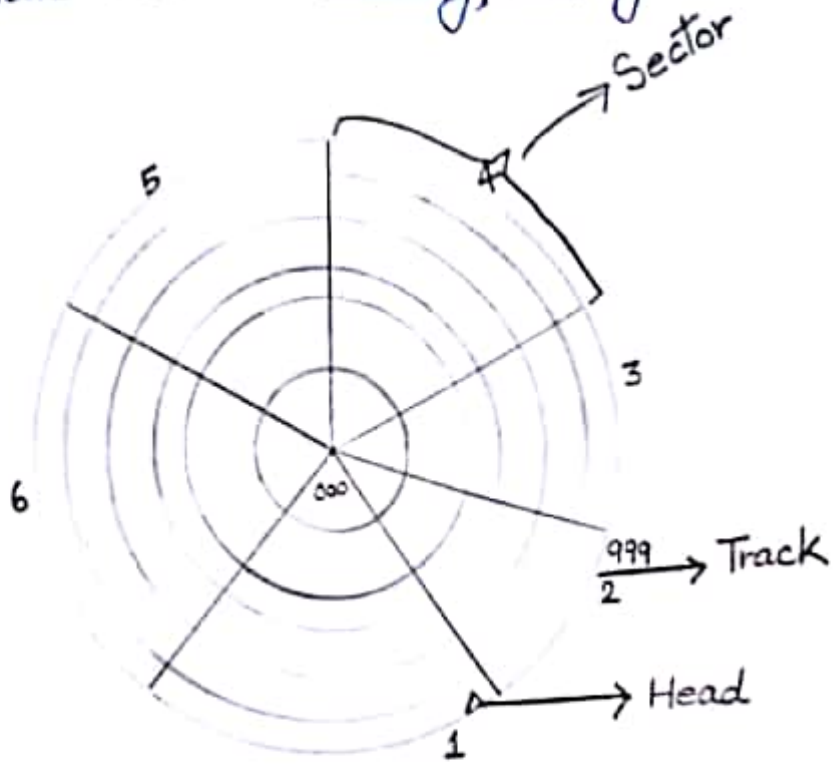
ORGANISATION

Disk is the secondary storage media i.e. data store and external devices such as hard disk, magnetic disk, floppy disk, CD-ROM where the data is stored in the sector and provides to user program via I/O Request.

DISK MANAGEMENT

Disk management is an important function of operating system. These include disk scheduling, management of swap area etc.



Track

For data recording, the surface of a disk is divided into a number of concentric circle called track.

Sector

Each track is further subdivided into number of segments called sector.

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A disk is a device used for mass storage of data needed for direct access. This way, a disk can be used to retrieve any record of data at very high speed.

Seek Time

It is the time taken from read/write over requested track.

Seek Time = Time of one track to the Time of another track

Latency Time

It is the time taken for the required sector to come under the head.

Latency Time = Time taken from one particular sector to time taken from same particular sector.

NOTE: Another name of Latency time is Search time.

If the head is fixed, seek time = 0

∴ Access time = Latency time

i.e. $A \cdot T = L \cdot T$

Movable head, $A \cdot T = S \cdot T + L \cdot T$

DISK SCHEDULING

(17) When more than one process is running concurrently, several requests are generated by these processes for I/O operation. These are issued to operating system at the same time.

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operating system maintain a queue for this purpose, taking out the I/O request from the queue and processing it one by one.

The queue needs to be scheduled. Various scheduling are given to perform this function -

(a) FIFO (First - Come - First - Served) Scheduling.
(b) SSTF (Shortest - Seek - Time - First) Scheduling.
(c) SCAN (elevator algorithm) Scheduling.
(d) C - SCAN (Circular SCAN) Scheduling.

(a) FIFO (First - Come - First - Served) Scheduling

As the name suggest, the request that arises first will be served first. Being the simplest form of disk scheduling, it processes the request in sequential order i.e. the order in which the I/O request arrive.

For Example - A disk of size 200 track receives the request for the block of I/O operation. Number of the blocks/tracks on the disk are 88, 174, 27, 131, 12, 150, 55, 50, 13 and 182.

Disk arm is initially at track 40. It will first move from 40 to 88, then 88 to 174, then 174 to 27 and so on..... covering 948 track in total.

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disk is on track 40

Requested Track	Track covered
88	88-40 = 48
174	174-88 = 86
27	174-27 = 147
131	131-27 = 104
12	131-12 = 119
150	150-12 = 138
55	150-55 = 95
50	55-50 = 5
13	50-13 = 37
182	182-13 = 169
	Total no° of track covered = 948

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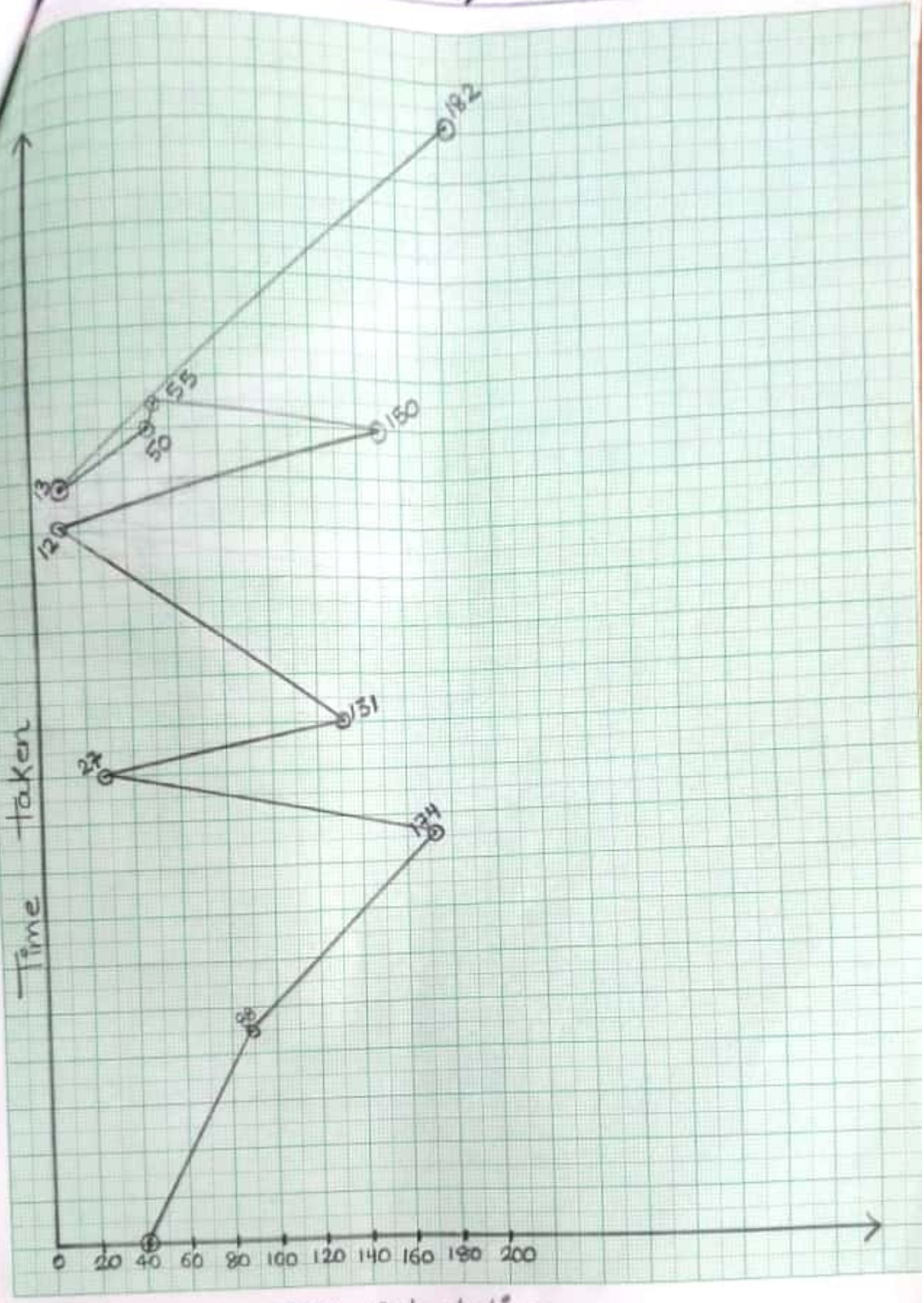
(Shortest - Seek - Time - First) Scheduling



