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- **DEFINATION**

Motherboard also known as the system board is the physical arrangement in a computer that contain the computer's basic circuitry and components. On the typical motherboard, circuitry is in printed or affixed to the surface of a firm planner surface and usually manufactured in a single step.

The motherboard contains the connectors for attaching addition boards.

MOTHERBOARD ARCHITECTURE

Prior to invention of the microprocessor, a computer consisted of multiple printed circuit board in a card cage case with component connected by a BLACKPLANE as set of interconnected socket. In very old design or wirers were discrete connection between card connection pin, and printed circuit board soon become the standard practice.

The central processing unit(CPU), memory and peripherals wire housed on individual printed circuit boards, which are plugged into the backplane.

During the 1980s it became economical to move an increasing number of peripheral function into the motherboard.

HISTORY OF A MOTHERBOARD

In the late 1990s personal computer(PC) motherboard began to include single Ics also called super I/O chips capable of supporting a set of low speed peripherals, keyboard, mouse, floppy disc drive, serial ports and parallel ports . By the late 1990s the main personal computers motherboard supported a full range of audio, video, storage and networking functions without the need for any expansion card all

   The most popular computers such as the Apple and IBM PC had published schematic diagrams and other documentation which permitted rapid reverse engineering and third party replacement motherboards. Usually intended for building new computers compatible with exemplars , many motherboards offers additional performances or features and were used to upgrade the manufacturer original equipment.

TYPES OF COMPUTER MOTHERBOARD

The types of system board should not be confused with the form factors. There are basically two types of motherboard.

➢ INTEGRATED MOTHERBOARD: the integrated system board has most of its component soldered on the motherboard unlike expansion card that are detachable. This type of motherboard has an advantage and also a drawback, it main advantage is its simplicity as much space is conserved, portable and perhaps cheaper to manufacture.

The major drawback is when the board component is faulty the entire system board has to be replaced. However, such faulty component in some motherboard can be disable and replaced by an expansion card.

But this have to be done by a highly experienced technician. Sometimes the cost of doing so many outweigh its benefits.

➢ NON-INTEGRATED MOTHERBOARD: the non integrated system board has expansion slot with some of its component detachable like the video adaptor, disc controller etc. the major advantage of this type of system board is flexibility with respect to the replacement of faulty component, when an expansion card is faulty it can easily be replaced.

FORM FACTORS OF A MOTHERBOARD

The form factors of a motherboard has to do with the mode of design, position of component and their size. computers are classified according to their form factors.

One of the earliest form factors was the ADVANCED TECHNOLOGY(AT) industrial standard has 12x113 in 305x27933mm dimension. It came into existence in 1984 and 1985 baby (AT) was lunched by IBM which serves as the industrial standard for all IBM systems compactable. It has the same functionality with AT but with lesser expansion slots.

➢ The drawback lead to ATX(ADVANCED TECHNOLOGY EXTENDED) coming on board created by INTEL in 1995 the ATX form factor has 12x9.6 in 305x244mm in dimension by implication full ATX SYSTEM board was popularly called cannot fit into BABY ATX case design and vice versa

- The ATX gained the most popularity within the area of its creation and have seen a number of variant and deriatives since then up to the time discourse microATX, miniATX, flexATX etc. form factor are of shoot of ATX and up to the present a number of its derivatives are still in the making.
- Apart from the various derivative of ATX form factor another motherboard configuration that also gained popularity was the new low profile extended (NLX) form factor

the NLX system board is uniquely designed. An example of a non integrated motherboard with its expansion slot placed side ways via a riser card. Low profile case designed was used for its housing and space in maximally utilized.

- BALANCED TECHNOLOGY EXTENDED: was released by INTEL in 2004 intended to replace ATX form factor but most manufacturers did not buy into its technology and consequently did not popularity.

