**MP Programs: Addition**

1. **Addition of 1 digit/4 bits**
2. **Addition of 2 digits/8 bits**
3. **Addition of 4 digits/ 16 bits**
4. **Addition of 8 digits/32 bits**

**\*For subtraction only one command is to be changed, replace ADD with SUB.**

**Addition of 1 digit/4 bits**

.model small

.stack 100H

.data

msg db 10,13,"Enter the first no.:: $"

msg1 db 10,13,"Enter the second no.:: $"

msg2 db 10,13,"The Resultant sum is :: $"

.code

.startup

MOV AH,09

MOV DX,OFFSET msg

INT 21H

MOV AH, 01

INT 21H

SUB AL,30H

MOV BL, AL

MOV AH,09

MOV DX,OFFSET msg1

INT 21H

MOV AH, 01

INT 21H

SUB AL,30H

ADD BL,AL

MOV AH,09

MOV DX,OFFSET msg2

INT 21H

MOV DL,BL

CMP DL, 09

JG L6

ADD DL,30H

JMP L7

L6: ADD DL, 37H

L7: MOV AH,02

INT 21H

MOV AH, 4CH

INT 21H

.exit

end

**Addition of 2 digits/8 bits**

.model small

.stack 100H

.data

data1 db 00H

msg db 10,13,"Enter the first no.:: $"

msg1 db 10,13,"Enter the second no.:: $"

msg2 db 10,13,"The Resultant sum is :: $"

.code

.startup

MOV BL, 00

MOV AH,09

MOV DX,OFFSET msg

INT 21H

MOV CX, 2

AGAIN: MOV AH, 01

INT 21H

CMP AL, 'A'

JGE P1

SUB AL,30H

JMP P4

P1: SUB AL, 37H

P4: SHL BL, 4

ADD BL, AL

LOOP AGAIN

MOV data1, BL

MOV AH,09

MOV DX,OFFSET msg1

INT 21H

MOV CX, 2

AGAIN2: MOV AH, 01

INT 21H

CMP AL, 'A'

JGE P2

SUB AL,30H

JMP P3

P2: SUB AL, 37H

P3: SHL BL, 4

ADD BL,AL

LOOP AGAIN2

ADD BL, data1

MOV AH,09

MOV DX,OFFSET msg2

INT 21H

MOV DL, 00

MOV CX, 2

AGAIN3: ROL BL, 4

MOV DL,BL

AND DL, 0FH

CMP DL, 09

JG L6

ADD DL,30H

JMP L7

L6: ADD DL, 37H

L7: MOV AH,02

INT 21H

LOOP AGAIN3

MOV AH, 4CH

INT 21H

.exit

end

**Addition of 4 digits/ 16 bits**

.model small

.386

.data

DATA1 dw 0000H

msg db 10,13,"Enter the first no.:: $"

msg1 db 10,13,"Enter the second no.:: $"

msg2 db 10,13,"The Resultant sum is :: $"

.code

.startup

MOV AH,09

MOV DX,OFFSET msg

INT 21H

MOV EBX,0

MOV CX,4

AGAIN: MOV AH,01 ;1ST NO. ENTERED

INT 21H

CMP AL,'A'

JGE L5

SUB AL,30H

JMP L6

L5: SUB AL,37H

L6: SHL BX,4

ADD BL,AL

LOOP AGAIN

MOV DATA1,BX

MOV AH,09

MOV DX,OFFSET msg1

INT 21H

MOV BX,0

MOV CX,4

AGAIN1:MOV AH,01 ;2nd NO. ENTERED

INT 21H

CMP AL,'A'

JGE L7

SUB AL,30H

JMP L8

L7: SUB AL,37H

L8: SHL BX,4

ADD BL,AL

LOOP AGAIN1

ADD BX,DATA1 ;ADDITION

MOV AH,09

MOV DX,OFFSET msg2

INT 21H

MOV CX,4

AGAIN2: ROL BX,4

MOV DL,BL

AND DL,0FH

CMP DL,09

JG L1 ; to o/p given no.

ADD DL,30H

JMP PRINT

L1: ADD DL,37H

PRINT: MOV AH,02

INT 21H

LOOP AGAIN2

.EXIT

END

**Addition of 8 digits/32 bits**

.model small

.386

.data

DATA1 dd 00000000H

msg db 10,13,"Enter the first no.:: $"

msg1 db 10,13,"Enter the second no.:: $"

msg2 db 10,13,"The Resultant sum is :: $"

.code

.startup

MOV AH,09

MOV DX,OFFSET msg

INT 21H

MOV EBX,0

MOV CX,8

AGAIN: MOV AH,01 ;1ST NO. ENTERED

INT 21H

CMP AL,'A'

JGE L5

SUB AL,30H

JMP L6

L5: SUB AL,37H

L6: SHL EBX,4

ADD BL,AL

LOOP AGAIN

MOV DATA1,EBX

MOV AH,09

MOV DX,OFFSET msg1

INT 21H

MOV EBX,0

MOV CX,8

AGAIN1:MOV AH,01 ;2nd NO. ENTERED

INT 21H

CMP AL,'A'

JGE L7

SUB AL,30H

JMP L8

L7: SUB AL,37H

L8: SHL EBX,4

ADD BL,AL

LOOP AGAIN1

ADD EBX,DATA1 ;ADDITION

MOV AH,09

MOV DX,OFFSET msg2

INT 21H

MOV CX,8

AGAIN2: ROL EBX,4

MOV DL,BL

AND DL,0FH

CMP DL,09

JG L1 ; to o/p given no.

ADD DL,30H

JMP PRINT

L1: ADD DL,37H

PRINT: MOV AH,02

INT 21H

LOOP AGAIN2

.EXIT

END