Different types of Computer

Supercomputer

- Supercomputers are one of the fastest computers currently available. They are very expensive and are employed for specialized applications that require immense amount of mathematical calculations (number crunching).
- Large systems that are specifically designed to solve complex scientific and industrial challenges. Such applications span a wide range of computational intensive tasks, including quantum mechanics, weather forecasting, climate research, oil and gas exploration, molecular dynamics, and physical simulations, and require an amount of computing power and resources that go beyond what is available in general-purpose computer servers or workstations.

  Until the late 1990s, supercomputers were based on high-end, special-purpose components that underwent extensive testing. This approach was very expensive and limited the use of supercomputers in a few research centers around the world.

  To reduce the acquisition and operational costs, researchers started to build supercomputers out of "common-off-the-shelf" (COTS) components, such as those used in general-purpose desktop and laptop. This technology shift greatly reduced the cost of each supercomputer and allowed many research centers and universities to acquire mid- and large-scale systems.

Figure 11. Fukaju supercomputer

(source:https://sciencenode.org/feature/the-5-fastest-supercomputers-in-the world.php#:~:text=1.,fastest%20supercomputer%20in%20the%20world.)

Jointly developed by RIKEN and Fujitsu, Japan's **Fugaku** is the new number one fastest supercomputer in the world. Japan has not had a system take the top spot since June 2011 when Fugaku's predecessor, the K computer, debuted in first place.

Personal Computer or PC

- can be defined as a small, relatively inexpensive computer designed for an individual user.
- PCs are based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip.
- At home, the most popular use for personal computers is playing games and surfing Internet. Businesses used personal computers for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications.

Figure 12. Personal computer

(source: https://sciencenode.org/feature/the-5-fastest-supercomputers-in-the world.php https://pagedesignshop.com/how-and-why-you-should-back-up-your-personal-computer/)

Mainframe

- very large in size and is an expensive computer capable of supporting hundreds or even thousands of users simultaneously. Mainframe executes many programs concurrently and supports many simultaneous executions of programs.
- also known as "big iron", are computers used primarily by large organizations for critical applications; bulk data processing, such as census, industry and consumer statistics; enterprise resource planning; and transaction processing.

Figure 13. Mainframe computer

(source: https://siliconangle.com/2019/07/29/zowe-open-source-devops-democratizing-mainframe-computer/)

Minicomputer

- Minicomputers emerged in the mid–1960s and were first developed by IBM Corporation. They were primarily designed for business applications and services that require the performance and efficiency of mainframe computers. Minicomputers are generally used as mid–range servers, where they can operate mid–sized software applications and support numerous users simultaneously.

- Minicomputers may contain one or more processors, support multiprocessing and tasking, and are generally resilient to high workloads. Although they are smaller than mainframe or supercomputers, minicomputers are more powerful than personal computers and workstations.

- Computer that is smaller, less expensive, and less powerful than a ... management, and are often now referred to as small or midsize servers *(source: brittanica.com)*.

Figure 14. Minicomputer

(source: https://www.tutorialspoint.com/computer_fundamentals/computer_types.htm

Workstation

- Workstation is a computer used for engineering applications (CAD/CAM), desktop publishing, software development, and other such types of applications which require a moderate amount of computing power and relatively high quality graphics capabilities.

- Workstations generally come with a large, high–resolution graphics screen, large amount of RAM, inbuilt network support, and a graphical user interface. Most workstations also have mass storage device such as a disk drive, but a special type of workstation, called diskless workstation, comes without a disk drive.

- Common operating systems for workstations are UNIX and Windows NT. Like PC, workstations are also single–user computers like PC but are typically linked together to form a local–area network, although they can also be used as stand–alone systems.

Figure 15. Workstation

(source: https://www.tutorialspoint.com/computer_fundamentals/computer_types.htm