In [ ]:
```
#Lists:
'''
List items are ordered, changeable, and allow duplicate values.
Ordered means index based both positiv'e and negitive
changeable means we can change, add, and remove items in a list after it has been created.
Duplicate means in the list same value can repeat n.no of times.
'''
```

In [11]:
```
l1=["python","system_verilog","verilog", "UVM","perl"]
l2=[9,2,7,8,9,3,6]
l3=[True,False,True,True]
l4=["python",9,True]
l5=list((100,"python","day3","class",99,True))
print("list :  (l1) \n\t (l2) \n\t (l3) \n\t (l4) \n\t (l5)")
```

```
list :  ['python', 'system_verilog', 'verilog', 'UVM', 'perl']
        [9, 2, 7, 8, 9, 3, 6]
        [True, False, True, True]
        ['python', 9, True]
        [100, 'python', 'day3', 'class', 99, True]
```

In [20]:
```
#Changable
l1=["python","system_verilog","verilog", "UVM","perl"]
l1[1]="System Verilog"
l1[-1]="OVM"
print(f"After 1st change the elements are : {l1} ")
l1[1:3]=["AI","ML"]
print(f"After 2nd change the elements are : {l1} ")
l1[1:3]=["data_science"]
print(f"After 3rd change the elements are : {l1} ")
l1[1:3]=["data_science","ML","AI"]
print(f"After 4th change the elements are : {l1} ")
l1.insert(2,"matlab")
print(f"After 5th change the elements are : {l1} ")
l1.append("SQL")
print(f"After 6th change the elements are : {l1} ")
l1.remove("matlab")
print(f"After 7th change the elements are : {l1} ")
#l1.remove() # required exist arguement
#print(f"After 6th change the elements are : {l1} ")
l1.pop(2)
print(f"After 6th change the elements are : {l1} ")
l1.pop()
print(f"After 6th change the elements are : {l1} ")
l1.clear() #here list will remain only elements in the list will clear
print(f"After 7th change the elements are : {l1} ")
l1=["python","system_verilog","verilog", "UVM","perl"]
print(f"After 8th change the elements are : {l1} ")
del l1[2]
print(f"After 9th change the elements are : {l1} ")
del l1 #completely delete the list
#print(f"After 10th change the elements are : {l1} ") #if we try to access after delete it will through the error like "l1 is not define"
```

```
After 1st change the elements are : ['python', 'System Verilog', 'verilog', 'UVM', 'OVM']
After 2nd change the elements are : ['python', 'AI', 'ML', 'UVM', 'OVM']
After 3rd change the elements are : ['python', 'data_science', 'UVM', 'OVM']
After 4th change the elements are : ['python', 'data_science', 'ML', 'AI', 'OVM']
After 5th change the elements are : ['python', 'data_science', 'matlab', 'ML', 'AI', 'OVM']
After 6th change the elements are : ['python', 'data_science', 'ML', 'AI', 'OVM', 'SQL']
After 6th change the elements are : ['python', 'data_science', 'AI', 'OVM', 'SQL']
After 6th change the elements are : ['python', 'data_science', 'AI', 'OVM']
After 7th change the elements are : []
After 8th change the elements are : ['python', 'system_verilog', 'verilog', 'UVM', 'perl']
After 9th change the elements are : ['python', 'system_verilog', 'UVM', 'perl']
```

In [13]:
```
l2=[9,2,7,8,9,3,6]
l2.sort()
print("asscending order : ",l2)
l2.sort(reverse=True)
print("reverse order : ",l2)
l3=l2.copy()
print("list 13: ",l3)
l4=list(l2)
print("list 14 : ",l4)
l4.reverse()
print("list reverse : ",l4)
print(l4[::-1])
```

```
asscending order :  [2, 3, 6, 7, 8, 9, 9]
reverse order :  [9, 9, 8, 7, 6, 3, 2]
list 13:  [9, 9, 8, 7, 6, 3, 2]
list 14 :  [9, 9, 8, 7, 6, 3, 2]
list reverse :  [2, 3, 6, 7, 8, 9, 9]
[9, 9, 8, 7, 6, 3, 2]
```

