

④ Computer \rightarrow Computing unit.

⑤ Behavioral:

* State:-

Range, Indicators. Numbers

⑥ It is collective imperials^(matrix) representation of known indicators (observed value) in a given system at a given time stamps (to be defined).

⑦ Mathematical model (weight, material, length).

To T_1

f
↓

s_i s_{i+1}

A
 s_n

Desired state

① Computers → Goals → Objectives

pre-Defined

Undefined

② It is an electronic device consumes electricity and comprises different components and changes its state or transit itself from one state to other state of our desired and achieve goal.

③ Goals and objectives are states but desired states.

* Engineers and scientists (Better?)

12/1/22

④ HyperLink:

focus can be transferred It is way of method by which to transfer from one point in data to another (html).

⑤ Commerce:

کاری. Trade. Term or instrument or money or cheque.

Exchange values or laws.

⑥ Paper & pencil (کاغذ) (Audit)

⑦ Technological devices introduced.

⑧ BIOS, EBIOS, flash drive
(Basic Input/Output System)

⑨ GUI:-

⑩ Interface: point where exchange of data can happen. meetings take place (کامپیوٹر)

- ① Facilitate exchange of data.
- ① Receives user input and process it at backend. (GUI)
- ① Boot → start / kick.

① Server:-

- ① Types of computer.

- ① Embedded:

Placing a system into subsystem which remains cease or invisible. microwave, fridge, A.C, T.V.

- ① Smart T.V (without antenna)

- ① Computing Unit:

Input - Output - Processing - Storage - OS - Connection

- ① Personal Computer:

Needed by me. (Range)

- ① Capacity, size difference-

① Server:

Piece of code that provides a particular service. e.g: `emailserver.com`

- ① Client: piece of code that request

a service and when provided consumes it. `web browser`

collection

- ① Server class machine: configuration of hardware devices capable of hosting one or more servers.

- ① Mid-range servers

- ① Soft server.

`-print`

(task: 1)

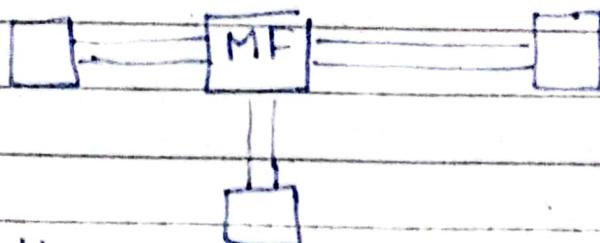
- ① Data servers

`Srv`

- ① YouTube: Google data center Documentary

③ Mainframe:

Fundamental management.
More servers or clients are attached.
A server to manage other computers.



④ Weather forecasting servers.

⑤ RAID (Redundant Array of Integrated Disks)

⑥ Super Computer:

:- Deepblue

⑥ Less scope of functionality

⑥ Capacity or ability to do task much faster.

(Task:2)

⑥ Tic, Tac, Toe (Tree)(State) :- X-Wins

⑥ Prime Number finding (2008, last) Y-Wins Draw

⑥ Public Key Encryption (PKE) (mod)

⑦ Networks:

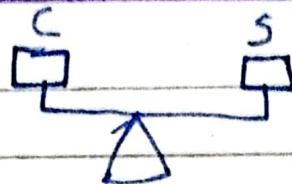
Two or more computing units connected using a media with a communication channel forms a network.

(Task:3) ⑥ How many addresses

0-255 000.000.000.000

⑥ Next week (Quiz).

17/1/22



client-server Architecture.

- Client works less (Thin Client)(Dumb terminal)
- There exists a balance b/w client and server relationship , if client comes short in weight / client computability, memory, complexity etc, we call or say client is **thin client** or dumb terminal .

