In [1]:
```
# Function to print n natural no's using while loop

def nat(x):
    counter = 1
    while counter <= x:
        print(counter, end=" ")
        counter = counter +1
    return
nat(20)
```

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
```

In [2]:
```
# Function to print n natural no's

def nat(x):
    for counter in range(1, x+1):
        print(counter, end=" ")
    return
nat(10)
```

```
1 2 3 4 5 6 7 8 9 10
```

In [3]:
```
# Function to Identify the greatest of 3 numbers

def grt(x,y,z):
    if x>y and x>z:
        print(x, "is big number")
    elif y>z:
        print(y, "is big number")
    else:
        print(z, "is big number")
grt(-1,0,-3)
```

```
0 is big number
```

In [4]:
```
# Function to count the digits in a number

def dig(x):
    x=int(input("enter a number"))
    return len(str(x))

dig("x")
```

```
enter a number45
```

Out[4]:
```
2
```

In [5]:
```
#Leap year
def leap(s):
    if s%400==0 or (s%100!=0 and s%4==0):
        return True
    else:
        return False
leap(1947)
```

Out[5]:
```
False
```

In [13]:
```
#print using function print num div by6
#and not a factor of 100 in given range
def printnum(a,b):
    for i in range(a,b):
        if i%6==0 and 100%i!=0:
            print(i,"is divi by 6")
        else:
            print("not")
printnum(90,120)
```

```
90 is divi by 6
not
not
not
not
not
96 is divi by 6
not
not
not
not
not
102 is divi by 6
not
not
not
not
not
108 is divi by 6
not
not
not
not
not
114 is divi by 6
not
not
not
not
not
```

In [17]:
```
#cubes avg of even no
def avgn(a,b):
    d=0
    sum=0
    for i in range(a,b):
        if i%2==0:
            c=i**3
            d=d+1
            sum=sum+c
    avg=sum/d
    print(avg)
avgn(2,5)
```

```
36.0
```

In [26]:
```
#calculate factorial of given no
def factorial(n):
    fact=1
    for i in range(1,n+1):
        fact=fact*i
        print(fact)
factorial(5)
```

```
1
2
6
24
120
```

In [31]:
```
#function to generate list of factors for given no
#12-->1,2,3,4,6,12
n=int(input("Enter num: "))
def fact(n):
    count=0
    for i in range(1,n+1):
        if n%i==0:
            count+=1
            #print("factors",i)
    return count
fact(n)
```

```
Enter num: 13
```

Out[31]:
```
2
```

In [41]:
```
#if number is prime
def prim(n):
    def fact(a):
        count=0
        for i in range(1,a+1):
            if n%i==0:
                count=count+1
        return count
    x=fact(n)
    if x == 2:
        return "Prime"
    else:
        return "NotPrime"

prim(19)
```

Out[41]: 'Prime'

In [57]:
```
#prime
def prime(n):
    flag=True
    for i in range(2,n//2+1):
        if n%i==0:
            flag=False
            return flag
    return flag
prime(4)
```

Out[57]: False

In [10]:
```
#prime
def prime(n):
    count=0
    for i in range(1,n+1):
        if n%i==0:
            count=count+1
            print(i)

    if count>2:
        print("not prime")
    else:
        print("prime")
prime(23)
```

```
1
23
prime
```

In [13]:
```
#sum prime
def prime(n,n1):
    count=0
    sums=0
    for j in range(n,n1+1):
        for i in range(1,j+1):
            if j%i==0:
                count=count+1
                #sums=sums+i
    #print(sums)
    if count>2:
        print("not prime")
    else:
        print(j)
        print("prime")
prime(2,22)
```

```
not prime
```

In [27]:
```
#print alternate values from range
#[500,550]
#(500,550)
def alternate(a,b):
    z=[]
    for i in range(a,b+1,2):
        print(i)
alternate(500,550)
def alternate(a,b):
    z=[]
    for i in range(a,b,2):
        print(i)
alternate(500,550)
```

```
500
502
504
506
508
510
512
514
516
518
520
522
524
526
528
530
532
534
536
538
540
542
544
546
548
550
500
502
504
506
508
510
512
514
516
518
520
522
524
526
528
530
532
```

