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
JPM 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
```