

1.

An instruction is a command that tells the computer what to do. It is a sequence of bits that the CPU can decode and execute. Instructions are the basic building blocks of computer programs.

2.

The Instruction Set Architecture (ISA) is the set of instructions that a particular computer can understand and execute. It defines the format of instructions, the operations that can be performed, and the addressing modes that can be used.

3.

The instruction format contains two main parts: the opcode and the operands. The opcode is a code that tells the CPU what operation to perform. The operands are the data that the operation will be performed on.

4.

Instructions are stored in the computer's memory. The memory is a large array of cells, each of which can store a single instruction.

5.

Instructions are stored in binary form. Each instruction is a sequence of bits, and the meaning of each bit is defined by the ISA.

6.

The three main factors that distinguish one instruction from another are:

- * The opcode: This is the code that tells the CPU what operation to perform.
- * The operands: These are the data that the operation will be performed on.
- * The addressing mode: This specifies how the operands are located in memory.

7.

The size of the instruction is the sum of the size of the opcode and the size of the memory address. In this case, the size of the instruction is $6 + 12 = 18$ bits.

8.

The number of different instructions that a computer can have is 2^n , where n is the number of bits in the instruction format. In this case, the number of different instructions is $2^{18} = 262,144$.

9.

The maximum memory size that a computer can address is 2^m , where m is the number of bits in the memory address. In this case, the maximum memory size is $2^{25} = 32,768,000$ bytes.

10.

The memory address of the instruction format contains two parts: the base address and the offset. The base address is the starting address of the memory location that the instruction is referring to. The offset is the distance from the base address to the actual memory location.