* Chapter #2

Data Representation And Storage

- ④  → CPU+MB+AB+Mem+Card+Communication & I/O
Paraphenelia

- A/C - D/C
 - P

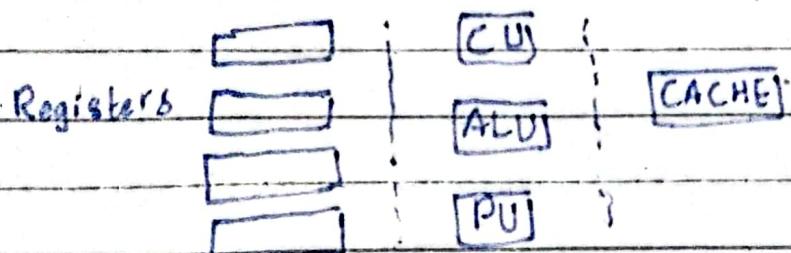
○ Signal:-

Discipline → Pulse → Electric/Audio/Magnetic

- Pulse collection: Energy is emitted from one system. Sequence of energy presence and absence. Pulse (Energy Bur).
- Meaningful sequence of energy pulses (Signal). (Read/Write/Reproduce).
- Combination of 0's and 1's can qualify it as signal.

- HT → Hyperthreading → processor → core
- Processor Heating up → core made.
- Clock speed: Ticking process
- Silicon wafer.
- Benchmark Tests.
- Word size (amount of data manipulate at one time).
- Addressing Scheme (increases size)
- Bus (wire/path data can travel), Bus width.
- Registers:

A part of processing unit which contains data and can process a bit of data.



- PROM (Programmable), EEPROM (Erasable), BIOS update
- Firewire / IEEE 1394 buses.

○ Port:

- | | |
|---|--|
| ① Physical Port
(Connected on board) | ② Logical Port
(Programming structure)
(Used in network programming) |
|---|--|

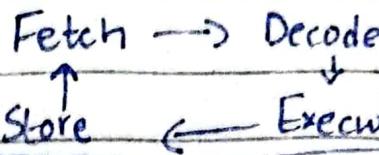
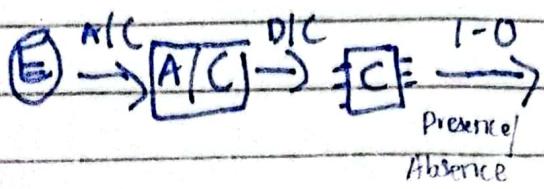
- Fetch → Decode → Execute → Store
- GUT (Generalization theory)
- LADAR technology (internet)
- Ch#1 and Ch#2 on Tuesday Quiz

24/11/22

- Hub (many devices are connected in one device to perform different operations).

4 words
(in programming)
language

① Machine Cycle:



Transitions → Grouped
(Changing state
of one or more
component to
achieve goal)

** ② Computers do grouped transitions

③ Alphabets {A, B, C, ..., Z} - 26

Words - Group of Σ

Sentences - Group of words

④ Grammar: set of rules which gives meaningful structure.

⑤ Coinage - New words added.

Words are limited / finite. OED (Oxford)

* ⑥ Respiratory problem / Largest Vocab Word

* ⑦ Merry Popin (2nd largest)

⑧ Paradigms (Style of classes or groups)

(Discipline) (ways of languages).

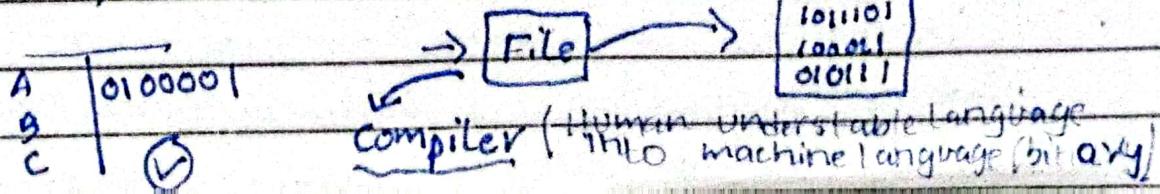
(orders \rightarrow) ① Imperative ④ Declarative
 ② Logical
 ③ Function

⑨ Syntax = Grammar

⑩ Words :

- | | |
|------------------|--------------------|
| ① Reserved words | ④ Identifiers |
| ② Keyword | ⑤ Directives |
| ③ Data Types | ⑥ Operators {Math} |

⑪ → Some transitions



Chap # 3

Storage

① Storage Media:

Material to store data by using technology. Platter of HD, CD, DVD.