  It should be born in mind that in most cases it form factors goes with a befitting case design.
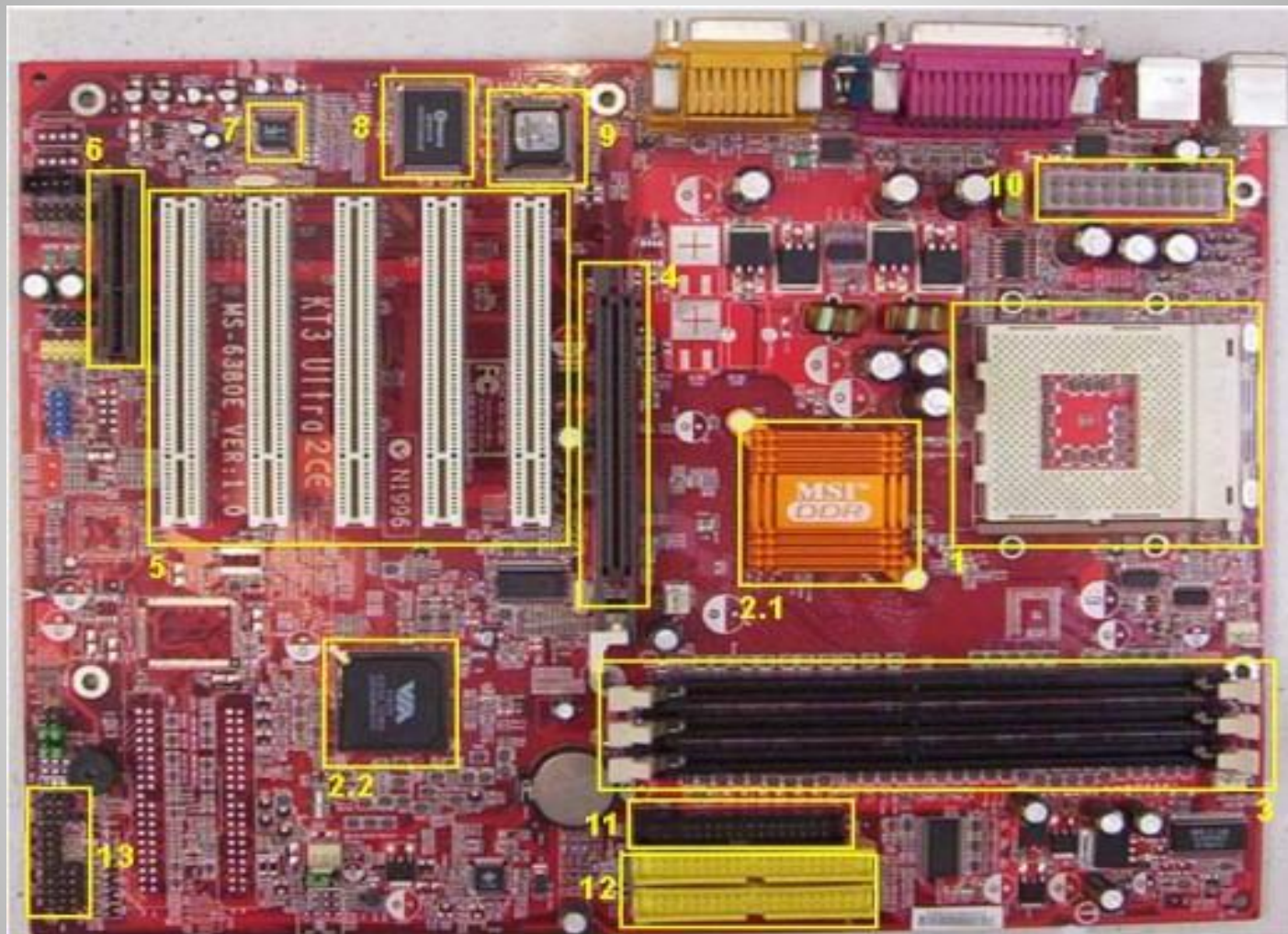
COMPONENTS OF A MOTHERBOARD

The following are the main component found on a computer motherboard.

- MEMORY AND THEIR SLOTS: the computer memory(RAM) is one of the most important parts of the system board. the number of memory chips of a motherboard depend on the type of computer and it capacity. Their slots are usually white and black and very close to each other.

❖ EXPANSION CARDS: are the typically component of non integrated system board as indicated earlier in the discussion. An example is the graphic card. However this can be integrated into the motherboard it depends on the type of circuitry.

❖ CPU AND SLOTS: the central processing unit and the socket is prolific part of a computer. It is located right on the motherboard and it is easily identifiable as a result of the heat sink or cooling fan directly on it.

- BIOS CHIP: just like the CPU the BIOS chip occupies a top position in terms of the other of importance on the system board. Its direct the CPU with respect to how it relate with other parts of the computer. The BIOS chip or integrated circuit is fixed on board and it is also easily identifiable

- CMOS BATTERY: the complementary metal oxide semiconductor(CMOS) is a small battery on the system board that powers the CMOS memory. The CMOS memory keep very important settings on the computer such as date, time, configuration of the hard drive etc.in such a way that when the computer is switched off such settings are maintained in other for this to be, the memory most always have power on.

- POWER SUPPLY AND CONNECTORS: This is the electrical unit of the system it is the unit that supplies power as required for the smooth running of the computer. If it is bad the system will not power on.

- KEYBOARD CONNECTOR: this is one of the most important input device for a desktop computer. It connector is located on the motherboard. Keyboard connectors have two main types. The AT and the PS/2 connector. The AT has round connecting interface into the motherboard while the PS/2 is rectangular in shape and is smaller. Modern motherboards come with both connecting ports

- MOUSE CONNECTOR: This mouse is also a very important input device on the computer. Its connecting port is located on the motherboard. The connecting interface is usually round.
- FLOPPY AND HARD DISC CONNECTOR: the hard drive is the mass storage device of the computer system. Same with the floppy disc. They are on board connecting interface that enables the computer to communicate with both drivers.

- EXPANSION SLOTS: expansion slot on the motherboard or a riser board make it possible for an additional card or board to be connected to the main board. There are different types serving different purpose. Mostly you across PCI, PCI express and AGP expansion slot. And for those computer manufactured before 1997,their slots are slightly different from what is obtainable today, though most of them are been faced out.

- PERIPHERAL PORTS AND SLOTS: The function performed by the computer required in most cases an external device connection either for uploading or for downloading data as the case maybe. They are various peripheral ports and slots met for there purpose. The most important peripheral port are the universal serial port(USB), serial Ethernet, parallel, video, sound and game port.

- JUMPER AND DIP SWITCHES: jumper and dip switches are used to configure the system board serving as a regulator for the amount of voltage supplied as required by the various component on the motherboard especially the processor this is automatic in some recent motherboards form factors.