Computer: The Development Of CPU And Its Effect

Abstract

The development of CPU and its effect& How does it affect our lives?

Input &output devices vary from time to time. But generally, they go in the same way, how to make the computer easier to use…

Storage measurements & new storage devices…How fast it was? … How fast it is?

Introduction:

By the time, the amount of data increased as a result of the massive increase in populations. a lot of paper is used to record and by the way, a lot of effort is exerted to write, calculate & check data…

Searching for an instance for the way they do hard work was a must. Here, Charles Babbage, In 1822 started making the Difference Engine, considered to be the first of its kind. The Difference Engine was able to compute several bunches of numbers and make hard copies of the results.[1]

CPU:

It’s an abbreviation that means the central processing unit. The CPU sends signals to control parts of the computer, almost like how a brain controls a body. The CPU is an electronic machine that works on a list of computer things to do, called instructions. Its main job is to analyze data inserted by inputs and convert it to information viewed on the outputs.[2]

The developments of CPU:

Transistors played the main role in the evolution of the CPU, According to Moore’s Law, the number of transistors on a chip was doubled every 24 months. Processors became smaller to accommodate more transistors. It would mean better performance. However, the resultant rise in temperature would require high cooling. Therefore, the challenge for speed ended up being the fight against the laws of physics. Instead of increasing clock speeds, the developer introduced multiple-core chips in which each core had the same clock speed. As a result, computers could be much more effective in performing multiple tasks at the same time.

The introduction of multiple cores required producer to come up with different algorithms so the developments could be noticeable. This wasn’t always easy in the gaming industry where the CPU’s performance had always been one of the most important characteristics.

Developer faced another problem, that is the more cores you have, the harder it is to operate them. It is also difficult to come up with a proper code that would work well with all the cores. In

fact, if it was possible to develop a 150 GHz single-core unit, it would be a perfect machine. However, silicon chips can’t be clocked up that fast due to the laws of physics.

Quantum physics helped to make an evolutionary improvement to the system of processing. Machines based on this technology are a lot different from the ones we have in our homes. For example, conventional computers use bits and bytes, whilst quantum machines are all about the use of qubits. Two bytes can have only one of these: 0-0, 0-1, 1-0, or 1-1. Qubits can store all of them at the same time, which allows quantum computers to process an immense amount of data simultaneously.

Quantum technology can be used to process massive quantities of information, too. Qubit-based ones process data thousands of times faster than conventional computers. Apart from that, the prediction and modeling of complex scenarios is where quantum computers excel as well. We are able to model various conditions and results and as such can be used extensively in physics, chemistry, pharmaceutics, weather forecasting, and so on.

However, there are also some drawbacks. Such computers are not very useful these days and can only serve certain purposes. This is mainly because they require special laboratory equipment and are too expensive to operate.

There is another issue related to the development of a quantum computer. The maximum speed at which silicon chips can operate today is much lower than that required to test quantum technologies.[3]

Input devices:

Input devices vary according to your field, for example, you won’t need joystick if you’re working in business. However, there’re common input devices used for each computer such as mouse, keyboard & recently touch screen. (fig 2,3&4)

1. mouse:

The mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm-size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed.

Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer. Fig 2:mouse

2. keyboard:

The keyboard is the most common and very popular input device which helps to input data to the computer. The layout of the keyboard is like that of a traditional typewriter, although there are some additional keys provided for performing additional functions.[4]

Output Devices:

The output device is any device that receives data from a computer, usually for display, projection or physical reproduction. For example, the image displays an inkjet printer, an output device that can make a hard copy of anything shown on the monitor. Monitors and printers are two of the most commonly used output devices used on a computer.

1. monitor:

Monitors commonly referred to as the Visual Display Unit (VDU), are the main output device of a computer. It forms images of tiny dots, called pixels, which are arranged in a rectangular form. The sharpness of the image depends on the number of pixels.

There are two types of viewing screen that is used for the monitors:

- Cathode-Ray Tube (CRT)
- Flat-Panel Display

-Cathode-Ray Tube (CRT) : fig(5)

The CRT display consists of small image elements called pixels. The smaller the pixels, the better the clarity or resolution of the image. It takes more than one illuminated pixel to form a whole character, such as the letter ‘e’ in the word help. A finite number of characters may be displayed on the screen at once. The screen can be divided into a series of character boxes-a fixed location on the screen where a standard character can be placed. Most screens are capable of displaying 80 data characters horizontally and 25 lines vertically. (fig 5)

-Flat-Panel Display Monitor: (fig 6)

The flat-panel display refers to a class of video devices that have reduced volume, weight and power requirement in comparison to the CRT. You can hang them on walls or wear them on your wrists. Current uses of flat-panel displays include calculators, video games, monitors, laptop computers, and graphics displays. [5]

3. Touch screen: (fig 7)

touch screen is a computer display screen that serves as an input& output device. When a touch screen is touched by a finger or stylus, it registers the event and sends it to a controller for processing.

A touch screen may contain pictures or words that the user can touch to interact with the device. [6]

Storage measurement:

The smallest unit of measurement used to measure data is a bit small. A single bit can have a value of either 0 or 1. It may have a binary value (such as On / Off or True / False) but nothing more. The byte, or eight bits, is also used as the basic unit of data measurement. Binary can contain 28 or 256 different values, that are appropriate to reflect regular ASCII characters, like letters, upper and lower case. Since most files contain thousands of bytes, file sizes are also

expressed in kilobytes. Larger files, such as images, videos and audio files, contain millions of bytes and are thus represented in megabytes. Modern storage devices can hold thousands of such files, which is why storage space is usually measured in gigabytes or terabytes. Larger measuring units are reserved exclusively for calculating the amount of several storage devices or the capacity of large data storage networks.

Below is a figure(8) of all the standard units of measurement used for data storage, from the smallest to the largest.[7]

Storage devices:

A storage system is a piece of computer hardware used to carry, archive, and extract data. This can maintain and retain information in the short or long term. It can be a system inside or outside a computer or server. Many storage system words are storage medium or storage media.

A storage unit is one of the essential features of any computing system. Almost all data and programs are stored on a computer, except for hardware firmware. It comes in different shapes and sizes depending on your needs and features.

Examples of Storage Device:

- Magnetic Storage Device : one of the most common storage devices used.
- Floppy disk: A normal 3 1?2 inch disk can store 1.44 MB of data.
- Hard drive: The primary storage unit on the machine is the internal hard disk. The external hard drive is also known as the removable hard disk. It is used for storing portable data and backups.
- Magnetic strip: Magnetic tape drive stores film and audio using magnetic tape, such as cassette and video tape recorders.
- Super disk: a hard drive and a hard that can accommodate 120 MB and 240 MB of data.
- Cassette tape: A magnetic storage device used for audio recording and playback.
- Zip Diskette: Like a floppy disk, but more advanced.
- Optical Storage Device: uses lasers and lights to store and retrieve data.
- Blu-ray Disk: a digital optical storage device intended to replace the DVD format.
- CD-ROM disk: an optical storage device that is read-only or can not be changed or removed.
- CD-R and CD-RW disk: CD-R is a recordable disc that can be written once, while CD-RW is a rewritable disk that can be written multiple times..
- SSD: Solid State Drive: Flash memory unit that uses integrated circuit assemblies to store data on a continuous basis.
- Cloud storage: Data is controlled and made accessible via a network. Basic features are free to use, but the updated edition is charged on a monthly basis as per usage rate.[8]