

```
1: #include<stdio.h>
2: //Factorial program with Pointer//
3: void fact(int*,int*);
4: void main()
5: {
6:     int n,fac=1;
7:     printf("Enter Your Number here for
8: knowing its Factorial:\n");
9:     scanf("%d",&n);
10:    fact(&n,&fac);
11:    printf("Hey Factorial of %d is %d",n,fac);
12: }
13: void fact(int* n,int* fac)
14: {
15:     int i;
16:     for(i=1;i<=*n;i++)
17:     {
18:         *fac=(*fac)*i;
19:     }
20: }
21:
22:
```

```
1: #include<stdio.h>
2: //sum of two number with Pointer//
3: void sum_num(int*,int*,int*);
4: void main()
5: {
6:     int n1,n2,sum;
7:     printf("Enter Any Two Numbers here for
Addition of Numbers:\n");
8:     scanf("%d %d",&n1,&n2);
9:     sum_num(&n1,&n2,&sum);
10:    printf("Hey Your Addition of Above Number
is :%d",sum);
11:
12: }
13: void sum_num(int* n1,int* n2,int* sum)
14: {
15:     *sum=*n1+*n2;
16: }
17:
```

```
1: #include<stdio.h>
2: //Sum of Digits with Pointer//
3: void sum_digit(int*,int*);
4: void main()
5: {
6:     int n,sum=0;
7:     printf("Enter your NUmber here for
8: summing its digits:\n");
9:     scanf("%d",&n);
10:    sum_digit(&n,&sum);
11:    printf("Hey Sum of Digits of Above Number
12: is :%d",sum);
13: }
14: void sum_digit(int* n,int* sum)
15: {
16:     int r;
17:     for(;*n>0;*n=*n/10)
18:     {
19:         r=(*n)%10;
20:         *sum=(*sum)+r;
21:     }
22:
23:
24: }
25:
26:
```

```
1: #include<stdio.h>
2: //swapping with Pointer//
3: void swap(int*,int*);
4: void main()
5: {
6:     int a=10,b=20;
7:     printf("Before swapping a=%d b=%d\n",a,b);
8:
9:     swap(&a,&b);
10:    printf("After swapping a=%d b=%d",a,b);
11:
12: }
13: void swap(int *a,int *b)
14: {
15:     /*int m;
16:     m=*a;
17:     *a=*b;
18:     b=m;*/
19: //without using Third Variable//
20:     *a=*a+*b;
21:     *b=*a-*b;
22:     *a=*a-*b;
23:
24:
25: }
```


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Assignment: 16 (Form)

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Topic: Pointer

1) Sum of numbers memory diagram:
eg: $a = 10$, $b = 15$; $Sum = 0$

Suppose

for:

$*Sum = *a + *b;$

Here

$*a =$ value at

address in a
200
10

$\therefore *a = 10$

&

Similarly $*b = 15$

Now,

for

$*Sum =$ It is in ~~alt~~ file $So, = *a + *b$
 $=$ value at address in $Sum = 10 + 15$
 $= 25$

At address 400
give value 25

void main()

$a = 10$

200 → 4

$b = 15$

300 → 4

Sum

400 → 25

Sum = num()

$a = 200$

$b = 300$

Sum 400

2) Sum of digits

eg:

for $n = 123$ & initializing $sum = 0$.

Sending address of n & also sum to sum_digit function.

So for Algorithm of Summing of Digits we write

```
for (; *n > 0; *n = *n / 10)
```

```
{
```

```
    *sum = (*sum) + r;
```

```
}
```

Here $*sum = (*sum) + r$;

value of address in sum

200

value at address in sum

200

+ remainder value

means value at 200 address is 6

void main()

n [123]

100

sum [0]

200

sum_digit()

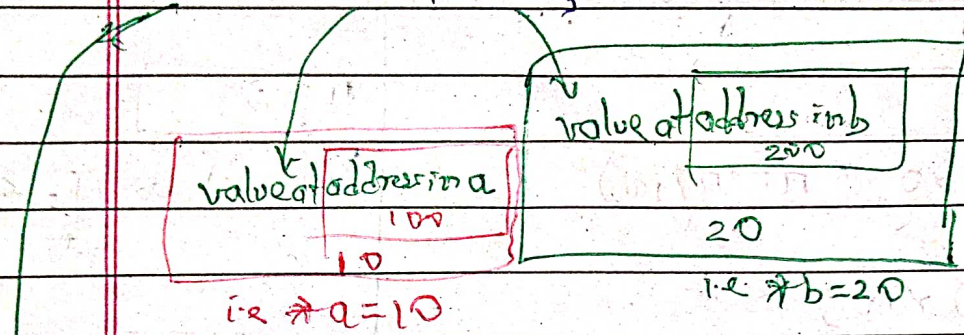
n [100]

sum [200]

3) Swapping

Suppose $a = 10$
 $b = 20$

for $*a = *a + *b;$



$$= *a + *b = 30$$

value at address in a
100

i.e. $*a = 30$

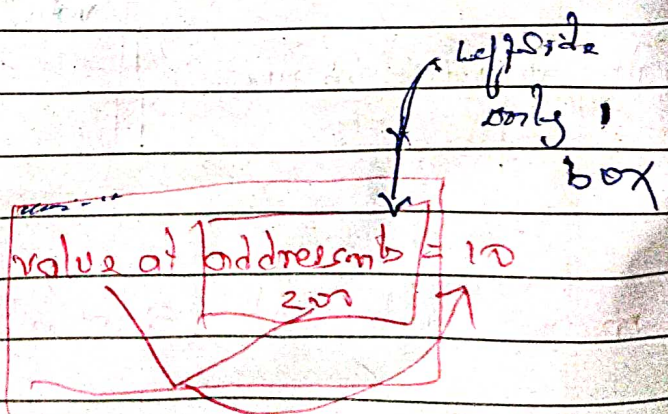
Then

$$*b = *a - *b$$

So similarly

$$*b = 30 - 20$$

i.e. $*b = 10$ → means



$$*a = *a - *b$$

$$*a = 30 - 10$$

i.e. $*a = 20$ → means value at address in a = 20
100

main()

$a = 10$ 20

$b = 20$ 10

swap()

$a = 20$

$b = 10$