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Subject: Microprocessors & Application

Unit II – 8-bit Microprocessors (Intel-8085)

ASSEMBLY LANGUAGE PROGRAMMING

A program written in the form of 0's and 1's is called a machine language program.
Machine language is best for Machine
The demerits of machine language program are:

I- difficult to understand or debug a program
II- Entry of program is very slow.
III- Programs are long.
IV- Program writing is difficult and tiresome
V- Chances of careless errors.

Similarly best choice for Programmer/User is English
In a high-level language statements more clearly resemble English and Mathematics than mnemonics.
e.g. BASIC, FORTRAN, C, COBOL, QBASIC, VISUAL BASIC etc.
Instructions written in high level language are called statements rather than mnemonics.

An extension of Mnemonic Machine language is Assembly Language.

A program written in mnemonics is known as assembly language program

It also avoid the need of compiler.
A compiler is needed to translate high level language to machine codes for the operation of a computer.

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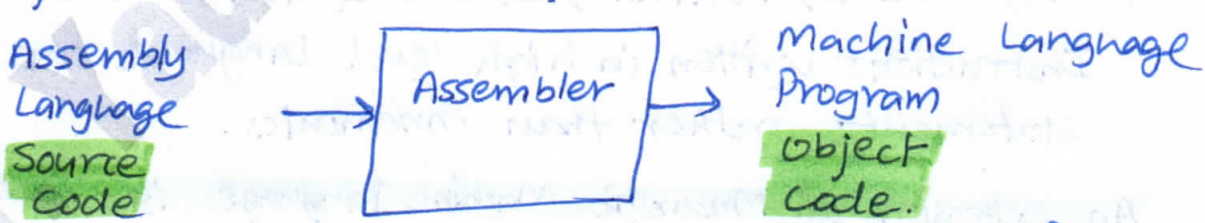
ADVANTAGES OF ASSEMBLY LANGUAGE

- Better Human Understanding
- Use of Mnemonics for OPCODES
- Use of symbolic name for OPERAND address.
- Easy to write, Modify and Debug.
- Self Documenting
- More Efficient program.
- Checks Syntax Errors
- Reserves Memory Locations

DISADVANTAGES OF ASSEMBLY LANGUAGE

I- Requirement of Assembler. The assembler converts the program into a machine language program before the execution of the program.



Source code must be written in well defined format for easy translation by assembler.

II- Program is difficult and time consuming

III- The assembly language is computer oriented.

IV- Assembly language program is not portable

V- Programs are longer as compared to a high level language programs.

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ASSEMBLY LANGUAGE FORMAT.

In general assembly language statements have four sectors in general known as field

Label:	operation /Mnemonic	operands ;	comment

I- Label Field: (Symbolic name of add., variable no. of char.)
- used to represent an address that is not specified known on. it is usually ended with a colon. It may not always present.

II- Mnemonic field: - It may consist of pseudo mnemonics.
- mnemonic for the instruction to be performeel
- referred to as operation codes or opcode.

III- Operand field: operands seperated by comma ','
- consists of operand and operands either
- constants or variables with reference to the instruction in the mnemonic field it may be any register, data, or address on which the instruction is to be performed.

IV- Comment field:
- started with semicolon
- are not part of the machine program
- written for the reference of the user.
- The starting comments should also include a list of parameter, registers and memory location used.
- maintain for future meintenance.

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ASSEMBLERS

> To assemble a program automatically the assembler needs information in the form of assembler direct that control the assembly

> These assembler directives are command placed in the program by the designer that provides information to the assembler.

> They do not become part of the final program as the microprocessor nor did they translate into executed code

> Therfore, they are also known as psendo instruction or false instructions

> Each assembler has its own unique pseudo instruction written in assembly language format-

ORG	Origin is specified	ORG E000H
EQU	Equal	ADDR EQU 003A H
DB	when a table of fixed data value is required, memory must also be allocated.	Data: DB A1H, 6FH