

# **8086 Instructions (105)**

## **1. Data Transfer Group (9)**

**MOV**

**LEA**

**LDS**

**LEA**

**LES**

**LSS**

**XCHG**

**IN**

**OUT**

## **2. Arithmetic Group (18)**

**ADD**

**ADC**

**SUB**

**SBB**

**MUL**

**IMUL**

**DIV**

**IDIV**

**INC**

**DEC**

**NEG**

**AAA**

**AAS**

**AAM**

**AAD**

**DAA**

**DAS**

**MOD**

### **3. Logical Group (4)**

**AND**

**OR**

**XOR**

**NOT**

#### **4. Rotation Group (4)**

**ROL**

**ROR**

**RCL**

**RCR**

#### **5. Shifting Group (4)**

**SHL**

**SHR**

**SAL**

**SAR**

#### **6. Comparison Operation (2)**

**CMP**

**TEST**

## **7. Relational Operation (6)**

**EQ**

**NE**

**LT**

**GT**

**LE**

**GE**

## **8. Flag Operation (11)**

**CLC**

**CLD**

**CLI**

**STC**

**STD**

**STI**

**CMC**

**LAHF**

**SAHF**

**PUSHF**

**POPF**

## **9. Stack Operation (2)**

**PUSH**

**POP**

## **10. Looping Instruction (5)**

**LOOP**

**LOOPE**

**LOOPZ**

**LOOPNE**

**LOOPNZ**

## **11. Branching Instruction (28)**

**JA**

**JAЕ**

**JB**

**JBE**

**JC**

**JNC**

**JE**

**JNE**

**JZ**

**JNZ**

**JG**

**JNG**

**JL**

**JNL**

**JO**

**JS**

**JNS**

**JP**

**JPE**

**JNP**

**JPO**

**CALL**

**INT**

**JMP**

**RETN**

**RETF**

**RET**

**IRET**

## **12. Type Conversion (2)**

**CBW**

**CWD**

### **13. String Instruction (10)**

**MOVS**

**MOVSB**

**MOVSW**

**CMPS**

**CMPSB**

**CMPW**

**LODS**

**LODSB**

**LODW**

**REP**



# **8086 ASSEMBLER DIRECTIVES (20)**

**DB**

**DW**

**DD**

**DQ**

**?**

**DUP**

**EQU**

**OFFSET**

**SEGMENT**

**ENDS**

**.CODE**

**.DATA**

**.STACK**

**.EXTRA**

**.MODEL**

**.MODEL SMALL**

**.MODEL MEDIUM**

**.MODEL LARGE**

**.MODEL COMPACT**

**END**

## **8086 DOS INTERRUPTS (6)**

**(Disk Operating System)**

**(00H-1FH)**

**(INT 21H)**

**Function 01H (Read a character with echo)**

**Function 02H (Display single character)**

**Function 08H (Keyboard input without echo)**

**Function 09H (Display string)**

**Function 0AH (Read String)**

**Function 4CH (Terminates program)**

# **8086 BIOS INTERRUPTS (5)**

**(Basic Input Output System)**

**(20H-3FH)**

**(INT 10H)**

**Function 00H (Set video mode of the screen)**

**Function 02H (Set cursor position)**

**Function 06H (Scroll up screen)**

**Function 07H (Scroll down screen)**

**Function 09H (Display character and  
attribute at cursor)**

# ADDRESSING MODES IN 8086 (10)

- **Register Addressing**

MOV AH, BL

MOV DX, CX

- **Immediate Addressing**

MOV AH, 35H

MOV BX, 7A25H

- **Direct Memory Addressing**

MOV AL, [3000H]

MOV [3000H], CX

(Uses DS as default offset address)

- **Register Indirect Addressing**

MOV BX, [SI]

(Allowed address registers are BP, SI, DI, BX. BX, SI, DI uses offset address DS by default. BP uses offset address SS by default.)

- **Base Addressing**

MOV AX, [BX+15]

**(BX uses offset address DS by default. BP uses offset address SS by default)**

- **Index Addressing**

**MOV AX, [DI-125]**

**(SI, DI uses DS by default)**

- **Base-Index Addressing**

**MOV CX, [BX+DI]**

**(Uses BP or BX with SI or DI. BP uses offset address SS by default. BX uses offset address DS by default.)**

- **Relative Base-Index Addressing**

**MOV AL, [BX+SI+10H]**

**(BP uses offset address SS by default. BX uses offset address DS default)**

- **String Addressing**

**(SI points to 1<sup>st</sup> byte of source operand and DI points to 2<sup>nd</sup> byte of destination operand. Default segment register for source is DS and for destination is ES)**

- **Implied Addressing**

**CLC**