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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ITT204 – MICROCONTROLLER & EMBEDDED SYSTEMS

III YEAR - V SEM

UNIT I – 8086 Assembler Directives

➢An assembler supports directives to define data, to organize segments to control procedure, to define macros.

➢It consists of two types of statements: instructions and directives.

➢The instructions are translated to the machine code by the assembler whereas directives are not translated to the machine codes.

Assembler Directives of 8086

1. DB – The DB directive is used to declare a BYTE -2-BYTE variable – A BYTE is made up of 8 bits.

Declaration examples:

Byte1 DB 10h

Byte2 DB 255 ; 0FFh, the max. possible for a BYTE

CRLF DB 0Dh, 0Ah, 24h ;Carriage Return, terminator BYTE

2. DW – The DW directive is used to declare a WORD type variable – A WORD occupies 16 bits or (2 BYTE).

Declaration examples:

Word DW 1234h

Word2 DW 65535; 0FFFFh, (the max. possible for a WORD)

3. DD – The DD directive is used to declare a DWORD – A DWORD double word is made up of 32 bits =2 Word's or 4 BYTE.

Declaration examples:

Dword1 DW 12345678h

Dword2 DW 4294967295 ;0FFFFFFFFh.

4. STRUCT and ENDS directives to define a structure template for grouping data items.

The STRUCT directive tells the assembler that a user defined uninitialized data structure follows. The uninitialized data structure consists of a combination of the three supported data types.

Syntax:

STRUCT

Structure_element_name element_data_type?

. . .

. . .

. . .

ENDS

(5) The EQU Directive

The EQU directive is used to give name to some value or symbol. Each time the assembler finds the given names in the program, it will replace the name with the value or a symbol. The value can be in the range 0 through 65535 and it can be another Equate declared anywhere above or below.

The following operators can also be used to declare an Equate:

THIS BYTE

THIS WORD

THIS DWORD

Eg:

A – Byte EQU THIS BYTE

DB 10

A_ word EQU THIS WORD

DW 1000

(6) Extern:

It is used to tell the assembler that the name or label following the directive are I some other assembly module.

For example: if you call a procedure which is in program module assembled at a different time from that which contains the CALL instructions ,you must tell the assembler that the procedure is external the assembler will put information in the object code file so that the linker can connect the two module together.

Example:
PROCEDURE -HERE SEGMENT
EXTERN SMART-DIVIDE: FAR ; found in the segment; PROCEDURES-HERE
PROCEDURES-HERE ENDS

(7) GLOBAL:

The GLOBAL directive can be used in place of PUBLIC directive .for a name defined in the current assembly module; the GLOBAL directive is used to make the symbol available to the other modules.
Example:

GLOBAL DIVISOR:

WORD tells the assembler that DIVISOR is a variable of type of word which is in another assembly module or EXTERN.

(8) SEGMENT:

It is used to indicate the start of a logical segment. It is the name given to the the segment. Example: the code segment is used to indicate to the assembler the start of logical segment.

(9) PROC: (PROCEDURE)

It is used to identify the start of a procedure. It follows a name we give the procedure.

(10) NAME:

It is used to give a specific name to each assembly module when program consists of several modules.

(11) INCLUDE:

It is used to tell the assembler to insert a block of source code from the named file into the current source module.

(12) OFFSET:

It is an operator which tells the assembler to determine the offset or displacement of a named data item from the start of the segment which contains it.

References

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Thank You