*1. Why is computer known as data processor?*

* A computer is an electronic device for storing and processing data, typically in binary form, according to instructions given to it in a variable program.
* It can also be defined as a general purpose device that can be [programmed](http://en.wikipedia.org/wiki/Computer_program) to carry out a finite set of arithmetic or logical operations. Since a sequence of operations can be readily changed, the computer can solve more than one kind of problem.

A computer manipulates or transforms data. It accepts data, stores data, process data according to a set of instructions, and also retrieve the data when required. Hence it is known as a data processor.

*2. Explain in brief the various generations in computer technology*?

## First Generation (1940-1956) Vacuum Tubes

The first computers used vacuum tubes for circuitry and [magnetic drums](http://www.webopedia.com/TERM/M/magnetic_drum.html) for [memory](http://www.webopedia.com/TERM/M/memory.html), and were often enormous, taking up entire rooms. They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

First generation computers relied on [machine language](http://www.webopedia.com/TERM/M/machine_language.html), the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts.

The UNIVAC and [ENIAC](http://www.webopedia.com/TERM/E/ENIAC.html) computers are examples of first-generation computing devices. The UNIVAC was the first commercial computer delivered to a business client, the U.S. Census Bureau in 1951.

## Second Generation (1956-1963) Transistors

[Transistors](http://www.webopedia.com/TERM/T/transistor.html) replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 but did not see widespread use in computers until the late 1950s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Though the transistor still generated a great deal of heat that subjected the computer to damage, it was a vast improvement over the vacuum tube. Second-generation computers still relied on punched cards for input and printouts for output.

Second-generation computers moved from cryptic [binary](http://webopedia.com/TERM/B/binary.html) machine language to symbolic, or [assembly](http://webopedia.com/TERM/a/assembly.html), languages, which allowed programmers to specify instructions in words. [High-level programming languages](http://www.webopedia.com/TERM/H/high_level_language.html) were also being developed at this time, such as early versions of [COBOL](http://www.webopedia.com/TERM/C/COBOL.html) and [FORTRAN](http://www.webopedia.com/TERM/F/FORTRAN.html). These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

The first computers of this generation were developed for the atomic energy industry.

## Third Generation (1964-1971) Integrated Circuits

The development of the [integrated circuit](http://www.webopedia.com/TERM/I/integrated_circuit_IC.html) was the hallmark of the third generation of computers. Transistors were miniaturized and placed on [silicon](http://www.webopedia.com/TERM/S/silicon.html) [chips](http://webopedia.com/TERM/C/chip.html), called [semiconductors](http://webopedia.com/TERM/s/semiconductor.html), which drastically increased the speed and efficiency of computers.

Instead of punched cards and printouts, users interacted with third generation computers through [keyboards](http://webopedia.com/TERM/keyboard.html) and [monitors](http://webopedia.com/TERM/monitor.html) and [interfaced](http://webopedia.com/TERM/interface.html) with an [operating system](http://webopedia.com/TERM/operating_system.html), which allowed the device to run many different [applications](http://webopedia.com/TERM/application.html) at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

## Fourth Generation (1971-Present) Microprocessors

The [microprocessor](http://webopedia.com/TERM/microprocessor.html) brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer—from the [central processing unit](http://webopedia.com/TERM/CPU.html) and memory to input/output controls—on a single chip.

In 1981 [IBM](http://webopedia.com/TERM/I/IBM.html) introduced its first computer for the home user, and in 1984 [Apple](http://webopedia.com/TERM/A/Apple_Computer.html) introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microprocessors.

As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of [GUIs](http://webopedia.com/TERM/GUI.html), the [mouse](http://webopedia.com/TERM/mouse.html) and [handheld](http://webopedia.com/TERM/hand_held_computer.html) devices.

