LOOPS

 # Author - Soumitra Das Date - 10/02/2023

#1.Write a program to calculate the sum of the digits of a number

```
n=int(input("Enter a number : "))
sum=0
c=n
while(n>0):
    r=n%10
    sum+=r
    n//=10
print("The sum of the digits of {} is : {}".format(c,sum))
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\sum-digit.py"
Enter a number : 145
The sum of the digits of 145 is : 10
```

 # Author - Soumitra Das Date - 10/02/2023

 # 2.Write a program to find the factorial of a given number.

```
n=int(input("Enter a number : "))
fact=1
for i in range(1,n+1,1):
    fact=fact*i
print("The factorial of {} is : {} ".format(n,fact))
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\fact.py"
```

Enter a number : 5

The factorial of 5 is : 120

 # Author - Soumitra Das Date - 10/02/2023

 # 3.write a program to show the prime number in between 1 to 5000.

```
n=int(input("Enter a number : "))
print("All prime numbers in between 1 to {} are : ".format(n))
for i in range(1,n+1,1):
   count=0
   for j in range (1,n+1,1):
      if(i%j==0):
         count+=1
   if(count==2):
      print(i,end=' ')
```

OUTPUT:

PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\prime.py"

Enter a number : 5000

All prime numbers in between 1 to 5000 are :

2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103
107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197
199 211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 293 307
311 313 317 331 337 347 349 353 359 367 373 379 383 389 397 401 409 419
421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 509 521 523
541 547 557 563 569 571 577 587 593 599 601 607 613 617 619 631 641 643
647 653 659 661 673 677 683 691 701 709 719 727 733 739 743 751 757 761
769 773 787 797 809 811 821 823 827 829 839 853 857 859 863 877 881 883
887 907 911 919 929 937 941 947 953 967 971 977 983 991 997 1009 1013
1019 1021 1031 1033 1039 1049 1051 1061 1063 1069 1087 1091 1093 1097
1103 1109 1117 1123 1129 1151 1153 1163 1171 1181 1187 1193 1201 1213

1217 1223 1229 1231 1237 1249 1259 1277 1279 1283 1289 1291 1297 1301
1303 1307 1319 1321 1327 1361 1367 1373 1381 1399 1409 1423 1427 1429
1433 1439 1447 1451 1453 1459 1471 1481 1483 1487 1489 1493 1499 1511
1523 1531 1543 1549 1553 1559 1567 1571 1579 1583 1597 1601 1607 1609
1613 1619 1621 1627 1637 1657 1663 1667 1669 1693 1697 1699 1709 1721
1723 1733 1741 1747 1753 1759 1777 1783 1787 1789 1801 1811 1823 1831
1847 1861 1867 1871 1873 1877 1879 1889 1901 1907 1913 1931 1933 1949
1951 1973 1979 1987 1993 1997 1999 2003 2011 2017 2027 2029 2039 2053
2063 2069 2081 2083 2087 2089 2099 2111 2113 2129 2131 2137 2141 2143
2153 2161 2179 2203 2207 2213 2221 2237 2239 2243 2251 2267 2269 2273
2281 2287 2293 2297 2309 2311 2333 2339 2341 2347 2351 2357 2371 2377
2381 2383 2389 2393 2399 2411 2417 2423 2437 2441 2447 2459 2467 2473
2477 2503 2521 2531 2539 2543 2549 2551 2557 2579 2591 2593 2609 2617
2621 2633 2647 2657 2659 2663 2671 2677 2683 2687 2689 2693 2699 2707
2711 2713 2719 2729 2731 2741 2749 2753 2767 2777 2789 2791 2797 2801
2803 2819 2833 2837 2843 2851 2857 2861 2879 2887 2897 2903 2909 2917
2927 2939 2953 2957 2963 2969 2971 2999 3001 3011 3019 3023 3037 3041
3049 3061 3067 3079 3083 3089 3109 3119 3121 3137 3163 3167 3169 3181
3187 3191 3203 3209 3217 3221 3229 3251 3253 3257 3259 3271 3299 3301
3307 3313 3319 3323 3329 3331 3343 3347 3359 3361 3371 3373 3389 3391
3407 3413 3433 3449 3457 3461 3463 3467 3469 3491 3499 3511 3517 3527
3529 3533 3539 3541 3547 3557 3559 3571 3581 3583 3593 3607 3613 3617
3623 3631 3637 3643 3659 3671 3673 3677 3691 3697 3701 3709 3719 3727
3733 3739 3761 3767 3769 3779 3793 3797 3803 3821 3823 3833 3847 3851
3853 3863 3877 3881 3889 3907 3911 3917 3919 3923 3929 3931 3943 3947
3967 3989 4001 4003 4007 4013 4019 4021 4027 4049 4051 4057 4073 4079
4091 4093 4099 4111 4127 4129 4133 4139 4153 4157 4159 4177 4201 4211
4217 4219 4229 4231 4241 4243 4253 4259 4261 4271 4273 4283 4289 4297
4327 4337 4339 4349 4357 4363 4373 4391 4397 4409 4421 4423 4441 4447
4451 4457 4463 4481 4483 4493 4507 4513 4517 4519 4523 4547 4549 4561
4567 4583 4591 4597 4603 4621 4637 4639 4643 4649 4651 4657 4663 4673
4679 4691 4703 4721 4723 4729 4733 4751 4759 4783 4787 4789 4793 4799
4801 4813 4817 4831 4861 4871 4877 4889 4903 4909 4919 4931 4933 4937
4943 4951 4957 4967 4969 4973 4987 4993 4999

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 # 4.write a program to following example-

```
#       5+55+555+.....+ upto nth term.
n=int(input("Enter the term : "))
c=n
sum=0
for i in range(1,n+1,1):
    print(n,end='+')
    sum=sum+n
    n=n*10+c
print("\nThe sum of the following pattern is : ",sum)
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\sum1.py"
Enter the term : 6
6+66+666+6666+66666+666666+
The sum of the following pattern is :  740736
```

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 # 5.write a program to get the sum of the following example-

```
#       x+x²/2!+x³/3!+......+x^n/n!
import math
n=int(input("Enter the term : "))
x=int(input("Enter a value of x : "))
sum=0
for i in range(1,n+1,1):
    po=pow(x,i)
```

```
    fact=1
    for j in range(1,i+1,1):
        fact=fact*j
    di=po/fact
    sum=sum+di
print("The sum is :",sum)
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\sum2.py"
Enter the term : 4
Enter a value of x : 4
The sum is : 33.33333333333333
```

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 # 6.Display the following pattern

 # 1

 # 2 3

 # 4 5 6

 # 7 8 9 10

```
r=int(input("Enter row number : "))
count=1
print("Pattern is : ")
for i in range(1,r+1,1):
    for j in range(1,i+1,1):
        print(count,end=' ')
        count+=1
    print("\n")
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\pattern1.py"
Enter row number : 5
Pattern is :
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

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 # 7.Display the following pattern

 # 0

 # 1 0

 # 1 1 0

 # 1 1 1 0

```
r=int(input("Enter row number : "))
print("Pattern is : ")
for i in range(1,r+1,1):
   for j in range(1,i+1,1):
      if(i==j):
       print(0,end=' ')
      else:
       print(1,end=' ')
   print("\n")
```

OUTPUT:

```
PS C:\Users\SOUMITRA> python -u "d:\Python\LOOP\pattern2.py"
```

Enter row number : 5

Pattern is :

0

1 0

1 1 0

1 1 1 0

1 1 1 1 0