In [1]:
```
#odd numbers into the list
list1=[]
for i in range(0,51):
    if(i%2!=0):
        list1.append(i)
print(list1)
```

```
[1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49]
```

In [2]:
```
l=[]
n=int(input("enter the range: "))
sum1=0
for i in range(0,n):
    a=int(input("enter the number: "))
    l.append(a)
print(l)
for i in l:
    sum1=sum1+i
avg=sum1/n
print("average of numbers:",avg)
```

```
[98, 89, 92, 95, 88, 90]
average of numbers: 92.0
```

In [5]:
```
# multiplication of 10
l1=[]
n=int(input("enter the range:"))
for i in range(0,n):
    mul=i*10
    l1.append(mul)
print(l1)
```

```
[0, 10, 20, 30, 40, 50, 60]
```

In [11]:
```
#remove the duplicates
l1=["a","b","c","a","c"]
l2=[]
for i in l1:
    if i not in l2:
        l2.append(i)
print(l2)
```

```
['a', 'b', 'c']
```

In [ ]:
```
#input is "python is very easy"
# output = ["easy","very","is","python"]
#output = ["nohtyp","si","yrev","ysae"]
```

In [2]:
```
s=input(" ")
s1=s.split()
#print(s1)
l1=[]
l=len(s1)-1
#print("length :", l)
while(l>=0):
    l1.append(s1[l])
    l-=1
    output=" ".join(l1)
print(l1)
print(output)
```

```
['easy', 'very', 'is', 'python']
easy very is python
```

In [22]:
```
s=input(" ")
s1=s.split()
#print(s1)
l1=[]
l=0
l=len(s1)-1
while(l>=1):
    l1.append(s1[l][::-1])
    l-=1
    output=" ".join(l1)
print(l1)
print(output)
```

```
['nohtyP', 'si', 'yrev', 'ysae']
nohtyP si yrev ysae
```

In [12]:
```
evensum=0
oddsum=0
el=[]
ol=[]
n=int(input("enter a range: "))
for i in range(0,n):
    if(i%2==0):
        el.append(i)
    else:
        ol.append(i)
print("Even numbers list: ",el)
print("Odd numbers list: ",ol)
for m in el:
    evensum=evensum+m
for n in ol:
    oddsum=oddsum+n
print(evensum)
print(oddsum)
```

```
Even numbers list:  [0, 2, 4, 6, 8]
Odd numbers list:  [1, 3, 5, 7, 9]
20
25
```

In [13]:
```
#swapping first and last elements
ls=[10,20,30,40,50]
temp=ls[0]
ls[0]=ls[len(ls)-1]
ls[len(ls)-1]= temp
print(ls)
```

```
[50, 20, 30, 40, 10]
```

In [14]:
```
#find the max number in list(m-1)
l=[6,4,7,3,9,0]
greater=max(l)
print(greater)
```

```
9
```

In [15]:
```
l=[6,4,7,3,9,0]
l.sort()
print(l)
print(l[-1])
#or
print(l[len(l)-1])
```

```
[0, 3, 4, 6, 7, 9]
9
9
```

In [16]:
```
# find second largest number in the list
l=[6,4,7,3,9,0,64,97,111]
l.sort()
print(l)
print(l[-2])
#or
print(l[len(l)-2])
```

```
[0, 3, 4, 6, 7, 9, 64, 97, 111]
97
97
```

In [17]:
```
#python program to print largest even and largest odd number in list:
l=[6,4,7,3,9,0,64,76,10,97,111]
even_list=[]
odd_list=[]
for i in l:
    if(i%2==0):
        even_list.append(i)
    else:
        odd_list.append(i)
print(even_list)
print(odd_list)
print(max(even_list))
print(max(odd_list))
```

```
[6, 4, 0, 64, 76, 10]
[7, 3, 9, 97, 111]
76
111
```

