## EXPERIMENT 1

**AIM:** To perform 8 bit operations ADD,SUBTRACT,MULTIPLY,DIVIDE

**THEORY:** Instructions used in program:

### MOV: (Move)

This data transfer instruction transfers data from one register/memory location to another register/memory location. The source may be nay one of the segment registers or other general or special purpose registers or a memory location and another register/memory location may act as destination. However, in case of immediate addressing mode, a segment register cannot be a destination register. In other words, direct loading of the segment registers with immediate data is not permitted. To load the segment registers with immediate data, one will have to load any general purpose register with the data and then it will have to be moved to that particular segment register. The arithmetic instructions add data in registers or memory.

### ADD: (Add)

This instruction adds an immediate data or contents of a memory location specified in the instruction or a register (source) to the contents of another register (destination) or memory location. The result is in the destination operand. However, both the source and destination operands cannot be memory operands. Also contents of segment registers cannot be added using this instruction. All the condition code flags are affected depending on the result.

**SUB:** The subtract instruction subtracts the source operand from the destination operand and the result is left in the destination operand. Source operand may be a register, memory location or immediate data and the destination operand may be a register or a memory location. But source and destination operands both must not be memory operands. Destination operand cannot be an immediate data. All the condition code flags are affected by the instruction.

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### MUL: Unsigned Multiplication Byte or Word

This instruction multiplies an unsigned byte or word by the contents of AL. The unsigned byte or word may be in any one of the general-purpose registers or memory locations. The most significant word of the result is stored in AX. All the flags are modified depending upon the result. Immediate operand is not allowed in this instruction.

### DIV: (unsigned Division)

This instruction performs unsigned division. It divides an unsigned word or double word by a 16- bit or 8-bit operand. The dividend must be in AX for 16-bit operation and divisor may be specified using any one of the addressing modes except immediate. The result will be in AL while AH will contain the remainder. If the result is too big to fit in AL, type 0 interrupt is generated. In case of a double word dividend (32-bit), the higher word should be in DX and lower word should be in AX. The divisor may be specified as explained earlier. The quotient and remainder will be in AX and DX respectively. The instruction does not affect any flag.

PROGRAM AND EXECUTION SCREENSHOT :

1.Addition A screenshot of a computer

Description automatically generated

2.Subtraction

A screenshot of a computer

Description automatically generated

3. Multiplication A screenshot of a computer

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4. Division

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**CONCLUSION**: We have learned to program to Add, Sub, Multiply and Divide 8 bit unsigned numbers with the help of 8086 Micro Processor and assembly Language used by the same processor.

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