16 BIT HEXADECIMAL ADDITION OF TWO NUMBERS:

0dh cr equ lf 0ah equ data segment table db '0123456789ABCDEF' n1 dw 05555h n2 dw 05555h result dw 00000h 'the result is ' msg db asciir db 4 dup(?) cr,If,'\$' db data ends code segment assume cs:code,ds:data start: mov ax,data mov ds,ax ax,n1 mov add ax,n2 lea bx,table mov result,ax lea si,asciir si,3 add mov ax,result and ax,0000Fh xlat mov [si],al dec si ax,result mov and ax,000f0h mov cl,04h shr al,cl xlat mov [si],al dec si mov ax,result ax,00f00h and cl,08h mov shr ax,cl xlat mov [si],al dec si mov ax,result and ax,0f000h cl,0ch mov shr ax,cl xlat [si],al mov mov ah,09h lea dx,msg

```
int 21h
```

quit: mov al,00h mov ah,04ch

int 21h code ends end start

C:\BIN>16add the result is AAAA

C:\BIN>

16 BIT HEXADECIMAL SUBTRACTION OF TWO NUMBERS:

cr equ 0dh If equ 0ah

data segment

table db '0123456789ABCDEF'

 n1
 dw
 05555h

 n2
 dw
 03333h

 result
 dw
 00000h

 msg
 dh
 'the result

msg db 'the result is ' asciir db 4 dup(?)

db cr,lf,'\$'

data ends

code segment

assume cs:code,ds:data

start: mov ax,data

mov ds,ax ax,n1 mov sub ax,n2 lea bx,table mov result,ax lea si,asciir add si,3 ax,result mov

and ax,0000Fh

xlat

mov [si],al dec si

mov ax,result and ax,000f0h mov cl,04h shr al,cl

```
xlat
```

mov [si],al dec si

mov ax,result and ax,00f00h mov cl,08h shr ax,cl

xlat

mov [si],al dec si

mov ax,result and ax,0f000h mov cl,0ch shr ax,cl

xlat

mov [si],al mov ah,09h lea dx,msg int 21h

quit: mov al,00h

mov ah,04ch int 21h code ends end start

C:\BIN>16sub the result is 2222

C:\BIN>

16 BIT HEXADECIMAL MULTIPLICATION OF TWO NUMBERS:

cr equ Odh If equ Oah

data segment

table db '0123456789ABCDEF'

 n1
 db
 00005h

 n2
 db
 00004h

 result
 dw
 00000h

msg db 'the result is ' asciir db 4 dup(?)

db cr,lf,'\$'

```
data
       ends
code
       segment
assume cs:code,ds:data
       mov
               ax,data
start:
mov
       ds,ax
mov
       al,n1
       bl,n2
mov
       bl
mul
lea
       bx,table
mov
       result,ax
lea
       si, asciir
add
       si,3
mov
       ax,result
and
       ax,0000Fh
xlat
       [si],al
mov
dec
       si
       ax,result
mov
and
       ax,000f0h
       cl,04h
mov
       al,cl
shr
xlat
mov
       [si],al
dec
       si
mov
       ax,result
and
       ax,00f00h
       cl,08h
mov
shr
       ax,cl
xlat
       [si],al
mov
dec
       si
       ax,result
mov
       ax,0f000h
and
mov
       cl,0bh
       al,cl
shr
xlat
mov
       [si],al
mov
       ah,09h
lea
       dx,msg
int
       21h
               al,00h
quit:
       mov
mov
       ah,04ch
       21h
int
code
       ends
```

C:\BIN>16bitmul the result is 0014

start

C:\BIN>

end

32 BIT BY 16 BIT HEXADECIMAL DIVISION:

CR EQU 0DH

LF EQU 0AH

DATA SEGMENT

TABLE DB '0123456789ABCDEF'

LSBDIVIDEND DW 00005H

MSBDIVIDEND DW 00000H

DIVISOR DW 00002H

REMAINDER DW 00H

QUOTIENT DW 00H

MESSAGE1 DB 'THE QUOTIENT IS:'

ASCIIQUOTIENT DB 4 dup(?)

DB CR, LF, '\$'

MESSAGE2 DB 'THE REMAINDER IS:'

ASCIIREMAINDER DB 4 dup(?)

