

COA – Lab Assignment 1

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Memory Models in 8086 –

The memory models in 8086 specify the size of memory assigned to the different parts of a program. The .MODEL directive is used at the start to specify which model is going to be used. There are total 6 memory models:

1. TINY – In this model both code and data occupy a single physical segment of memory. On linking a file with this model, it automatically generates a com file which is smaller than exe file.
2. SMALL – In this model, the code and data occupy individual physical segments from memory.
3. COMPACT – In this model the code occupies a single physical segment while the contents of data can be given their own separate segments.
4. MEDIUM – In this model the data occupies a single segment.
5. LARGE – In this model, both code and data are stored in different physical segments.
6. HUGE – It is similar to LARGE with an only difference that a data array may have a size that exceeds one physical segment.

Instructions –

- MOV: This instruction is used to move data from one location to another.
Syntax – mov destination, source
- LEA (Load Effective Address): It loads the specified register with the offset of a memory location.

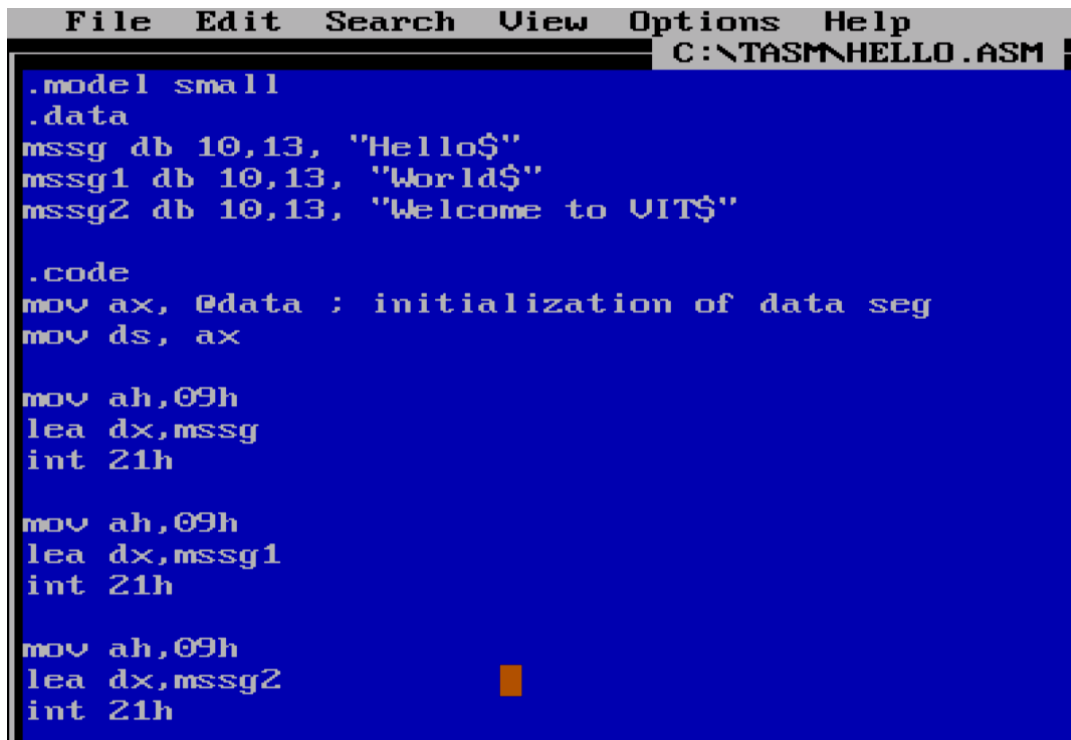
Commands –

1. **09h**: Displays the string until “\$” is reached.
2. **Int 21h**: Interrupt used to exit the program.
3. **.data**: This Command is used only when we want to store in Data Segment, basically, it is the memory access of the Data Segment. Whatever we want to print must be written here. Also, the variables are declared here.
4. **10, 13**: They work as Escape Sequence Character
5. **\$**: It states the end of a Statement
6. **Db (Define Byte)**: It acts as an Assembler Directive

7. .code: Full Logical Program is written here
8. Tasm – Used for Compilation
9. tlink– Perform linking operation

Screenshots of Source Code and Output:

Source Code –



```
File Edit Search View Options Help
C:\TASM\HELLO.ASM

.model small
.data
mssg db 10,13, "Hello$"
mssg1 db 10,13, "World$"
mssg2 db 10,13, "Welcome to VIT$"

.code
mov ax, @data ; initialization of data seg
mov ds, ax

mov ah,09h
lea dx,mssg
int 21h

mov ah,09h
lea dx,mssg1
int 21h

mov ah,09h
lea dx,mssg2
int 21h
```

Output:



```
C:\TASM>edit

C:\TASM>TASM Hello.asm
Turbo Assembler Version 3.0 Copyright (c) 1988, 1991 Borland International

Assembling file:   Hello.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  476k

C:\TASM>TLINK hello.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack

C:\TASM>hello.exe

Hello
World
Welcome to VIT
C:\TASM>
```