FCFS Scheduling

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(Shortest - Seek - Time - First) Scheduling

In this scheduling, disk arm (head) will those I/O operation that require minimum track to be covered. Only that I/O request is served first i.e. close to the disk arm.

SSTF policy helps in achieving the minimum seek time by serving request that require minimum seek time. That means further following same mechanism for - 88, 174, 27, 131, 12, 150, 55, 50, 13 and 182.

Disk arm is initially at track 40. It will first move from 40 to 50, then 50 to 55, then 55 to 27, then 27 to 13, then 13 to 12, then 12 to 88, then 88 to 131 and so on..... covering 228 track in total.

disk is on track 40

Requested Track	Track covered
88	40 - 50 = 10
174	50 - 55 = 5
27	55 - 27 = 28
131	27 - 13 = 14
12	13 - 12 = 1
150	12 - 88 = 76
55	88 - 131 = 43
50	131 - 150 = 19
13	150 - 174 = 24
182	174 - 182 = 8
	Total number of track covered = 228

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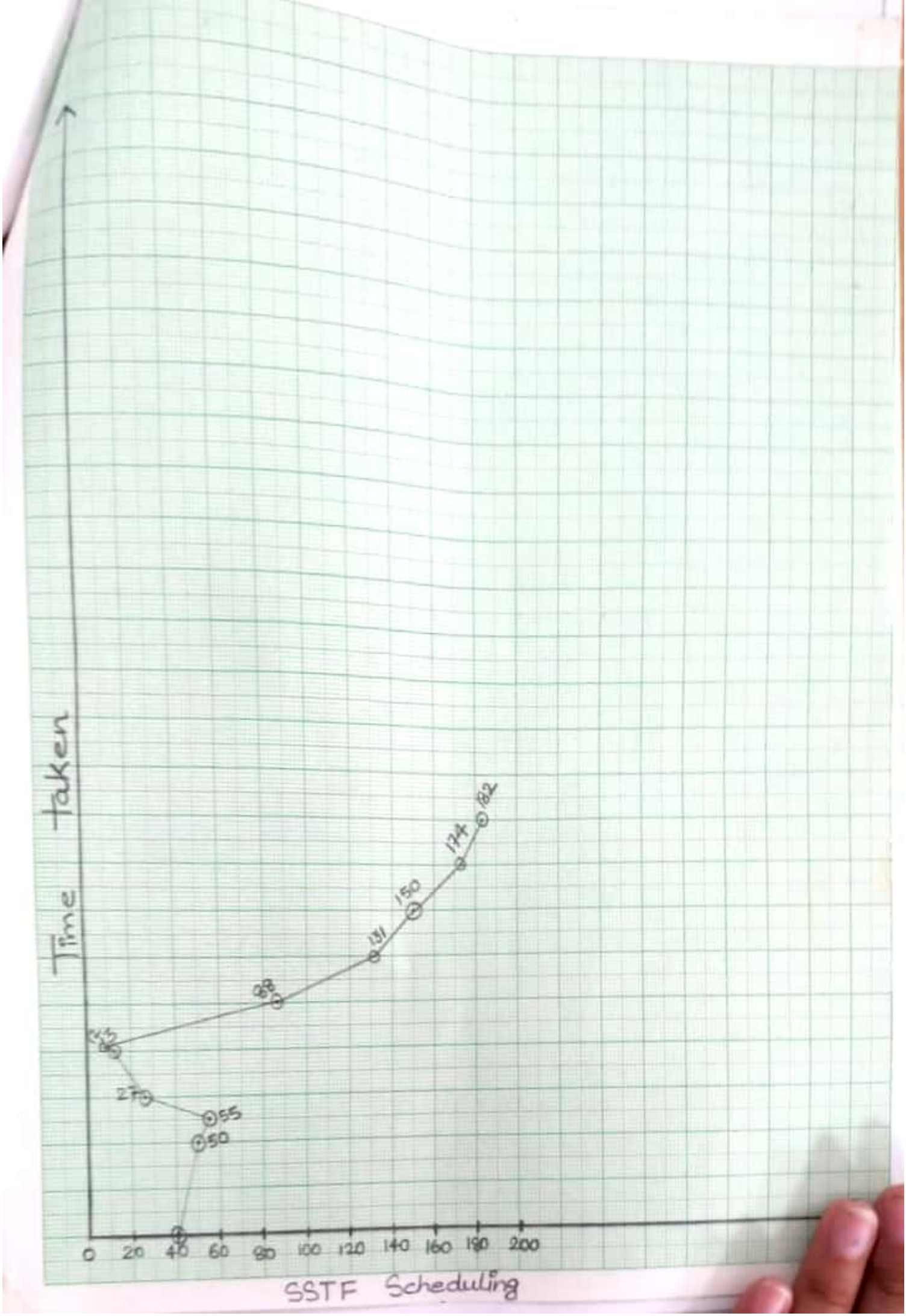