## Fifth Generation (Present and Beyond) Artificial Intelligence

Fifth generation computing devices, based on [artificial intelligence](http://webopedia.com/TERM/artificial_intelligence.html), are still in development, though there are some applications, such as [voice recognition](http://webopedia.com/TERM/voice_recognition.html), that are being used today. The use of [parallel processing](http://webopedia.com/TERM/parallel_processing.html) and superconductors is helping to make artificial intelligence a reality. [Quantum computation](http://webopedia.com/TERM/quantum_computing.html) and molecular and [nanotechnology](http://webopedia.com/TERM/nanotechnology.html) will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to [natural language](http://webopedia.com/TERM/natural_language.html) input and are capable of learning and self-organization.

*3. Write a short note on Fifth Generation of computer. What makes it different from Fourth generation computer?*

The Fifth Generation Computer Systems project (FGCS) was an initiative by Japan's [Ministry of International Trade and Industry](http://en.wikipedia.org/wiki/Ministry_of_International_Trade_and_Industry), begun in 1982, to create a fifth generation computer which was supposed to perform much calculation using massively parallel computing/processing. It was to be the result of a massive government/industry research project in Japan during the 1980s. It aimed to create an "epoch-making computer" with-supercomputer-like performance and to provide a platform for future developments in [artificial intelligence](http://en.wikipedia.org/wiki/Artificial_intelligence).

The term "fifth generation" was intended to convey the system as being a leap beyond existing machines. In the [history of computing hardware](http://en.wikipedia.org/wiki/History_of_computing_hardware), computers using [vacuum tubes](http://en.wikipedia.org/wiki/Vacuum_tube) were called the first generation; [transistors](http://en.wikipedia.org/wiki/Transistor) and [diodes](http://en.wikipedia.org/wiki/Diode), the second; [integrated circuits](http://en.wikipedia.org/wiki/Integrated_circuit), the third; and those using [microprocessors](http://en.wikipedia.org/wiki/Microprocessor), the fourth. Whereas previous computer generations had focused on increasing the number of logic elements in a single CPU, the fifth generation, it was widely believed at the time, would instead turn to massive numbers of CPUs for added performance.

***Difference***: Fifth generation computers use [parallel processing](http://webopedia.com/TERM/parallel_processing.html) and superconductors which help in making artificial intelligence a reality while 4th generation computers used thousands of integrated circuits which were built onto a single silicon chip.

*4. Why did the size of computer get reduced in third generation computer?*

Integrated circuits allowing 10 or more transistors per package (as compared to 1 in second generation machines) as well as several resistors permitted both higher component density and reduced heat generation.

*5.  Give short notes on the following:*

*(a) Versatility (b) Storage (c) Slide Rule (d) Babbage’s Analytical Engine*

**Versatility** of a computer means that the computer is able to perform various types of functions or operations.

**Storage** (Computer data storage) is a technology consisting of [computer](http://en.wikipedia.org/wiki/Computer) components and [recording media](http://en.wikipedia.org/wiki/Data_storage_device) used to retain digital [data](http://en.wikipedia.org/wiki/Data_%28computing%29). It is a core function and fundamental component of computers.

The **slide rule**, also known colloquially as a **slip stick**, is a mechanical [analog computer](http://en.wikipedia.org/wiki/Analog_computer). It was developed by [William Oughtred](http://en.wikipedia.org/wiki/William_Oughtred) and used primarily for [multiplication](http://en.wikipedia.org/wiki/Multiplication) and [division](http://en.wikipedia.org/wiki/Division_%28mathematics%29), and also for functions such as [roots](http://en.wikipedia.org/wiki/Nth_root), [logarithms](http://en.wikipedia.org/wiki/Logarithm) and [trigonometry](http://en.wikipedia.org/wiki/Trigonometry), but is not normally used for [addition](http://en.wikipedia.org/wiki/Addition) or [subtraction](http://en.wikipedia.org/wiki/Subtraction).

Slide rules come in a diverse range of styles and generally appear in a linear or circular form with a standardized set of markings (scales) essential to performing mathematical computations. Slide rules manufactured for specialized fields such as [aviation](http://en.wikipedia.org/wiki/Aviation) or [finance](http://en.wikipedia.org/wiki/Finance) typically feature additional scales that aid in calculations common to that field.

