Mutable Operations of List

1. append()
2. insert()
3. remove()
4. clear()
5. pop()
6. sort()
7. del keyword
8. reverse()
9. replace/update
10. extend()

reverse()

This method is used to reverse the list element in place.

```
>>> list1=[10,20,30,40,50,60,70,80,90]
>>> print(list1)
[10, 20, 30, 40, 50, 60, 70, 80, 90]
>>> list1.reverse()
>>> print(list1)
[90, 80, 70, 60, 50, 40, 30, 20, 10]
>>> list2=list1[::-1]
>>> print(list2)
[10, 20, 30, 40, 50, 60, 70, 80, 90]
>>> print(list1)
[90, 80, 70, 60, 50, 40, 30, 20, 10]
```

list conversion functions or type conversion

1. **list() : Create empty List**
2. **list(iterable) : Create List using existing iterable or iterator**

```
>>> list1=list()
```

```
>>> print(list1)
[]
>>> list1=list(range(1,11))
>>> print(list1)
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
>>> list2=list(range(10,0,-1))
>>> print(list2)
[10, 9, 8, 7, 6, 5, 4, 3, 2, 1]
>>> list3=list("PYTHON")
>>> print(list3)
['P', 'Y', 'T', 'H', 'O', 'N']
>>> list4=list([10,20,30,40,50])
>>> print(list4)
[10, 20, 30, 40, 50]
```

https://www.hackerrank.com/challenges/python-lists/problem?isFullScreen=true

```
N=int(input())
list1=[]
for i in range(N):
    cmd=input().split()
    if cmd[0]=="insert":
        list1.insert(int(cmd[1]),int(cmd[2]))
    elif cmd[0]=="append":
        list1.append(int(cmd[1]))
    elif cmd[0]=="remove":
        list1.remove(int(cmd[1]))
    elif cmd[0]=="sort":
        list1.sort()
    elif cmd[0]=="reverse":
        list1.reverse()
```

```
    elif cmd[0]=="print":
        print(list1)
    elif cmd[0]=="pop":
        list1.pop()
```

Example:

Write a program to read 10 numbers from user, if the number is odd, then add that number to list

```
list1=[]
for i in range(10):
    value=int(input("Enter any number "))
    if value%2!=0:
        list1.append(value)


print(list1)
```

Output:

```
Enter any number 1
Enter any number 2
Enter any number 3
Enter any number 4
Enter any number 5
Enter any number 6
Enter any number 7
Enter any number 8
Enter any number 9
Enter any number 10
[1, 3, 5, 7, 9]
```

Example:

```
# Write a program to input n number into list and find maximum
value without using any
# inbuilt function

n=int(input("enter value of n"))
list1=[]
for i in range(n):
    value=int(input("enter any value "))
    list1.append(value)

max_value=0
for value in list1:
    if value>max_value:
        max_value=value

print(f'List of values {list1}')
print(f'Maximum value {max_value}')
```

Output:

```
enter value of n5
enter any value 10
enter any value 20
enter any value 50
enter any value 40
enter any value 30
List of values [10, 20, 50, 40, 30]
Maximum value 50
```

extend(iterable)

The method extends or append more than one value from given iterable.

```
>>> list1=[10,20,30]
>>> print(list1)
[10, 20, 30]
>>> list2=[40,50,60]
>>> print(list2)
[40, 50, 60]
>>> list1.extend(list2)
>>> print(list1)
[10, 20, 30, 40, 50, 60]
>>> list1.extend(range(70,110,10))
>>> print(list1)
[10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
>>> list1.extend("PYTHON")
>>> print(list1)
[10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 'P', 'Y', 'T', 'H', 'O', 'N']
>>>
```

Example:

```
# Write a program to input n numbers into list and remove -ve
numbers

n=int(input("Enter the value of n"))
list1=[]
for i in range(n):
    value=int(input("Enter value "))
    list1.append(value)

print(f'Before deleting -ve numbers {list1}')
i=0
while i<n:
    if list1[i]<0:
        del list1[i]
```

```
        n=n-1
        continue
    i=i+1

print(f'After deletig -ve numbers {list1}')
```

Output:

```
Enter the value of n5
Enter value 1
Enter value 2
Enter value -3
Enter value 4
Enter value -5
Before deleting -ve numbers [1, 2, -3, 4, -5]
After deletig -ve numbers [1, 2, 4]
```

Example:

```
# Write a program to input a number and count the occurrence of
that number in the given list


B=[34,21,3,12,34,56,76,5,4,21,12,34]
print(f'List is {B}')
num=int(input("enter number "))
c=B.count(num)
print(f'List {B}')
print(f'Count is {c}')
```

Output:

```
List is [34, 21, 3, 12, 34, 56, 76, 5, 4, 21, 12, 34]
enter number 90
List [34, 21, 3, 12, 34, 56, 76, 5, 4, 21, 12, 34]
```

Count is 0

index(value)
This function returns index of input value.

```
>>> list1=[10,20,30,40,50]
>>> list1.index(10)
0
>>> list1.index(40)
3
>>> list1.index(60)
Traceback (most recent call last):
  File "<pyshell#31>", line 1, in <module>
    list1.index(60)
ValueError: 60 is not in list
```