② Device :

which reads and writes from/on device data. Hard Disk, CD-ROM

③ Remote : something distinct (not exact location). Drives, clouds.

④ Volatile (changeable), Non-Volatile (unchangeable)

⑤ File: collection of data with a name and association of type. (^(handle) separated from identity but defining about entity is called metadata)

⑥ extension : string → meta actives → Fetch.

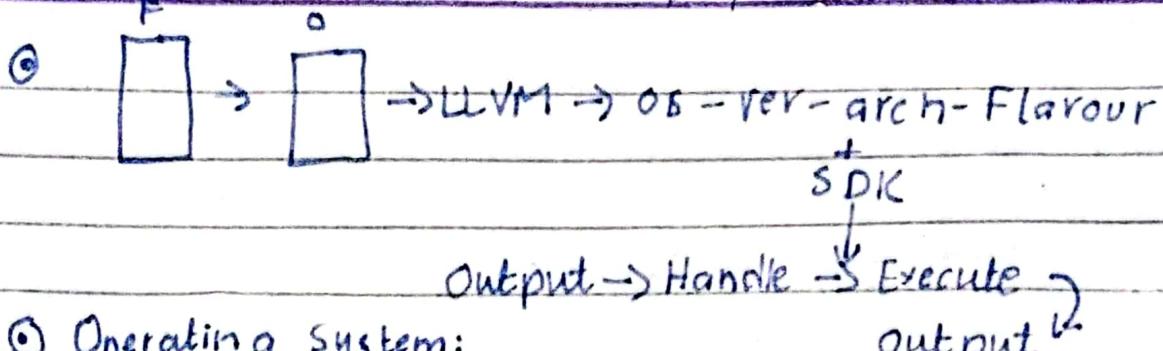
⑦ Meta data: Data and information about file/file information/file data/associations.

⑧ Registers: Fastest memory on processor.

① Purpose oriented registers ② General oriented registers

⑨ Hacking: ① Vulnerability ② attack.

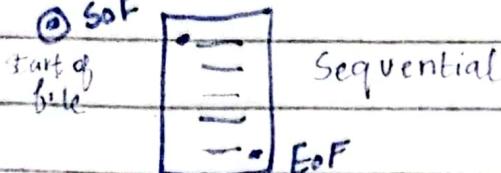
-RAT perspective, LSM, MSM



○ Operating System:

① File, ② System ③ Memory ④ Processing Management.

⑤ SOF

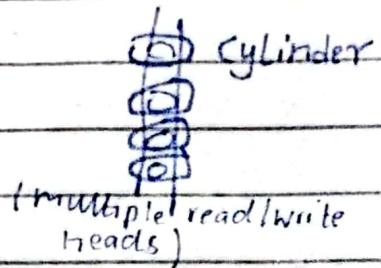
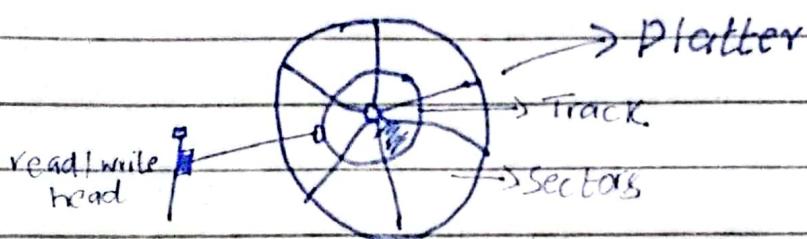


○ Storage technologies :

- Magnetic -
- Optical

○ Hard drive → Internal / External

○ Single disk (platter).



