Four types of computers

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category:
Introduction to Computing

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Since the advent of the first computerdifferent types and sizes of computers are offering different services. Computers can be as big as occupying a large building and as small as a laptop or a microcontroller in mobile & embedded systems.

The four basic types of computers are as under:

1. Supercomputer
2. Mainframe Computer
3. Minicomputer
4. Microcomputer

Supercomputer

The most powerful computers in terms of performance and data processing are the Supercomputers. These are specialized and task specific computers used by large organizations. These computers are used for research and exploration purposes, like NASA uses supercomputers for launching space shuttles, controlling them and for space exploration purpose.

The supercomputers are very expensive and very large in size. It can be

accommodated in large air-conditioned rooms; some super computers can span an entire building.

See Also: Top ten Supercomputers with HD pictures

Seymour Cray designed the first Supercomputer"CDC 6600" in 1964. CDC 6600 is known as the first ever Supercomputer.

Exascale Supercomputer

On 29th July, 2015, President of the United States, Barack Obama, approved the development of an**Exascale Super Computer**. The Exascale Super computer will be 30 times faster and more powerful than today's fastest Super Computers. The need to develop such a high performance Supercomputer comes after China's surge in high performance computing. However, the US still tops the list of Supercomputers with 233 high performance machines. China has 37 Supercomputers but they lead the list of the most powerful and high performance supercomputers since June 2013.

Presently, China's "Tianhe – 2" is the world's faster Supercomputer.

The Tianhe – 2 can perform 100 Petaflops, i.e quadrillions of floating point operations per second.

The following table shows list of top five most powerful Supercomputers in the world. you can also viewcomplete list of Top 500 Supercomputers in the world.

Top five Supercomputers

RANK	SITE	SYSTEM	CORES	RMAX (TFLOPS/S)	RPEAK (TFLOPS/S)	POWER (KW)
1	National Super computer in Guanzhou, China	**Tianhe - 2 (MilkyWay - 2)**	3,120,000	33,862.7	54,902.4	17,808
2	DOE/SC/Oak Ridge National Laboratory, United States	**Titan - Cray XK7, Cray Inc.**	560,640	17,590.0	27,112.5	8,209
3	DOE/NNSA/LLNL, United States	**Sequoia - BlueGene/Q, IBM**	1,572,864	17,173.2	20,132.7	7,890
4	RIKEN Advanced Institute for Computational Science (AICS) Japan	**K Computer, Tofu Interconnect Fujitsu.**	705,024	10,510.0	11,280.4	12,660
5	DOE/SC/Argonne National Laboratory, United States	**Mira - BlueGene/Q, Custom IBM**	786,432	8,586.6	10,066.3	3,945

Uses of Supercomputers

In Pakistan Supercomputers are used by Educational Institutes like NUST for research purposes. Pakistan Atomic Energy commission & Heavy Industry Taxila uses supercomputers for Research purposes.

Space Exploration

Supercomputers are used to study the origin of the universe, the dark-matters. For these studies scientist use IBM's powerful supercomputer "Roadrunner" at National Laboratory Los Alamos.

Earthquake studies

Supercomputers are used to study the Earthquakes phenomenon. Besides that supercomputers are used for natural resources exploration, like natural gas, petroleum, coal, etc.

Weather Forecasting

Supercomputers are used for weather forecasting, and to study the nature and extent of Hurricanes, Rainfalls, windstorms, etc.

Nuclear weapons testing

Supercomputers are used to run weapon simulation that can test the Range, accuracy & impact of Nuclear weapons.

Popular Supercomputers

- IBM's Sequoia, in United States
- Fujitsu's K Computer in Japan
- IBM's Mira in United States
- IBM's SuperMUC in Germany
- NUDT Tianhe-1A in China

Mainframe computer

Although Mainframes are not as powerful as supercomputers, but certainly they are quite expensive nonetheless, and many large firms & government organizations uses Mainframes to run their business operations. The Mainframe computers can be accommodated in large air-conditioned rooms because of its size. Super-computers are the fastest computers with large data storage capacity, Mainframes can also process & store large amount of data. Banks educational institutions & insurance companies use mainframe computers to store data about their customers, students & insurance policy holders.

Popular Mainframe computers

- Fujitsu's ICL VME
- Hitachi's Z800

Minicomputer

Minicomputers are used by small businesses & firms. Minicomputers are also called as "Midrange Computers". These are small machines and can be accommodated on a disk with not as processing and data storage capabilities as super-computers & Mainframes. These computers are not designed for a single user. Individual departments of a large company or organizations use Mini-computers for specific purposes. For example, a production department can use Mini-computers for monitoring certain production process.

Popular Minicomputers

- K-202
- Texas Instrument TI-990
- SDS-92
- IBM Midrange computers

Microcomputer

Desktop computers, laptops, personal digital assistant (PDA), tablets & smartphones are all types of microcomputers. The micro-computers are widely used & the fastest growing computers. These computers are the cheapest among the other three types of computers. The Micro-computers are specially designed for general usage like entertainment, education and work purposes. Well known manufacturers of Micro-computer are Dell, Apple, Samsung, Sony & Toshiba.

Desktop computers, Gaming consoles, Sound & Navigation system of a car, Netbooks, Notebooks, PDA's, Tablet PC's, Smartphones, Calculators are all type of Microcomputers.