3) Apple's Macintosh was described as a game-changer for the computer industry in 1980s. Justify the features and performance when compared to computers of earlier versions.

Apple's Macintosh, introduced in 1984, was indeed a game changer for computer industry due to several key features & performance enhancements compared to earlier computers. Here are some justifications for its revolutionary impact in 1980s.

1. GRAPHICAL USER INTERFACE (GUI): The Macintosh was the 1st mainstream computer to feature a GUI, which replaced earlier text based command-line interface GUI made computers more accessible & user friendly by utilising icons, windows, menus allowing user to navigate and operate system easily. This innovation made computers more approachable for non-technical users and opened up whole new world of possibilities

2. MOUSE INPUT: Macintosh popularised the use of mouse as primary input device. Prior to Macintosh, most computers relied on text based commands typed on a keyboard. The introduction of a mouse made it easier for user to interact point-and-click interaction that significantly improved user experience.

3. INTEGRATED HARDWARE AND SOFTWARE: Macintosh computers were designed as interface system with both hardware & software tightly coupled. This integration resulted in more consistent and stable experience compared to many earlier computers. The seamless integration of hardware and software improved performance & provided more reliable computing environment.

4. COMPACT DESIGN: Macintosh compact and all-in-one design with a built in monitor, floppy disk drive and keyboard was a departure from the larger & often clunky design of earlier computers. This form factor made Macintosh more appealing and approachable for home & office environments as it required less physical space

5. DEVELOPER FRIENDLY ENVIRONMENT: Apple provided a comprehensive software development kit (SDK) for Macintosh, making it easier for developers to create applications for the platform. This led to a plethora of 3rd-party software, further expanding capabilities of Macintosh and creating a vibrant ecosystem for users

These features combined with a developer-friendly environment, revolutionised user experience, empowered individuals and businesses and set new standards for computer industry, making it true game changer.

⇒ Classify computers based on functionality and computing power and identify their applications.

1. Based on operating principle:

* ANALOG COMPUTER: functions on continuously varying quantity.
APPLICATIONS: Electronic weighing scale, heartbeat, temperature.

* DIGITAL COMPUTER: functions on discrete numbers.
APPLICATION: Business

* HYBRID COMPUTER: combine qualities of both analog & digital number computers.

2. Based on applications:

* General Purpose: used for variety of tasks.
APPLICATIONS: Business & Scientific research.

* Special Purpose:
used for particular tasks.
APPLICATION: aircraft control system.

3. Based on size & capability

* MICRO COMPUTER: MICROPROCESSOR
APPLICATIONS: Offices, homes, schools.

* MINI COMPUTER: Multiprocessor
APPLICATIONS: Large industries, banks.

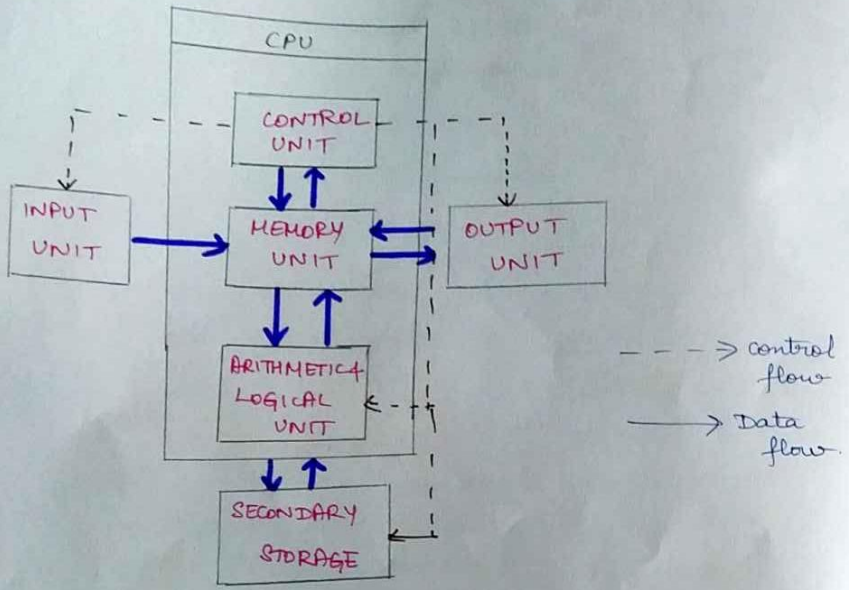
* MAINFRAME COMPUTERS: Faster & larger.
APPLICATIONS: Large industries, banks.

* SUPER COMPUTERS: powerfull computers.
APPLICATIONS: Atomic Research.

• PERSONAL COMPUTERS:
→ commonly used for general purpose computing tasks such as web browsing, email, word processing, multimedia Consumption.
→ can run a wide range of software applications including productivity tools, games and entertainment software.

• Embedded systems.
• Specialised computer integrated within other devices or systems for specific functions.
• Found in various device such as smartphones, smart TV's, cars, medical equipment and industrial control system.
• Server specific purposes like automation, monitoring, control & connectivity.

3) Draw and explain CPU architecture in detail



The architecture of the computer have not changed since decades, but technology used to accomplish those operations may vary from 1 computer to another computer.

1) MEMORY OR STORAGE UNIT :
→ stores instruction, datas, immediate results.
→ Responsible for transferring information to other units.
→ Its size affects speed, power, performance.
→ Data & instructions are stored here which are required for processing.
→ Also stores immediate results of any calculation or task when they're in process.
→ Final results of processing are stored in memory unit before these results are released to o/p device for giving output to user.
→ All sorts of i/p & o/p are transmitted through memory unit.

CONTROL UNIT :
→ controlling of data & transfer of data is done among other parts of computer.
→ Responsible for managing all units of computer.
→ Main task is to obtain instruction or data which is input from memory unit, inprets & directs operation.
→ Responsible for communication with i/p & o/p device.
→ Not responsible for processing of data or storing data.

ALU (Arithmetic & Logical Unit)
2 subsections
① Arithmetic section
② Logic section.

Fetch : CPU gets the instruction. That means binary numbers that are passed from RAM to CPU.

Decode : When instruction is entered into CPU, it needs to decode the instructions.

Execute : After decode step the instructions are ready to execute.

Store : After execute step instructions are ready to store in memory.