○ File system:

Operating system has the capacity and personalization. "It is collection of rules by which operating system manages data on a physical media called file system". Physical representation of data presented in logical form.

Eg: Windows filesystem (NTFS), VFAT, FAT32

(Network file system) (New technology file system)

○ Partitioning:

Separate Sections.

Increases efficiency. Recovery option.

○ "C drive" boot drive. Format will stop OS

○ Low-level formatting and High-level formatting.

14/2/23

Chapter #4

I/O Devices

① CURSOR: → Current screen region.

→ Keyboards
In screen On-Screen
 ↙ ↓
 Mechanical Physical

→ Mouse
 Mechanical
 Optical / Laser

* (vertical mouse) (new - tech)

* Handwriting Recognition → Uses phenomenon of probability.

* OCR

7/3/23

5 4 3 9
Divide &
Conquer

5 4 3 9 ① place holder

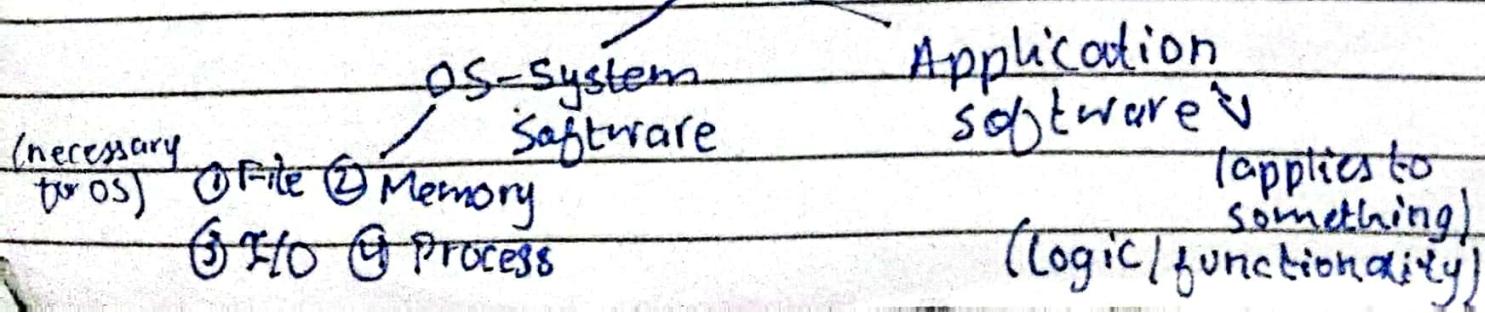
4 5 3 9 ② swap

3 4 5 9 Insertion sorting

④ Improvisation (solve using available tool) (56)

9/3/23

Computing Unit



④ Intellectual Property (claiming it own)

(otherwise it is fake, copy, inspiration)

(Licensing) (Copy Right).

⑤ Acquire Use Edit

① Commercial \$ Y N
Proprietary

② Freeware Free Y N

③ OpenSource Free/\$ Y Y

⑥ Trial Version / Beta Testing / Shareware
(First free for a short period & then monetize)

⑦ Public Domain Software / Freeware

⑧ Desktop Mobile

1- Memory ✓ X

2- Usability ✓ X

3- I/O Devices ✓ X

4- Touch X ✓

⑨ Installed vs Web Based Software

(Downloaded) (ms. office, Insta, WhatsApp). (online Using)

⑩ SaaS (Software as a Service) (Google Docs).

ASD (Application Service Providers).

⑪ Suites (Collection of Softwares / Products)

⑫ Microsoft Office Suites (search it).