DB CR, LF, '\$'

DATA ENDS

CODE SEGMENT

Assume CS:Code, DS: Data

START: MOV AX, DATA

MOV DS, AX

MOV AX, LSBDIVIDEND

MOV DX, MSBDIVIDEND

DIV DIVISOR

MOV QUOTIENT, AX

MOV REMAINDER, DX

LEA BX, TABLE

LEA SI, ASCIIQUOTIENT

ADD SI,3

MOV AX, QUOTIENT

AND AX, 0000FH

XLAT

MOV [SI], AL

DEC SI

MOV AX, QUOTIENT

AND AL,000F0H

MOV CL,04H

SHR AL, CL

XLAT

MOV [SI], AL

DEC SI

MOV AX, QUOTIENT

AND AX,00F00H

MOV CL,08

SHR AX, CL

XLAT

MOV [SI], AL

DEC SI

MOV AX, QUOTIENT

AND AX,0F000H

MOV CL,0CH

SHR AX, CL

XLAT

MOV [SI], AL

MOV AH, 09H

LEA DX, MESSAGE1

INT 21H

LEA SI, ASCIIREMAINDER

ADD SI,3

MOV AX, REMAINDER

AND AX, 0000FH

XLAT

MOV [SI], AL

DEC SI

MOV AX, REMAINDER

AND AL,000F0H

MOV CL,04H

SHR AL, CL

XLAT

MOV [SI], AL

DEC SI

MOV AX, REMAINDER

AND AX,00F00H

MOV CL,08

SHR AX, CL

XLAT

MOV [SI], AL

DEC SI

MOV AX, REMAINDER

AND AX,0F000H

MOV CL,0CH

SHR AX, CL

XLAT

MOV [SI], AL

MOV AH, 09H

LEA DX, MESSAGE2

INT 21H

QUIT: MOV AL,0

MOV AH,04CH

INT 21H

CODE ENDS

END START

C:\BIN>16div

THE QUOTIENT IS:0002 THE REMAINDER IS:0001

C:\BIN>_

8 BIT HEXADECIMAL ADDITION OF TWO NUMBERS:

0dh cr equ lf equ 0ah data segment table db '0123456789' n1 db 002h db n2 002h db 00h res 'The Result is ' msg db asres db 2 dup(?) db cr,lf,'\$' ends data code segment assume cs:code,ds:data start: mov ax,data ds,ax mov al,n1 mov add al,n2 mov res,al lea bx,table lea si,asres si inc mov al,res and al,00FH xlat mov [si],al dec si al,res mov and al,0F0H mov cl,04H shr al,cl xlat [si],al mov ah,09H mov lea dx,msg 21h int quit: al,0 mov mov ah,04ch 21h int ends code end start

C:\BIN>8add The Result is 04

C:\BIN>

8 BIT HEXADECIMAL SUBTRACTION OF TWO NUMBERS:

0dh cr equ lf equ 0ah data segment table db '0123456789ABCDEF' n1 db 002h db n2 002h db 00h res 'The Result is ' msg db asres db 2 dup(?) db cr,lf,'\$' ends data code segment assume cs:code,ds:data start: mov ax,data ds,ax mov al,n1 mov sub al,n2 mov res,al lea bx,table lea si,asres si inc mov al,res and al,00FH xlat mov [si],al dec si al,res mov and al,0F0H mov cl,04H shr al,cl xlat [si],al mov ah,09H mov lea dx,msg 21h int quit: al,0 mov mov ah,04ch 21h int ends code end start

C:\BIN>8sub The Result is 00

C:\BIN>

8 BIT HEXADECIMAL MULTIPLICATION OF TWO NUMBERS:

0dh cr equ lf equ 0ah data segment table db '0123456789ABCDEF' n1 db 005h n2 db 005h result dw 00000h 'the result is ' msg db asciir db 4 dup(?) db cr,lf,'\$' data ends code segment assume cs:code,ds:data start: mov ax,data mov ds,ax al,n1 mov mul n2 lea bx,table mov result,ax lea si,asciir add si,3 mov ax,result and ax,0000Fh xlat mov [si],al dec si ax,result mov and ax,000f0h mov cl,04h shr al,cl xlat mov [si],al dec si ax,result mov ax,00f00h and cl,08h mov shr ax,cl xlat mov [si],al dec si mov ax,result and ax,0f000h cl,0ch mov shr ax,cl xlat [si],al mov mov ah,09h lea dx,msg

int 21h

quit: mov al,00h

mov ah,04ch int 21h

code ends

end start

C:\BIN>8mul the result is 0019

C:\BIN>_

16 BIT BY 8 BIT HEXADECIMAL DIVISION:

CR EQU 0DH LF EQU 0AH

DATA SEGMENT

TABLE DB '0123456789'

LSBDIVIDENT DB 08 MSBDIVIDENT DB 00

DIVISOR DB 02

MESSAGE1 DB 'THE QUOTIENT IS' ASCIIQUOTIENT DB 1 dup(?)

DB CR, LF, '\$'

MESSAGE2 DB 'THE REMAINDER IS' ASCIIREMAINDER DB 1 dup(?)

