

Implied Mode: Operand is specified implicitly in the definition of the instruction. It is generally used for zero and one address mode.

Immediate Mode: Operand is directly provided as constant in address part. Hence, no computation is required for calculating the Effective Address.

Register Mode: Register number is there in the address part of the instruction. (Register contains the actual data). Due to register, instruction size is very less, and it is fast as well.

Register Indirect Mode: Register number is there in the instruction, but the register contains the address of the actual data. Instruction size is less, execution is fast but computational work is more.

Auto Increment or Decrement Mode: Special case of the above mode, but the data in the memory is in form of sequence (array of data). Used when data is in sequential form.

*Direct Addressing Mode/ Actual Address Mode: Actual address is given in the address part and helps in access of variables. Disadvantage - we cannot give large address due to limited size of instruction.

*Indirect Addressing Mode: Instruction contains the address which itself contains the actual address of the data. It is used to implement pointers and passing parameters. We need to access the memory twice.

Relative Addressing Mode: Instruction contains the address which has offsets to jump to achieve the real address. Hence, Effective Address = PC + Offsets. Hence, we do not need to give whole address.

Base Register Addressing Mode: Used in program reallocation. Hence,
Effective Address = Base Address + Offsets (or Displacement).

Indexed Addressing Mode: Used to implement array efficiently and it requires several registers for the implementation. Due to array, we can access any element without changing the instruction.