**What are the three parts of a CPU?**

The CPU has three main parts...

The A.L.U. (Arithmetic and Logic Unit) which performs all the calculations.

The Control Unit - which controls the flow of data round the computer by sending out control signals.

registers

**What does the ALU do?**

The ALU takes two inputs, loaded from registers on the chip.

Simple processes are performed by the Arithmetic Logic Unit (ALU for short). The ALU is made up of devices called gates that receive one or more inputs and, based upon what function they are designed to perform, output a result. The ALU in our example performs one of seven functions: NOT, Left Shift, Right Shift, Add, Subtract, AND, and OR.

**What are registers?**

A special, high-speed storage area within the CPU that is used to store data that is going to be processed.

The final step in memory is the registers. These are memory cells built right into the CPU that contain specific data needed by the CPU, particularly the arithmetic and logic unit (ALU). An integral part of the CPU itself, they are controlled directly by the compiler that sends information for the CPU to process. See How Microprocessors Work for details on registers.

**What does the control logic do?**

Control logic is a key part of a software program that controls the operations of the program. The control logic responds to commands from the user, and it also acts on its own to perform automated tasks that have been structured into the program.[

1]**What are binary and unary operations?**

Binary operations are operations made with two inputs

unary operations are operations made with one input

**What is the PC (program counter) or IP (instruction pointer)?**

Is the most important register that points to the next instruction to be fetched for execution

**What is the instruction register?**

Is the register that holds the instruction currently being executed

**What is micro-programming?**

Process of writing microcode for a microprocessor. Microcode is low-level code that defines how a microprocessor should function when it executes machine-language instructions. Typically, one machine-language instruction translates into several microcode instructions. On some computers, the microcode is stored in ROM and cannot be modified; on some larger computers, it is stored in EPROM and therefore can be replaced with newer versions.

**What are the advantages and disadvantages of micro-programming?**

Advantage

Making change to a hardwired control unit implies global change, that is, the circuit will be almost totally changed. Hence, it is constly and time consuming although the present CAD tools do reduce most of the burden in this area. In contrary, for a microprogrammed control unit, making change to it is just changing the microprogram, the bit pattern in the micromemory. There is tools to generate these bit content from a human-readable microprogram, hence making change to microprogram is similar to edit-compile a program. The circuit for control unit does not change. This enables adding new instructions, modifies addressing mode, etc. or updating the version of control behavior easy to do.

Disadvantage

Microprogram relies on fast micromemory. It requires high speed memory. In fact, the architect of early microprogrammed machine, IBM S360 family, depended on this crucial technology, which was still in the development at that time. The breakthrough in memory technology came, and S360 became the most successful family of computers. Hardwired control unit is much faster. Microprogramming is inherently very low level, making it hard to be absolutely correct. Microprogramming is by nature concurrent, many events occur at the same time, so it is difficult to develop and debug. (for a good reading that shows this process, read Tracy Kidder's "Soul of a new machine").