In [18]:
```
#sum of the negative numbers, sum of positive even_numbers and sum of positive odd_numbers in given list.
l=[-2,-9,-4,7,6,0,2,-6,9,8]
positive_list=[]
negative_list=[]
n_sum=0
es=[]
os=[]
for i in l:
    if(i>=0):
        positive_list.append(i)
    else:
        negative_list.append(i)
print("p_l",positive_list)
print("n_l",negative_list)
for i in negative_list:
    n_sum=n_sum+i
print("negative sum",n_sum)
for i in positive_list:
    if(i%2==0):
        el.append(i)
    else:
        ol.append(i)
print(el)
print(ol)
es=0
os=0
for i in el:
    es=es+i
print("even sum",es)
for i in ol:
    os=os+i
print("odd sum",os)
```

```
p_l [7, 6, 0, 2, 9, 8]
n_l [-2, -9, -4, -6]
negative sum -21
[6, 0, 2, 8]
[7, 9]
even sum 24
odd sum 16
```

In [19]:
```
#WAP to count occurence of an element in a list.
l=[9,0,1,0,1,7,1,5,1,3]
count=0
n=int(input("enter a count number:"))
for i in l:
    if(i==n):
        count=count+1
    else:
        pass
print(count)
```

```
1
```

In [25]:
```
l1=[1,2,3,4,5,6]
l2=[2,4,6,8,7,9]
l=l1+l2 #method-1
print(l)
#or
l1.extend(l2) #method-2
print(l1)
```

```
[1, 2, 3, 4, 5, 6, 2, 4, 6, 8, 7, 9]
[1, 2, 3, 4, 5, 6, 2, 4, 6, 8, 7, 9]
```

In [3]:
```
Mylist=["Python", "day",3]
Myls["class"]
Mylist.extend(myl)
print(Mylist)
Mylist.extend('Class')
print(Mylist)
```

```
['Python', 'day', 3, 'class']
['Python', 'day', 3, 'class', 'C', 'l', 'a', 's', 's']
```

In [28]:
```
# python program to generate random numbers from 1 to 20 and append them to the list.
import random
l=[]
for i in range(0,20):
    #l.append(random.randint(0,80))
    l.append(random.randrange(1,100))
print(l)
```

```
[92, 41, 19, 44, 63, 39, 4, 9, 24, 35, 44, 91, 64, 30, 78, 20, 39, 69, 62, 68]
```

In [39]:
```
#create a list with mixed type of elements.
l=[1,"c",4,5.6,"z",9,"a",0.4]
intlist=[]
strlist=[]
for i in l:
    if(type(i)==int):
        intlist.append(i)
    if(type(i)==str):
        strlist.append(i)
print(intlist)
print(strlist)
```

```
[1, 4, 9, 0, 4]
['c', 'z', 'a']
```

In [17]:
```
#WAP to remove punctuations from a string
punctuations='''!()-{}[];:'"\,<>./?@#$%^&*_~'''
string_1=input("enter a string: ")
no_punct =""
for char in string_1:
    if char not in punctuations:
        no_punct=no_punct+char
print(no_punct)
```

```
hjdjfd
```

In [ ]:
```
#check list is empty or not
#create a new list with the sequare of each element in the original list
#remove all occurences of a specific elements from the list
#check list is pallindrome or not #[::-1]
#calculate the product of elements in the list

#WAP to check leap year
#wap to find to find the factorial of a number
#WAP to check amstrong number  (1^3+5^3+3^3=153)
```

In [1]:
```
#access the two elements using single for loop
t=[(1, "Amit"),(2, "Divya"),(3, "Sameer")]
print(type(t))
for i,j in t:
    print(i,j)
```

```
<class 'list'>
1 Amit
```

```
2 Divya
3 Sameer
```

In [ ]: