Instruction Cycle

An instruction is a binary pattern designed inside a microprocessor to perform a specific function. The fundamental sequence of steps that a CPU performs is also known as the "fetch-execute cycle," (shown in Figure) it is the time in which a single instruction is fetched from memory, decoded and executed. The first half of the cycle transfers the instruction from memory to the instruction register and decodes it. The second half executes the instruction. The entire group of instructions, called the instruction set, determines what functions the microprocessor can perform. These instructions can be classified into the following five functional categories:

- Data transfer (copy) operations
- Arithmetic operations
- Logical operations
- Branching operation.
- Machine-control operation

The figure below shows the instruction cycle.

1.Fetch instruction from memory.

2.Decode the instruction.

3.Fetch any data refered to by instruction

4.Execute the instruction

5.Store any new data created by the instruction.