INSIDE A PC

CPU

- The nerve centre of a PC is the processor.

- It is also called the CPU, or central processing unit.

- The CPU is built into a single chip.

- It is something like the brain of the computer and coordinates the activities within the computer.

- The chip itself is a small piece of silicon with an integrated circuit.

The processor and its parts
The processor consists of three main parts:

- **The control unit** examines the instructions in the user´s program, interprets each instruction and causes the circuits and the rest of the components- disk drives,etc.- to execute the functions specified.

- **The arithmetic logic unit** (ALU) performs mathematical calculations (+,-, etc.) and logical operations(AND, OR, NOT).

- **The registers** are high-speed units of memory used to store and control data. One of the registers (the program counter, or PC) keeps track of the next instruction to be performed in the main memory. The other (the instruction register, or IR) holds the instruction that is being executed.

A system clock

- The performance of a computer partly depends on the speed of its processor. A system clock sends out signals at fixed intervals to synchronize the flow of data. Clock speed is measured in gigahertz (GHz).

RAM and ROM

- The programs and data which pass through the processor must be loaded into the main memory. These programs and data are processed in there. When the user runs a program, the CPU looks for it on the hard disk and transfers a copy into the RAM chips.

- RAM (random access memory) is volatile, that is, its information is lost when the computer is turned off.

- ROM (read only memory) is non-volatile. The BIOS (basic input/output system) is stored in ROM and it controls communication with peripherals.

- RAM capacity can be extended by adding extra chips, usually contained in small circuit boards called dual in-line memory modules (DIMMs).

Buses and cards

- The main circuit board inside the computer is called the motherboard.

- The motherboard contains the processor, the memory chips, expensions slots, and controllers for peripherals. All the components are connected by buses.

- The buses are electrical channels which allow devices inside the computer to communicate with each other. For example, the front side bus carries all data that passes from the CPU to other devices.

- The size of a bus, called bus width, determines how much data can be transmitted.

- It can be compared to the number of lanes on the motorway, the larger the width, the more data can travel along the bus. For example, a 64-bit bus can transmit 64bits of data.

ASCII (American Standard Code for Information Interchange)

- When you press a key on the computer keyboard, your program translates that key press into an ASCII code. The ASCII code is a standard system to represent characters (letters, numbers or symbols of the keyboard) as bytes of binary signals.

Bits and bytes

- Computer can do all calculations using a code made of just two numbers – 0 and 1.

- The system is called binary code.

- The electronic circuits in a digital computer detect the difference between two states – when the current passes through it is represented by 1 and when the current doesn´t pass through it is represented by 0. Each 1 or 0 is called a binary digit or bit.

- Eight bits together are called a byte. In computing we also use bigger units such as kilobytes, megabytes and gigabytes.

- Each character (letter,number or symbol) of the keyboard has its own arrangement of eight bits.