⑬ Database:

Group of characters which has

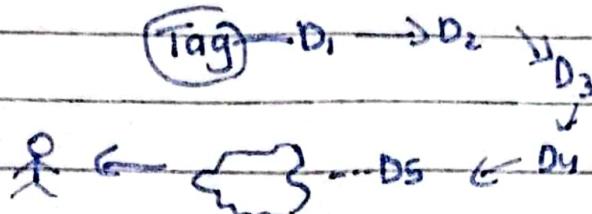
some meaning or give some sense.

CHAPTER #07

COMPUTER NETWORK

- * Network : A connected system of objects or people.
- * Connection : open channel which send or receive data . (communication channel).
- * Wired or Wireless channel (communication).
- * Computer network : collection of devices.

- * Biggest application of computer networking is "Internet".
- * Telephone service (POTS network, Mobile).
- * GPS (Global Positioning System), Air Tag.



- * Monitoring systems: Monitor status or location of individuals, vehicles, assets etc...

→ RFID-based systems

Sensor → Device } collect of data from Environment :- calling sensor (proximity).

- * RFID tags (locates position of object).

- * Waterflow sensor, profiling.

:- Bushfire sensor

- * Wired (Physical cables), wireless (without cable).

- * Topology: Physical arrangement of devices / NODES in a network. (send or receive data).

$$* T_1 + T_2 = \text{Hybrid Topology}.$$

- * Architecture:

(spacial representation) Things to be in package.

An abstract representation (text, model, description) of building block.

- * Design:

Objects are designed. (color added on book).

- * Identification of sender and receiver (one generates and other receives or save it).

- * Rules governing communications is called protocol (who would speak or who would listen).

13/4/23

CHAPTER #08

The Internet & WWW

⊕ Internet : A huge network comprising small networks.

⊕ Network → Communication

Data Info Service

⊕ ARPANET (Advanced Research Projects Agency).
(small network for document sharing.)

⊕ Internet ≠ www (not equal)(different).
mail.... (subset of internet).

⊕ Tim-Berners-Lee in 1989 (father of internet).

⊕ ① User ② ISPs ③ Internet Content Providers

⊕ ASP's (complex service & data) (Dropbox).

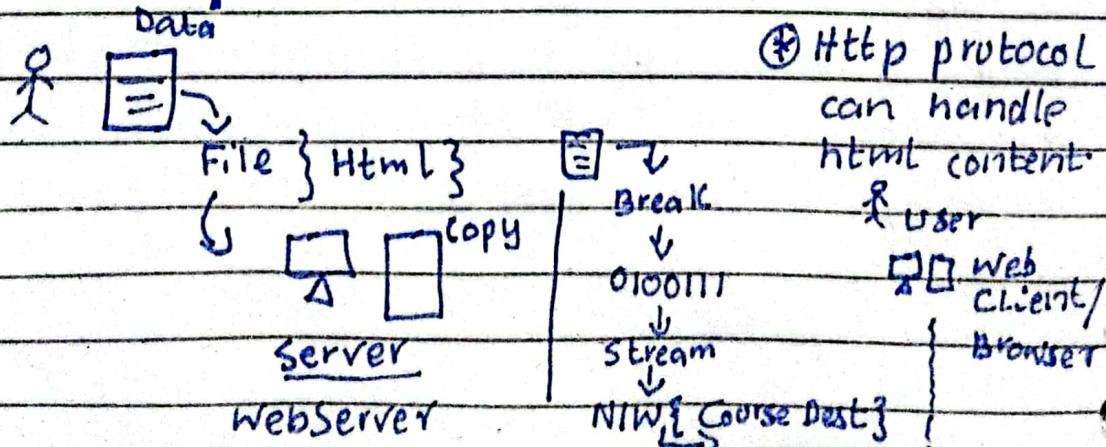
⊕ SaaS, IaaS (Infrastructure) . W3C (search)

⊕ Search Engines available on internet.

⊕ VOIP (Voice over IP) (Whatsapp call) .

⊕ RSS

○ Data | Service :



File: { http://www.MyFile.com }