

## NUMBER SYSTEM

// WAP TO FIND LENGTH OF THE NO.

```
// n = 125 ---> LENGTH = 3
#include<stdio.h>

int main()
{
    int n , l = 0 ;

    printf(" ENTER NO \n ");

    scanf("%d" , &n );

    while( n != 0 )
    {
        n = n / 10; // reduce n

        l++ ;    // increment l
    }

    printf(" LENGTH = %d\n", l);

}

/*
- _____
```

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TRACE :- METHOD - 1

$$n = 125$$

$$125 / 10 = 12 \quad l = 1$$

$$12 / 10 = 1 \quad l = 2$$

$$1 / 10 = 0 \quad l = 3$$

$$\text{LENGTH} = l = 3$$

-----

METHOD :- 2

$$n = 125 ; l = 0$$

$$125 \neq 0$$

$$n = 125 / 10 = 12$$

$$l = 1$$

$$\begin{array}{r} - \\ 12 \neq 0 \end{array}$$

$$n = 12 / 10 = 1$$

$$l = 2$$

$$\begin{array}{r} - \\ 1 \neq 0 \end{array}$$

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$$n = 1 / 10 = 0$$

$$l = 3$$

$$\begin{array}{r} - \\ 0 \neq 0 \end{array} \quad \text{X}$$

$$\text{length} = l = 3$$

---

### 1. LENTTH USING FOR LOOP

for( n = n ; n != 0 ; n /= 10 , l++ );

---

$$\begin{array}{r} 125 \text{ -->} \\ 5 \\ 2 \\ 1 \end{array}$$

/                      % (MOD) // REMAINDER

$$125 / 10 = 12$$

$$125 \% 10 = 5$$

---

\*/

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WAP TO PRINT  $n = 125$

PRINT  $\rightarrow$  5  
2  
1

```
#include<stdio.h>
int main()
{
    int n , t ;

    printf(" ENTER NO \n");
    scanf("%d" , &n);

    while( n != 0 )
    {
        t = n % 10 ; // remainder
        printf(" %d\n" , t);
        n = n / 10 ; // reduce
    }
}
/*
```

---

number system  
 $n = 125$   
 $125 \neq 0$                       print  
 $t = 125 \% 10 = 5$  ----> 5  
 $n = 125 / 10 = 12$

---

$12 \neq 0$   
 $t = 12 \% 10 = 2$  ----> 2

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$$n = 12 / 10 = 1$$

$$\begin{array}{r} - \\ \hline 1 \neq 0 \end{array}$$

$$t = 1 \% 10 = 1 \text{ -----} > 1$$

$$n = 1 / 10 = 0$$

-----

$$0 \neq 0 \times$$

-----

$$n = 125$$

$$\text{ans} = 8 ( 5 + 2 + 1 )$$

### SUM OF DIGITS

$$s = s + t ( \text{remainder} ) ;$$

-----

\*/

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// WAP TO CALCULATE SUM OF DIGITS

```
#include<stdio.h>
int main()
{
    int n , t , s = 0 ;

    printf(" ENTER NO \n");
    scanf("%d" , &n);

    while( n != 0 )
    {
        t = n % 10 ; // remainder

        s = s + t ;

        n = n / 10 ; // reduce
    }
    printf(" SUM = %d \n " , s);
}
```

/\*

- \_\_\_\_\_

n = 125 , s = 0

T    S = S + T    N

125 != 0    5    s = 0 + 5 = 5    12

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12 != 0      2      s = 5 + 2 = 7      1

1 != 0      1      s = 7 + 1 = 8      0

0 != 0 X      ANS = 8

\*/

// ARMSTORNG'S NO.

#include<stdio.h>

#include<math.h>

int main()

{

int n , t , q , s ;

printf(" ENTER THREE DIGIT NO \n ");

scanf("%d",&n);

s = 0 ;      q = n; // copy no. (imp)

while( q != 0 )

{

t = q % 10 ; // remainder

s = s + pow(t,3);

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```

        q = q / 10; // reduce
    }
    if( s == n )
    {
        printf(" ARMSTRONG'S NO \n ");
    }
    else
    {
        printf(" NOT ARMSTRONG'S NO \n ");
    }
}
/*

```

---

$n = q = 153$  ,  $s = 0$  ,  $length = l = 3$

	t	s		q
$153 \neq 0$	3	$s = 0 + 27 = 27$		15
$15 \neq 0$	5	$s = 27 + 125 = 152$		1
$1 \neq 0$	1	$s = 152 + 1 = 153$		0
$0 \neq 0$				X

if( s == n )

$153 == 153$     T



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ARMSTRONG'S NO.

-  
n = 123 NOT ARMSTRONG'S NO.

-  
\*/

// ARMSTORNG'S NO. ( FOR ALL DIGIT NOS.)

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

```
#include<math.h>
```

```
int main()
```

```
{
```

```
    int n , t , p , q,u, s ,l ;
```

```
    printf(" ENTER NO \n ");
```

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

```
    p = n ; // copy // imp
```

```
    l = 0 ;
```

```
    while( p!= 0)
```

```
    {
```

```
        p = p / 10 ;
```

```
        l++;
```

```
    } // length
```

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```
s = 0 ;      q = n;
while( q != 0 )
{
    t = q % 10 ; // remainder

    u = pow(t,l);

    s = s + u ;

    q = q / 10; // reduce

}

if( s == n )
{
    printf(" ARMSTRONG'S NO \n ");
}
else
{
    printf(" NOT ARMSTRONG'S NO \n ");
}
}

/*
-----

n = q = 153 , s = 0 ,length = l = 3

t      s              q
```

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153 != 0      3      s = 0 + 27 = 27      15

15 != 0      5      s = 27 + 125 = 152      1

1 != 0      1      s = 152 + 1 = 153      0

0 != 0 X

if( s == n )

153 == 153

ARMSTRONG'S NO.

-----  
n = 123 NOT ARMSTRONG'S NO.

\*/

//    STRONG'S NO.      no. 145 = 1! + 4! + 5! = 145

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

```
#include<math.h>
```

```
int main()
```

```
{
```

```
int n , t , p , f , i , s ;
```

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```
printf("enter no\n");
scanf("%d",&n);
p = n;          s = 0;
while( p != 0 )
{
    t = p % 10 ;    // REMAINDER
    f = 1 ; // IMP.
    for( i = 1 ; i <= t ; i++)
    {
        f = f * i;

    }

    s = s + f;    // ADD

    p = p / 10 ;    // REDUCE

}
if( s == n )
{
    printf(" STRONG'S NO.");
}
else
{
    printf(" NOT STRONG'S NO.");
}

}
```