

Sum

Computer Operations:-



type of computer
 Embedd - normal
 in cars....
 Individual
 Server
 Client

super computer
 main frame
 mini frame
 micro computer
 work station

Hardware
 the physical
 part (cpu....)

Software

- the operating system for mac... and system utilities
- Apps
- Google, ...

Data Type's for computer's
 Digital [0:1] Analogue \odot Hybrid $\square\square$

Advantages
 multi tasking - Reliability
 - Automation

Disadvantages
 Cost - Human error
 - security

Computer related vocabularies

- Computer ethics: Moral dilemmas relating to computer usage
- Digital piracy: Unauthorized reproduction and distribution of computer-based media
- Unethical behavior: Sending viruses, stealing credit card information, computer stalking, and installing illegitimate copies of software on computers
- Automation: Replacement of people by machines and computers
- Outsourcing: Subcontracting of portions of a job to a third party to reduce cost, time, and energy.
- E-learning: Learning without requiring students to be at a specific location at a specific time

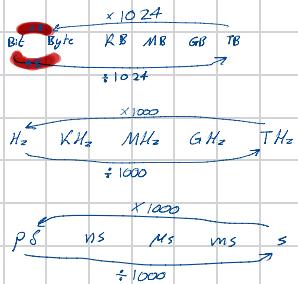
data representation in Binary 0,1

Byte \rightarrow 8bits

Signed number start $-8 \rightarrow +7$, $\boxed{00000000}$
 $\boxed{00000000}$ unsigned $0 \rightarrow +15$, $\boxed{00000000}$
 0 \rightarrow positive
 1 \rightarrow negative

All arithmetic operations can be applied to the binary systems
 - Addition (Carry should be considered):
 $11011011 + 10000011 = 10111110$
 - Subtraction (Borrow should be considered):
 $11011011 - 10000011 = 01011000$
 Floating point number example:
 Q1.E23 F
 $-8.0 + 10.1 = 1.01 \times 2^3$
 $S = 1$
 $E = 0000000000000001$
 $Fraction = 11000000000000000000000000000000$
 $1\ 10000001\ 01100000000000000000000000000000 = COA0000$
 Q2) Find 10 $\frac{1}{2}$

Conversion:-



System unit \leftarrow motherboard
 peripherals

foot prints = type of computer

computer components

Mother board
 CPU - power Supply \rightarrow input 220V AC \rightarrow output 12V, 5V, 3.3V DC
 Cooling System
 Expansion slots
 Disk type

Binary code's

ASCII \Rightarrow 7 bits 2^7 codes
 EBCDIC \Rightarrow 8 bits 2^8 codes
 Unicode \Rightarrow 16 bits 2^{16} codes

Hertz = Hz unit of frequency

$$\frac{1}{T}$$

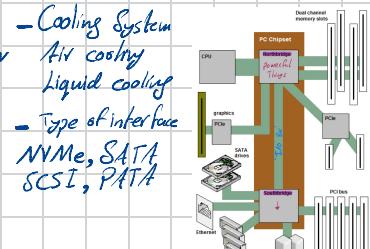
- Cooling System

Air cooling

Liquid cooling

- Type of interface

NVMe, SATA, SCSI, PATA



USB \Rightarrow PnP

CPU \Rightarrow interprets and carries Software instructions

System tools

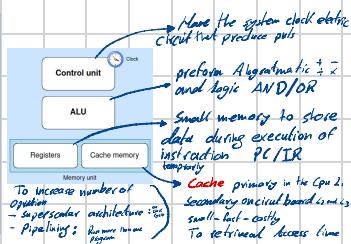
- Compiler
- Assembler
- Linker
- Loader

Control tools

- Fetch
- Decode
- Execute
- Store

Types of Cpu package

Pin - Land - Ball, Grid array



Factors effect Cpu performance

- number of transistors
- Bus width and word size
- clock speed

\hookrightarrow The maximum number of words Cpu processes

Multicore / Parallel processor

Idea : to speed the execution

Type : [dual - quad - oct] core

Ram : Temporally storage for locations
 and Ic volatile

Ram Volatile \rightarrow $\text{RAM} \xrightarrow{\text{volatile}}$
 Ram non-volatile \rightarrow $\text{ROM} \xrightarrow{\text{non-volatile}}$

Input: Raw data need to be processed
Output: Is the processed data that show up at the end

Input Devices

mouse
 Keyboard
 Scanner
 Touch pad
 Camera

KeyBoard → count by ~~number of pins~~ → ~~number of pins~~ → ~~number of pins~~

- 80 Keycaps
- Silkscreen in Key matrix
- a grid of circuit under the Keys
- character maps
- ↳ used to convert character to binary
- ASCI

Output Devices

display
 Speaker
 Headphone
 Printers

Display

G Types
 CRT
 LCD, LED
 OLED, SLED
 XDR

Size is the diagonal in inch

Resolution = height × width
 monitor pixel depth

1 bit → black and white
 2 Bits → 4 colors
 3 Bits → 8 colors

How Convert pic size to MB

w * h = Resolution

Bit / 8 = ans

ans * Resolution = Bytes

Byte $\div 2^{20}$ = MB

Image and Video formats
 ↳ JPEG, PNG, TIFF

MPEG 1, 2, 4
 H.264
 MOV

Hard Disk

SSD vs HDD

	SSD	HDD
faster	green	red
more expensive	red	green
non-mechanical (flash)	green	red
shock-resistant	green	red
best for storing operating systems, gaming apps, and frequently used files	green	white
slower	white	green
cheaper	white	green
mechanical (moving parts)	white	green
fragile	white	red
best for storing extra data, such as movies, photos, and documents	white	green

file Systems:

on the top of storage
 FAT, NTFS, APFS

Type of data Bases:

Relational (MySQL)

NoSQL (MongoDB)

function of OS

Start the computer

"Booting" = Cold Boot → off soon
 warm boot → "restart"

- Get BIOS or UEFI power on self test → if drop → error message
- Load OS → Get BIOS and UEFI → Kernel → Comp of OS config → self work
- Check system Configuration
- Load Utilities
- Authenticate User

manage the Apps

manage the memory

Handle input and output devices

Get user Interface

Get security