The **Analytical Engine** was a proposed mechanical [general-purpose computer](http://en.wikipedia.org/wiki/General-purpose_computer) designed by English mathematician [Charles Babbage](http://en.wikipedia.org/wiki/Charles_Babbage).

It was first described in 1837 as the successor to Babbage's [Difference engine](http://en.wikipedia.org/wiki/Difference_engine), a design for a mechanical computer. The Analytical Engine incorporated an [arithmetic logic unit](http://en.wikipedia.org/wiki/Arithmetic_logic_unit), [control flow](http://en.wikipedia.org/wiki/Control_flow) in the form of [conditional branching](http://en.wikipedia.org/wiki/Conditional_branching) and [loops](http://en.wikipedia.org/wiki/Program_loop#Loops), and integrated [memory](http://en.wikipedia.org/wiki/Computer_memory), making it the first design for a general-purpose computer that could be described in modern terms as [Turing-complete](http://en.wikipedia.org/wiki/Turing-complete).

Babbage was never able to complete construction of any of his machines due to conflicts with his chief engineer and inadequate funding. It was not until the 1940s that [the first general-purpose computers](http://en.wikipedia.org/wiki/History_of_computing_hardware#Electronic_digital_computation) were actually built.

*6.  Distinguish between Microcomputer and Mainframe computer.*

**Mainframe computer** is a [data processing system](http://www.businessdictionary.com/definition/data-processing-system.html) [employed](http://www.investorguide.com/definition/employed.html) mainly in large [organizations](http://www.businessdictionary.com/definition/organization.html) for various applications, including [bulk](http://www.businessdictionary.com/definition/bulk.html) [data processing](http://www.businessdictionary.com/definition/data-processing.html), [process control](http://www.businessdictionary.com/definition/process-control.html), [industry](http://www.investorguide.com/definition/industry.html) and [consumer](http://www.investorguide.com/definition/consumer.html) [statistics](http://www.businessdictionary.com/definition/statistics.html), [enterprise resource planning](http://www.investorguide.com/definition/enterprise-resource-planning.html), and [financial transaction](http://www.businessdictionary.com/definition/financial-transaction.html) [processing](http://www.businessdictionary.com/definition/processing.html).

Mainframes use [proprietary](http://www.businessdictionary.com/definition/proprietary.html) [operating systems](http://www.businessdictionary.com/definition/operating-system-OS.html), most of which are based on [Unix](http://www.businessdictionary.com/definition/unix.html), and a growing [number](http://www.investorguide.com/definition/number.html) on [Linux](http://www.businessdictionary.com/definition/Linux.html). Over the [years](http://www.investorguide.com/definition/year.html) they have evolved from being room-sized to networked [configurations](http://www.businessdictionary.com/definition/configuration.html) of [workstations](http://www.investorguide.com/definition/workstation.html) and [servers](http://www.businessdictionary.com/definition/server.html) that are an extremely [competitive](http://www.businessdictionary.com/definition/competitive.html) and [cost effective](http://www.investorguide.com/definition/cost-effective.html) [platforms](http://www.businessdictionary.com/definition/platform.html) for [e-commerce](http://www.investorguide.com/definition/e-commerce.html) [development](http://www.businessdictionary.com/definition/development.html) and [hosting](http://www.businessdictionary.com/definition/hosting.html). Mainframes are so called because the earliest ones were housed in large [metal](http://www.businessdictionary.com/definition/metal.html) [frames](http://www.businessdictionary.com/definition/frame.html) .A **microcomputer** is a small, relatively inexpensive [computer](http://en.wikipedia.org/wiki/Computer) with a [microprocessor](http://en.wikipedia.org/wiki/Microprocessor) as its [central processing unit](http://en.wikipedia.org/wiki/Central_processing_unit) (CPU). It includes a microprocessor, memory, and input/output (I/O) facilities.

Mainframe computers are for servers, normally with Unix system while Micro computer are personal computers like the ones you use at home.