- IAS computer is 1st gen computer. Concept is stored program concept. John neuman design this.

- Batch processing os? (second gen computer)
    - user submitted ~~the~~ their programs.
    - The o/s grouped jobs into a batch
    - The computer executed them sequentially (one by one) no realtime interaction.

- what is time sharing? (3rd gen computer)
    - Many users share one computer in one time.
    - enabled by faster IC-based machines
    - User feel like they have their own computer

- GUI - Grapical User ~~Interface~~ Interface

- Personal computer begin in 4th generation

- USLI Chip means millions transsistors in one chip

- AI come from 5th gen

- Cloud servers come from 6th gen

(q) what is ICs.
    ~~ICs~~ intergrated circuits (ICs) instead of transistors (used in 2nd gen). ICs allows many transistors, resistors and capacitors to be packed onto a single chip.

(.2) what are optical disk
    Storage devices that use laser light to read, write data.

(03) what is GpGpu (General-purpose computing on Graphics processing Units) (not only grapics)
    Purpose :- Accelerate compytation-intensive task like scientific calculation, AI

    GpGpu use in modern computers perform high-speed calculations using the Gpu, not just the cpu.

Generation	Time frame	Hardware	Software / OS	key systems	characteristics
1st	1940-1956	vacum tubes, drums, punched cards	machine language no o/s	ENIAC, UNIVAC	High power consumption massive size
2nd	1956-1963	Transistor magnetic-core memory.	Assembly language batch-procesing os	IBM 1401, IBM 7090	Lower Heat/power small Faster more Reliable
3rd	1964-1975	ICs (transistor + resistor + chip capasitors) I/o devices	High level language Early o/s Time-sharing	IBM-360, PDP-8,	Lower cost, multiprogramming
4th	1975-1989	LSI/VLSI chips microprocessors optical disk	GUI based o/s	IBM PC, Apple II	personal computer era
5th	1989-2010	ULSI chips Internet connectivity optica storage	GUI os with AI voice/handwrite recoganize	Laptops, workstations	multimedia portable network.
6th	2010-now	multiple GPGPU, cloud, IoT	virtualization, AI frameworks	smart phones, servers, IoT	parallel intelligent connected

01) what is multicore?

refer to cpu ~~is~~ that has two or more independent processing units. on a single chip, (parallel processing), multitasking.

multi core cpu is like several workers doing different task at the same time.

⅟ 16 ~~bit~~ bit - 16 bit processor is a cpu that processes data and instructions in 16 bit at a time.

~~64 bit~~

02) wha is embedded system?

is a computer system designed for a specific function with real-time computing constraints.

(ATM, washing machine)

.'. ARM architecture

~~Advanced risk Machines~~

Advanced RISC Machines

RISC = Redaced Instruction set computer.

ARM
.'. Cortext Product Families

A pplication processor (Smartphone, tablet, smart tv) High performance

R eal-time systems (Auto motive control, Storage controllers)
low latensy

M icrocontroller (Io7 devices, Sensors, embedded systems)
Ultra-low power.

:- Cloud service models

① Iaas (Infrastructure as a service)
   Provides virtualized computing resources like servers, storage, and network over the internet. (servers, storage)
        ex:- Amazon EC2, Microsoft Azure VM

② Pass (platform as a service)
   Provides a platform with tools, runtime and environment to developers to build, run and manage application without ~~worrying~~ about underlying infrastructure (tools, runtime)
        ex :- ~~A~~ Google app engine, Microsoft Azure App service

③ Saas (Software as a service)
   • Provides ready to use software applications over the internet on subscription basis. (enduser apps)
        ex = Gmail, Microsoft 365