DB CR, LF, '\$'

DATA ENDS

CODE SEGMENT

Assume CS:Code, DS: Data

START: MOV AX, DATA

MOV DS, AX

MOV AL, LSBDIVIDENT MOV AH, MSBDIVIDENT

MOV DH, DIVISOR

DIV DH

LEA BX,TABLE

LEA SI, ASCIIQUOTIENT

XLAT

MOV [SI], AL MOV AH,09H

LEA DX,MESSAGE1

```
INT 21H
```

LEA SI, ASCIIREMAINDER

MOV AL,DH

XLAT

END

MOV [SI], AL MOV AH,09H

LEA DX, MESSAGE2

START

INT 21H

QUIT: MOV AL,0

MOV AH,04CH INT 21H CODE ENDS

C:\BIN>8div THE QUOTIENT IS 4 THE REMAINDER IS 0 C:\BIN>

8 BIT DECIMAL ADDITION OF TWO NUMBERS:

cr equ Odh If equ Oah

data segment

table db '0123456789'

n1 db 099h n2 db 099h res db 00h

msg db 'The Result is ' asres db 2 dup(?)

db cr,lf,'\$'

data ends

code segment

assume cs:code,ds:data

start: mov ax,data

mov ds,ax mov al,n1 add al,n2

daa

mov res,al
lea bx,table
lea si,asres
inc si
mov al,res
and al,00FH

xlat

```
mov
               [si],al
       dec
               si
               al,res
       mov
               al,0F0H
       and
               cl,04H
       mov
       shr
               al,cl
       xlat
               [si],al
       mov
               ah,09H
       mov
       lea
               dx,msg
       int
               21h
quit:
       mov
               al,0
       mov
               ah,04ch
       int
               21h
       code
               ends
       end
               start
```

C:\BIN>8decadd The Result is 98 C:\BIN>_

8 BIT DECIMAL SUBTRACTION OF TWO NUMBERS:

```
cr
       equ
               0dh
lf
               0ah
       equ
data
       segment
table
       db
               '0123456789ABCDEF'
               099h
n1
       db
       db
               099h
n2
res
       db
               00h
       db
               'The Result is '
msg
       db
asres
               2 dup(?)
       db
               cr,If,'$'
data
       ends
code
       segment
       assume cs:code,ds:data
start:
       mov
               ax,data
       mov
               ds,ax
               al,n1
       mov
       sub
               al,n2
       das
               res,al
       mov
               bx,table
       lea
               si,asres
       lea
       inc
               si
               al,res
       mov
       and
               al,00FH
```

```
xlat
mov
       [si],al
dec
       si
mov
       al,res
and
       al,0F0H
mov
       cl,04H
shr
       al,cl
xlat
       [si],al
mov
mov
       ah,09H
lea
       dx,msg
```

int 21h quit: mov al,0

mov ah,04ch int 21h code ends end start

C:\BIN>8decsub The Result is 00

C:\BIN>

8 BIT DECIMAL MULTIPLICATION OF TWO NUMBERS:

cr equ 0dh If equ 0ah

data segment

table db '0123456789'

n1 db 04h n2 db 04h

msg db 'The Result is'

asres db 2 dup(?)

db cr,lf,'\$'

data ends

code segment

assume cs:code,ds:data

start: mov ax,data

mov ds,ax mov al,n1 mul n2 aam

lea bx,table lea si,asres inc si

and al,00FH

```
xlat
               [si],al
       mov
       dec
               si
       mov
               al,ah
       and
               al,00FH
       xlat
               [si],al
       mov
               ah,09H
       mov
       lea
               dx,msg
       int
               21h
quit:
       mov
               al,0
               ah,04ch
       mov
       int
               21h
       code
               ends
       end
               start
```

```
C:\BIN>8decmul
The Result is 16
C:\BIN>_
```

16 BY 8 BIT DECIMAL DIVISION:

CR EQU 0DH LF EQU 0AH

```
DATA SEGMENT
```

TABLE DB '0123456789ABCDF'

lsbdiv db 04h msbdiv db 00h divisor db 02h

msg1 db 'The Quotient is'

asquo db 2 dup(?)

db cr,lf,'\$'

msg2 db 'The Remainder is'

asrem db 2 dup(?)

db cr,lf,'\$'

data ends

code segment assume cs:code,ds:data

start: mov ax,data

mov ds,ax mov al,lsbdiv

```
mov
       ah, msbdiv
mov
       dh, divisor
aad
div
       dh
       bx,table
lea
lea
       si,asquo
xlat
       [si],al
mov
mov
       ah,09h
       dx,msg1
lea
int
       21h
       bx,table
lea
       si,asrem
lea
mov al,dh
xlat
       [si],al
mov
       ah,09h
mov
```

quit: mov al,0 mov ah,04ch int 21h code ends end start

dx,msg2

21h

lea

int

```
C:\BIN>div8
The Quotient is 2
The Remainder is 0
C:\BIN>
```