

Sum of the Digits of a Given Integer and Factorial of a Given Integer

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n 153

S = 0 + 3 + 5 + 1 = 9

$$\begin{array}{r} n/10 \\ 10 \overline{) n} \\ \underline{n\%10} \end{array}$$

```

int sum_of_digits ( int n)
{
    int S=0;
    while(n>0)
    {
        S = S + n%10;
        n = n/10;
    }
    return S;
}
        
```

Iteration no.	n	n%10	n/10	S
1	153	3	15	3
2	15	5	1	8
3	1	1	0	9
4	0 Codition of the while become False.			return 9

$1 = 10 * 0 + 1$ Hence, $1/10 = 0$ and $1\%10 = 1$.

Formal Parameter

A function is defined in terms of parameters called Formal Parameters.

$$f(x) = x * x + 1$$

Here x is a Formal Parameter.

Actual Parameter

A function is evaluated in terms of parameters called Actual Parameters.

$$f(3) = 3 * 3 + 1 = 10$$

Here 3 is the Actual Parameter.

```
#include <stdio.h>
```

```
/*Function prototype declaration.*/
```

```
int sum_of_digits (int );
```

```
int product_of_digits (int );
```

```
int factorial (int);
```

```
void main( )
```

```
{
```

```
    int x, y;
```

```
    printf ("\n Enter the Number :");
```

```
    scanf ("%d", &x);
```

```
    printf("\n Sum of the digits of %d is %d.", x, sum_of_digits (x));
```

```
    printf("\n Product of the digits of %d is %d.", x, product_of_digits (x));
```

```
    printf ("\n Enter another Number :");
```

```
    scanf ("%d", &y);
```

```
    printf("\n %d! = %d", y, factorial(y)); */
```

```
}
```

```
/*Function defination. Here, n is Formal Parameter*/
```

```
int sum_of_digits (int n)
```

```
{
```

```
    int S=0;
```

```
    while (n>0)
```

```
    {
```

```
        S += n%10;    /* S = S + n%10; */
```

```
        n /= 10;    /* n = n/10; */
```

```
    }
```

```
    return S;
```

```
}
```

```

int product_of_digits (int n)
{
    int P=1;
    while (n>0)
    {
        P = P * ( n%10) ;    /* It will give wrong result with
                               P = P*n%10 = (P*n)%10 */
        n /= 10;    /* n = n/10; */
    }
    return P;
}

```

```

int factorial (int n)
{
    int i, P=1;
    if (n == 0)
        return 1;
    else
    {
        for (i=1; i<=n ; i++)
            P*= i;    /*P=P*i; */
        return P;
    }
}

```