```
534
536
538
540
542
544
546
548
```

In [ ]:

In [ ]:

In [34]:
```
#print the reverseof range
def revrange(a,b):
    for i in range(b,a,-1):
        print(i)
revrange(1,10)
```

```
10
9
8
7
6
5
4
3
2
```

In [35]:
```
#pritn odd no reverse in range
def oddrever(a,b):
    for i in range(b,a,-1):
        if i%2!=0:
            print(i)
oddrever(1,10)
```

```
9
7
5
3
```

In [37]:
```
#pritn sun of range
def sumrange(a,b):
    sums=0
    for i in range(a,b):
        sums=sums+i
    return sums
sumrange(1,4)
```

Out[37]: 6

In [42]:
```
#print avg of range
def sumrange(a,b):
    sums=0
    avg=0
    c=0
    for i in range(a,b+1):
        sums=sums+i
        c=c+1
    return sums//c
sumrange(1,5)
```

Out[42]: 3

In [47]:
```
#amstrong no
def amstrong(n):
    n=str(n)
    s=0
    for i in n:
        i=int(i)
        s=s+i**3
    if s==int(n):
        return True
    else:
        return False
amstrong(371)
```

Out[47]: True

In [54]:
```
#odd amstrong nos
def oddamstrng(a,b):
    for i in range(a,b):
        if amstrong(i)==True and i%2!=0:
            print(i)
oddamstrng(100,377)
```

```
153
371
```

In [63]:
```
# avg of factorial
def avgfact(a,b):
    fact=1
    sums=0
    c=0
    for i in range(a,b+1):
        fact=fact*i
        c=c+1
        sums=sums+fact
        print(fact)
    return sums/c
avgfact(1,5)
```

```
1
2
6
24
120
```

Out[63]:
```
30.6
```

In [57]:
```
#print tables in range
def tablerange(a,b,n):
    for i in range(a,b+1):
        print(n,"*",a,"=",n*i)
tablerange(100,102,10)
```

```
10 * 100 = 1000
10 * 100 = 1010
10 * 100 = 1020
```

In [78]:
```
#print leap year in range
def leapyear(a,b):
    for i in range(a,b):
        if (i%400==0) or (i%4==0 and i%100!=0):
            print(i)
leapyear(1919,2018)
```

```
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
2004
2008
2012
2016
```

In [81]:
```
#calaulate days in given time period
def dayscount(a,b):
    daysleap=0
    daysnotleap=0
    for i in range(a,b+1):
        if i%400==0 or (i%4==0 and i%100!=0):
            daysleap=daysleap+366
            print(i,"the days count is 366 ")
        else:
            daysnotleap=daysnotleap+365
            print(i,"the days is 365")
    print("no of days leap years totoal is",daysleap)
    print("no of days not leap years totoal is",daysnotleap)

dayscount(2018,2019)
```

```
2018 the days is 365
2019 the days is 365
no of days leap years totoal is 0
no of days not leap years totoal is 730
```

In [85]:
```
#perfect no
def perfect(n):
    sums=0
    a=str(n)
    for i in a:
        b=int(i)
        sums=sums+b
    if sums==int(n):
        print("it is perfect no")
    else:
        print("not perfect no")
perfect(10)
```

```
not perfect no
```

In [101]:
```
#function to calculate number of hours for given period
#(11,1975,3,1999)
def hourscount(m1,y1,m2,y2):
    daysleap=0
    daysnotleap=0
    h=0
    h1=0
    for i in range(y1,y2+1):
        if i%400==0 or (i%4==0 and i%100!=0):
            daysleap=daysleap+366
            h=daysleap*24
            print(h)
            print(i,"the days count is 366 ")
        else:
            daysnotleap=daysnotleap+365
            h1=daysnotleap*24
            print(h1)
            print(i,"the days is 365")
   # print("total leap year hrs",totalh)
   # print("total notleap year hrs",totalh1)
hourscount(3,2019,3,2019)
```

```
8760
2019 the days is 365
```

In [3]:
```
#IS LEAP
def isleapyear(year):
    if year%400==0 or (year%4==0 and year%100!=0):
        return True
    return False
isleapyear(2000)
```

Out[3]:
```
True
```

In [ ]:
```
def monthdays(month,year):
    if month==2:
        if isleapyear(year):
            return 29
        return 28
    elif (month<=7 and month%2!=0)or (month!=2)//month:
        return 31
    else:
        return 30
```