Laboratory Practical Report

of

**Microprocessor and Computer Organization**

**(ICT ED 436)**

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# **List the instruction set of 8086 microprocessors along with its users?**

## Solution: A 16-bit Microprocessor having 20 address lines and16 data lines provides up to 1MB storage. It consists of powerful instruction set, which provides operations like multiplication and division easily. It supports two modes of operation, i.e. Maximum mode and Minimum mode. An Instruction is a command given to the computer to perform a specified operation on given data. The instruction set of a microprocessor is the collection of the instructions that the microprocessor is designed to execute. The instructions described here are of Intel 8085. These instructions are of Intel Corporation. Instructions are classified on the basis of functions they perform they are categorized into the following:

## Data Transfer instruction: All the instructions which perform data movement come under this category. The source data may be a register, memory location, port etc. the destination may be a register, memory location or port. The following instructions come under this category: Some data transfer instruction are MOV, LDS, LES etc. are the data transfer instruction.

## Arithmetic Instructions: Instructions of this group perform addition, subtraction, multiplication, division, increment, decrement, comparison, ASCII and decimal adjustment etc.

## Logical Instructions:

## Logical instructions are the instructions that perform basic logical operations such as AND, OR, etc. In the 8085 microprocessor, the destination operand is always the accumulator. Here logical operation works on a bitwise level. Instruction of this group perform logical AND, OR, XOR, NOT and TEST operations.

## Rotate Instructions: ROTATE is a logical operation of 8085 microprocessor. It is a 1 byte instruction. This instruction does not require any operand after the opcode. It operates the content of accumulator and the result is also stored in the accumulator.

## Branch Instructions: It is also called program execution transfer instruction. Instructions of this group transfer program execution from the normal sequence of instructions to the specified destination or target.

# **Draw the flowchart for division algorithm?**

## Solution: A division algorithm provides a quotient and a remainder when we divide two number. They are generally of two type slow algorithm and fast algorithm. Slow division algorithm are restoring, non-restoring, non-performing restoring, SRT algorithm and under fast comes Newton–Raphson and Goldschmidt

## See the source image

# **Write a program in 8086 MP to perform addition of two number.**

## Solution: Algorithm:

## Load the first data into register AX from memory.

## Load the second data into register BX from memory.

## ADD content of register BX with the content of register AX.

## Now load the result value from AX to memory.

## Program:

## MOV AX ,2025

## MOV BX, 2052

## ADD AX, BX

## MOV 2054, AX

## HLT

# **Discuss various types of microprocessor.**

## Solution: There are mainly two types of microprocessors namely, CISC, RISC. A microprocessor is basically the brain of the computer.

## 1: RISC:

## Reduced Instruction Set Computer, information processing using any of a family of microprocessors that are designed to execute computing tasks with the simplest instructions in the shortest amount of time possible. RISC is the opposite of CISC (Complex Instruction Set Computer).

## 2: CISC:

## A complex instruction set computer is a computer architecture in which single instructions can execute several low-level operations (such as a load from memory, an arithmetic operation, and a memory store) or are capable of multi-step operations or addressing modes within single instructions.