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AN Scheduling

In SCAN Scheduling, disk arm is req-ed to move from beginning of the disk and then owards the end of the disk satisfying the entire request that exist in the route of the disk arm. SCAN policy behaves like SSTF (Shortest - Seek - Time - First) if it starts moving fro-m the lower track number.

Disk arm is initially at track 40. It will first move from 40 to 27, then 27 to 13, then 13 to 12, then 12 to 50, then 50 to 55, then 55 to 88, then 88 to 131, then 131 to 150, then 150 to 174 and finally 174 to 182 covering 198 track in total.

disk is on track 40

Requested Track	Track covered
88	40 - 27 = 13
174	27 - 13 = 14
27	13 - 12 = 1
131	12 - 50 = 38
12	50 - 55 = 5
150	55 - 88 = 33
55	88 - 131 = 43
50	131 - 150 = 19
13	150 - 174 = 24
182	174 - 182 = 8
	Total number of track covered = 198

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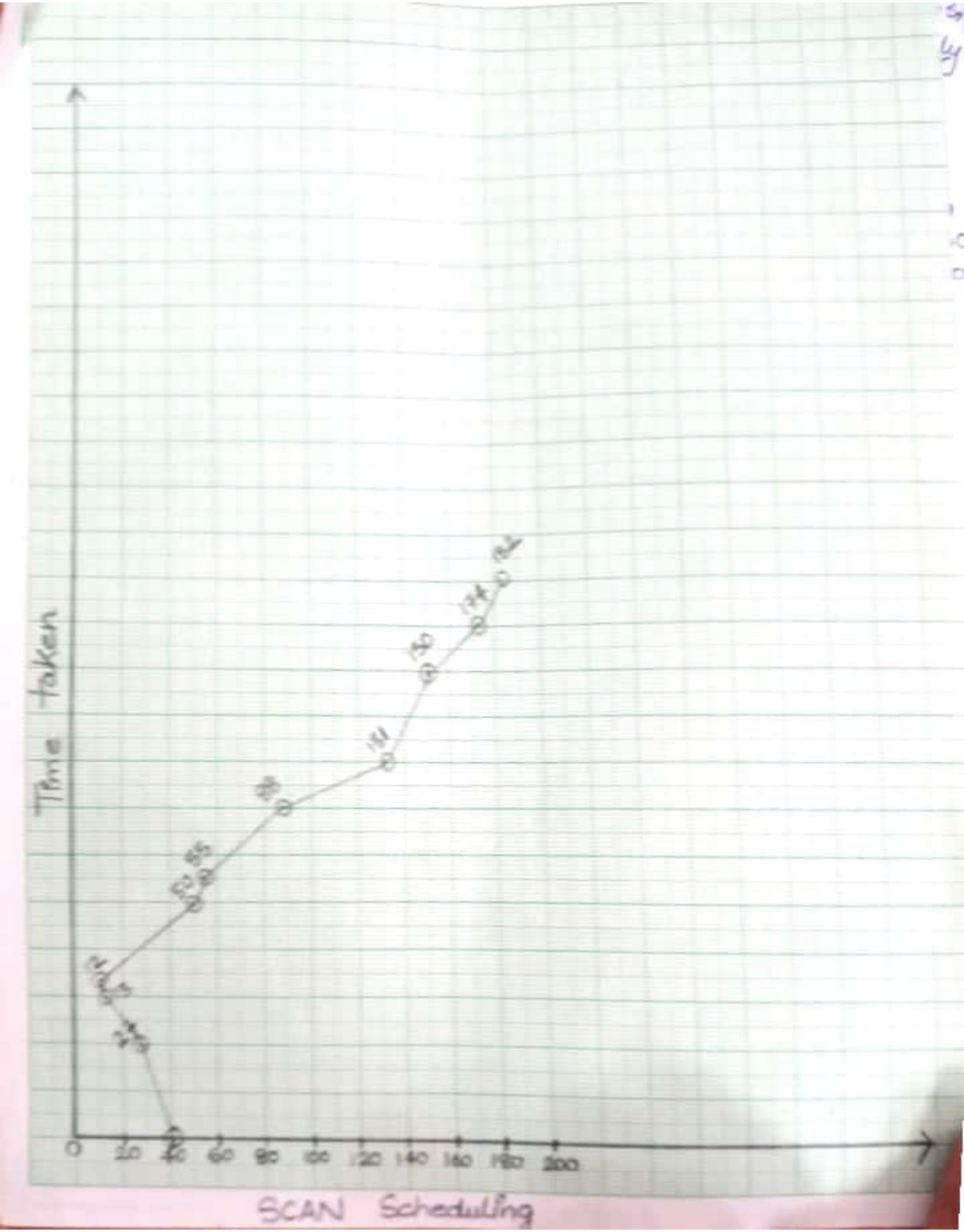

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d) C-SCAN (Circular SCAN) Scheduling

It is an important improvement over scan scheduling. In this policy, disk arm start from end where more number of request are present, while moving towards its end satisfies all the request that come in the route. When the disk arm reaches it quickly return to reach its end, then it quickly reaches to the other end without fulfilling any request in the way. That are 88, 174, 27, 131, 12, 150, 55, 50, 13, 182.

Disk arm is initially at track 40. It will first move from 40 to 50, 50 to 55, then 55 to 88, then 88 to 131, then 131 to 150, then 150 to 174, then 174 to 182, then 182 to 12, then 12 to 13 and finally 13 to 27 covering 227 track in total.

disk is on track 40

Requested track	Track covered
88	40 - 50 = 10
174	50 - 55 = 5
27	55 - 88 = 33
131	88 - 131 = 43
12	131 - 150 = 19
150	150 - 174 = 24
55	174 - 182 = 8
50	182 - 12 = 70
13	12 - 13 = 1
182	27 - 13 = 14
	Total number of track covered = 227

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