.model small

The .MODEL directive defines the attributes that affect the entire module: memory model, default calling and naming conventions, operating system & stack type.
The traditional memory models recognized by many languages are small, medium, compact, large, and huge. **Small model** supports one data segment and one code segment. All data and code are near by default.

.data

.data represents the data segment of the program. **.data** is a directive that is used to represent program area where data used by the program is declared and initialized.

num1 dw 1

num2 dw ?

To declare data in assembly language we need data types, assembly language provide directives for different data types like db is used to define byte (1 byte or 8 bits) and dw is used to define word (2 bytes or 16 bits).
For leaving data uninitialized we use a question mark (?)

.code

The **.CODE** directive in your program instructs the assembler to start a code segment. This is used to write source code for your program.

MAIN PROC

It represents the start of the main procedure of our program. It defines the entry point of our program. The end of this procedure is denoted by the following instruction.

ENDP

MOV

MOV instruction is used to move data from a source to a destination. It has two operands, destination is written on the left and source is written on the right. Only value of destination is changed after executing this instruction. **MOV** instruction operands has following standard formats.

Memory to Register

MOV AX, num1

Immediate to Memory

MOV num2, 3

Immediate to Register

MOV BX, 2

Register to Register

MOV CX, BX

Register to Memory

MOV num1, CX

MOV AX, data

MOV DS, AX

These two instruction are used to set the address of data segment in **DS**. As memory to memory move is not allowed so address is first placed in **AX** and then to **DS**.

MOV AX, 04ch

int 21h

These lines are used to call the interrupt to exit program and return 0 in **AL**. **int 21h** represents the DOS interrupt.

END MAIN

The END directive instructs the assembler to stop processing this source file. Every assembly language source module must finish with an END directive on a line by itself. Any lines following the END directive are ignored by the assembler.

.stack 100h

The stack segment holds procedure parameters, local variables, and return addresses.The .STACK directive identifies the area of a program holding the run-time stack, setting its size.

Immediate to Register

MOV AX,1234
MOV BX, 1234h
MOV CX,1100110011001100b

ADD

ADD instruction is used to add destination and source and save it in the destination. It has two operands, destination is written on the left and source is written on the right. Value of destination is updated to the sum of both source and destination after the execution of this statement. ADD instruction has different formats, we can directly add an immediate value to a register or memory:

```
ADD AX,5678
ADD BX, 5678h
ADD CX,1010101010101010b
```

We can add a register to another register:

```
add AX,BX

ADD BX,CX

ADD CX,DX
```