

```
In [4]: def fact(n):  
        fact=1  
        for i in range(1,n+1):  
            fact=fact*i  
        return fact  
num=5  
print(fact(num))
```

120

```
In [6]: def add(a):  
        b=str(a)  
        c=0  
        for i in b:  
            c=c+int(i)  
        return c  
a=1234  
print(add(a))
```

10

```
In [7]: def add(a):  
        b=str(a)  
        c=1  
        for i in b:  
            c=c*int(i)  
        return c  
a=1234  
print(add(a))
```

24

```
In [10]: a='1234'  
b=0  
for i in a:  
    if int(i)%2==0:  
        b=b+int(i)  
print(b)
```

6

```
In [17]: #prime  
def prime(n):  
    for i in range(2,n):  
        if n%i==0:  
            return "not prime"  
        break  
    return True  
n=70  
print(prime(n))
```

not prime

```
In [ ]: #composite(other than prime numbers)
def prime(n):
    for i in range(2,n):
        if n%i==0:
            return "composite"
        break
    return "not"
n=70
print(prime(n))
```

```
In [31]: #perfect number(the factors of the numner should be same)
n=6
b=0
for i in range(1,n):
    if n%i==0:
        b=b+i
if b==n:
    print('true')
else:
    print('false')
```

true

```
In [27]: a=153
b=str(a)
d=len(b)
c=0
for i in b:
    c=c+int(i)**d
print(c)
```

153

```
In [29]: #armstrong number
a=89
b=str(a)
d=len(b)
c=0
for i in b:
    c=c+int(i)**d
print(c)
```

145

```
In [30]: #disarium number
a=135
b=str(a)
c=0
for i in range(len(b)):
    z=int(b[i])
    c=c+z**(i+1)
print(c==a)
```

True

```
In [32]: #reverse a number
num=1234
rev=0
while num!=0:
    rem=num%10
    rev=rev*10+rem
    num//=10
print(rev)
```

4321

```
In [33]: #integer to binary
num=11
pos=1
rev=0
while num!=0:
    rem=num%2
    rev=rev+rem*pos
    num//=2
    pos*=10
print(rev)
```

1011

```
In [42]: b=11
a=bin(b)
print(a.replace('0b', ''))
```

1011

```
In [43]: #binary to integer
num=1011
rev=0
pos=0
while num!=0:
    rem=num%10
    rev=rev+rem*(2**pos)
    pos+=1
    num//=10
print(rev)
```

11

```
In [41]: a=1011
b=int(str(a),2)
print(b)
```

11

```
In [45]: #harshad number
a=12
c=0
for i in str(a):
    c=c+int(i)
if a%c==0:
    print('harshad')
else:
    print('not')
```

harshad

```
In [47]: #strong number
num=145
res=0
dup=num
while num!=0:
    rem=num%10
    fact=1
    for i in range(1,rem+1):
        fact*=i
    res+=fact
    num//=10
if res==dup:
    print('strong number')
else:
    print('not strong number')
```

strong number

```
In [54]: #evil number and odeous number
b=11
a=bin(b)
print(a.replace('0b',''))
c=a.count('1')
print(c)
if c%2==0:
    print('evil')
else:
    print('odeous number')
```

1011

3

odeous number

```
In [56]: num=19
while num>9:
    res=0
    while num!=0:
        rem=num%10
        res=res+rem**2
        num//=10
    num=res
if num==1 or num==7:
    print('happy number')
else:
    print('not happy number')
```

happy number

```
In [59]: #fascinating number
n=192
b= str(n) + str(n * 2) + str(n * 3)
print(b)
c='123456789'
z=list(c)
d=sorted(b)
print(d==z)
```

192384576

True

```
In [61]: num=5
for i in range(1,num+1):
    for j in range(i):
        print('*',end='')
    print()
```

```
*
**
***
****
*****
```

```
In [62]: num=5
for i in range(num,0,-1):
    for j in range(i):
        print('#',end='')
    print()
```

```
#####
####
###
##
#
```

```
In [67]: num=5
spaces=0
for i in range(1,num+1):
    for j in range(spaces):
        print(' ',end=' ')
    for j in range(num-i+1):
        print('$',end=' ')
    print()
```

```
$ $ $ $ $
$ $ $ $
$ $ $
$ $
$
```

```
In [69]: num=5
for i in range(1,num+1):
    for j in range(num):
        print(i,end=' ')
    print()
```

```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5
```

```
In [70]: num=5
for i in range(1,num+1):
    for j in range(i):
        print(i,end=' ')
    print()
```

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```
In [71]: num=5
for i in range(num,0,-1):
    for j in range(num):
        print(i,end=' ')
    print()
```

```
5 5 5 5 5
4 4 4 4 4
3 3 3 3 3
2 2 2 2 2
1 1 1 1 1
```

```
In [72]: num=5
for i in range(num,0,-1):
    for j in range(i):
        print(i,end=' ')
    print()
```

```
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
```

```
In [99]: num=5
for i in range(num,0,-1):
    for j in range(num-i+1):
        print(i,end=' ')
    print()
```

```
5
4 4
3 3 3
2 2 2 2
1 1 1 1 1
```

```
In [74]: num=5
for i in range(1,num+1):
    for j in range(num-i+1):
        print(i,end=' ')
    print()
```

```
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
```

```
In [103]: num=5
spaces=0
for i in range(num,0,-1):
    for j in range(spaces):
        print(' ',end='')
    for j in range(i):
        print(i,end=' ')
    print()
    spaces+=1
```

```
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
```

```
In [102]: num=5
          for i in range(1,num+1):
              for j in range(i):
                  print(i,end=' ')
              print()
```

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```
In [95]: num=5
          spaces=num-1
          for i in range(num,0,-1):
              for j in range(spaces):
                  print(' ',end=' ')
              for j in range(num-spaces):
                  print(i,end=' ')
              print()
              spaces-=1
```

```
    5
   4 4
  3 3 3
 2 2 2 2
1 1 1 1 1
```

```
In [96]: num=5
          spaces=num-1
          for i in range(1,num+1):
              for j in range(spaces):
                  print(' ',end=' ')
              for j in range(num-spaces):
                  print(i,end='')
              print()
              spaces-=1
```

```
    1
   2 2
  3 3 3
 4 4 4 4
5 5 5 5 5
```



```
In [117]: num=5
spaces=0
for i in range(num,0,-1):
    for j in range(spaces):
        print(' ',end=' ')
    for j in range(i):
        print(i,end=' ')
    print()
    spaces+=1
```

```
5 5 5 5 5
 4 4 4 4
 3 3 3
 2 2
 1
```

```
In [112]: num=5
spaces=0
for i in range(1,num+1):
    for j in range(spaces):
        print(' ',end=' ')
    for j in range(num-i+1):
        print(i,end=' ')
    print()
    spaces+=1
```

```
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
```

```
In [121]: a,b=2,11
if a>b:
    lcm=a
else:
    lcm=b
while True:
    if lcm%a==0 and lcm%b==0:
        print(lcm)
        break
    else:
        lcm+=1
```

22

```
In [122]: a,b=2,11
          if a>b:
              gcd=b
          else:
              gcd=a
          while True:
              if gcd%a==0 and gcd%b==0:
                  print(gcd)
                  break
              else:
                  gcd-=1
```

0

```
In [ ]:
```