U20CS110
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Tutorial - 7

1) Write an assembly language program for 8086 to add two 16 bit numbers

2) Write an assembly language program to find square root of a number.

3) Write an assembly language program to find the factorial of 8 bit binary numbers

Sol-1 Addition of 16 bit numbers

```
data segment
 a dw 0202h
 b dw 0408h
 c dw ?
data ends

code segment
assume cs: code, ds: data

start: mov ax, data
       mov ds, ax
       mov ax, a
       mov bx, b
       add ax, bx
       mov c, ax

       int 3
       code ends
       end start
```

2) Logic to find square root
sum of n odd numbers is n^2
we need to find out n

(CX=0) if AX ≠ 0

Ex	AX	BX	AX - BX	CX = CX+1	BX = BX+2
	25	1	24	1	3
	24	3	21	2	5
	21	5	16	3	7
	16	7	9	4	9
	9	9	0	5	end

And (CX=5)

```
Dosseg
.8086
~~.code~~ .model small
~~.code~~ .data
.code
  mov AX, @data
  mov ds, AX

  MOV  AX, 19H
  MOV  BX, 01H
  MOV  CX, 00H
LOOP: INC CX
  CMP  BX
  JZ   STOP
  SUB  AX, BX
  INC  BX
  INC  BX
```

```
JMP   LOOP
STOP: mov AX, CX
      mov ax, 4C00H
      int 21H
      END
```

3)

```
Dosseg
.8086
.model small
.data
   m db 04H
   f  db ?
   f1 db ?

.code
   mov  ax, @data
   mov  ds, ax
   mov  cx, m
   mov  ax, 0001H
   mov  DX, 0000H

MULTIPLY: MUL CX
          LOOP MULTIPLY
          MOV  f, AX
          mov  f1, DX
          MOV  AX, 4C00H
          int 21H
          END
```