Finding the factorial of a number

```
#Python Program to find the factorial of a number using loop.
n=int(input("Enter number:"))
fact=1

while(n>0):
    fact=fact*n
    n=n-1
print("Factorial of the number is: ")
print(fact)
```

```
Enter number:5
Factorial of the number is:
120
```

Program for multiples of 2 of a list without list comprehension

```
x=[1, 2, 3, 4, 5, 6]
result = []
for idx in range(len(x)):
  result.append(x[idx] * 2)
print(result)
```

```
[2, 4, 6, 8, 10, 12]
```

Single line program of Pythonic coding

```
print([i*2 for i in [1, 2, 3, 4, 5, 6] ])
```

```
[2, 4, 6, 8, 10, 12]
```

More Pythonic program of 3 lines!

```
from functools import reduce
sequences = [x for x in range(1,int(input('Enter no'))+1)]
product = reduce(lambda x, y: x*y, sequences)
print(product)
```

```
Enter no5
120
```

Number and its square as Tuple for a range

```
l_range=int(input("Enter the lower range:"))
u_range=int(input("Enter the upper range:"))
a=[(x,x**2) for x in range(l_range,u_range+1)]
print(a)
```

More Pythonic program of 2 lines!

```
a=[(x,x**210
    ) for x in range(int(input("Enter the lower range:")) \
```

```
    ) for x in range(int(input("Enter the lower range: ")),\
                           int(input("Enter the upper range:"))+1)]
print(a)
```

The most Pythonic program of a sinle line program is given below

```
print([(x,x**2) for x in range(int(input("Enter the lower range:")),\
                           int(input("Enter the upper range:"))+1)])
```

Finding the perfect squares

```
from math import *
sequences = [10,2,8,7,5,4,3,11,0,9,16,1]
result=[]
for i in sequences:
  if int(sqrt(i))**2==i:
    result.append(i)
print(result)
```

Pythonic program of 3 lines!

```
sequences = [10,2,8,7,5,4,3,11,0,9,16,1]
filtered_result = filter(lambda x: int(sqrt(x))**2==x, sequences)
print(list(filtered_result))
```

Program to find the largest number in a list.

```
a=[]
n=int(input("Enter number of elements:"))
for i in range(1,n+1):
    b=int(input("Enter element:"))
    a.append(b)
a.sort()
print("Largest element is:",a[n-1])
```

Try this More pythonic 2 lines program equivalent to above codings as shown below !

```
x=0
print('The greatest no is',max([int(input(x)) for _ in range(int(input("Enter no")))]))
```

Program to put the even and odd elements in a list into two different lists.

```
a=[]
n=int(input("Enter number of elements:"))
for i in range(1,n+1):
    b=int(input("Enter element:"))
    a.append(b)
even=[]
odd=[]
for j in a:
    if(j%2==0):
        even.append(j)
    else:
        odd.append(j)
print("The even list",even)
print("The odd list",odd)
```

Instead of forementioned 14 lines program, the equivalent 4 lines !

Pythonic program is here ....

```
x=0
l=[int(input(x)) for _ in range(int(input("Enter n")))]
print('odd list is',[ i for i in l if i%2])
print('even list is',[i for i in l if not i%2])
```

Python Program to merge two lists and sort it.

```
a=[]
c=[]
n1=int(input("Enter number of elements:"))
for i in range(1,n1+1):
    b=int(input("Enter element:"))
    a.append(b)
n2=int(input("Enter number of elements:"))
for i in range(1,n2+1):
    d=int(input("Enter element:"))
    c.append(d)
new=a+c
new.sort()
print("Sorted list is:",new)
```

Instead of forementioned 13 lines program, the equivalent 5 lines !

```
x=0
l=[int(input(x)) for _ in range(int(input("Enter how many elements")))]
m=[int(input(x)) for _ in range(int(input("Enter how many elements ")))]
new=l+m
new.sort()
print("Sorted list is:",new)
```

Double-click (or enter) to edit

```
#Python Program to sort the list according to the second element in the sublist.
a=[['A',34],['B',21],['C',26],['E',29]]
for i in range(0,len(a)):
    for j in range(i+1,len(a)):
        if(a[i][1]>a[j][1]):
            temp=a[j]
            a[j]=a[i]
            a[i]=temp
print(a)
```

Instead of forementioned 8 lines program, the equivalent 3 lines !

```
a=[['A',34],['B',21],['C',26],['E',29]]
a.sort(key = lambda x: x[1])
print(a)
```

Program to find the second largest number in a list

```
a=[]
n=int(input("Enter number of elements:"))
for i in range(1,n+1):
```

```
for i in range(1,n+1):
    b=int(input("Enter element:"))
    a.append(b)
for i in range(0,len(a)):
    for j in range(0,len(a)-i-1):
        if(a[j]>a[j+1]):
            temp=a[j]
            a[j]=a[j+1]
            a[j+1]=temp
print('Second largest number is:',a[n-2])
```

Instead of forementioned 12 lines program, the equivalent 4 lines progam !

```
x=0
l=[int(input(x)) for _ in range(int(input("Enter how many elements")))]
l.sort()
print("Second largest element is :",l[-2])
```

Program to create a list of tuples with the first element as the number and the second element as the square of the number.

```
l_range=int(input("Enter the lower range:"))
u_range=int(input("Enter the upper range:"))
a=[(x,x**2) for x in range(l_range,u_range+1)]
print(a)
```

The aforementioned program is already pythonic.

We can still make it more pythonic as follows

```
a=[(x,x**2) for x in range(int(input("Enter the lower range:")),\
                           int(input("Enter the upper range:"))+1)]
print(a)
```

Of course, We can write in the most pythonic way with one line ! as follows

```
print([(x,x**2) for x in range(int(input("Enter the lower range:")),\
                           int(input("Enter the upper range:"))+1)])
```

Program to generate random numbers from 1 to 20 and append them to the list.

```
import random
a=[]
n=int(input("Enter number of elements:"))
for j in range(n):
    a.append(random.randint(1,20))
print('Randomised list is: ',a)
```

Pythonic program of 2 lines!

```
import random
l=[random.randint(1,20) for _ in range(int(input("Enter how many elements")))]
print('Randomised list is: ',l)
```

Program for printing list of values with indexing

```
names = ['Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct','Nov','Dec']
index=0
for i in names:
    print(str(index)+":"+i)
    index=index+1
```

using Pythonic way using enumerate()!

```
names = ['Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct','Nov','Dec']
for index, value in enumerate(names):
    print(f'{index+1}: {value}')
```