

Example:

write a program to input n values inside list

#without comprehension

```
n=int(input("enter the value of n"))
```

```
list1=[]
```

```
for i in range(n):
```

```
    value=int(input("enter any value"))
```

```
    list1.append(value)
```

```
print(list1)
```

with comprehension

```
list1=[int(input("enter any value")) for i in range(n)]
```

```
print(list1)
```

Output:

enter the value of n5

enter any value10

enter any value20

enter any value30

enter any value40

enter any value50

[10, 20, 30, 40, 50]

enter any value10

enter any value20

enter any value30

enter any value40

enter any value50

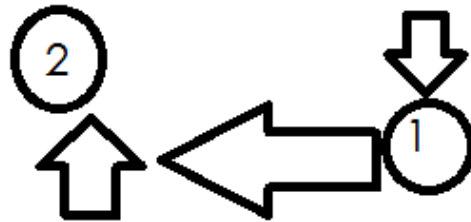
[10, 20, 30, 40, 50]

Syntax: [expression for variable in iterable if test]

Syntax1: [expression for variable in iterable]

Syntax2: [expression for variable in iterable if test]

Syntax1: [expression for variable in iterable]



for loop each time read value generated by iterable and evaluate expression and store result of expression inside list.

Example:

write a program to read 2x2 matrix and display

without comprehension

```
matrix=[]  
for i in range(2):  
    row=[]  
    for j in range(2):  
        value=int(input("enter any value"))  
        row.append(value)  
    matrix.append(row)
```

```
print(matrix)
```

with comprehension

```
matrix=[[int(input("enter any value")) for j in range(2)] for i in range(2)]  
print(matrix)
```

Output:

```
enter any value1
enter any value2
enter any value3
enter any value4
[[1, 2], [3, 4]]
enter any value1
enter any value2
enter any value3
enter any value4
[[1, 2], [3, 4]]
```

Example:

```
# write a program to add two matrices
```

```
# comprehension
print("enter the elements of matrix1")
matrix1=[[int(input("enter any value")) for j in range(2)] for i in range(2)]
print("enter the elements of matrix2")
matrix2=[[int(input("enter any value")) for j in range(2)] for i in range(2)]
```

```
#without comprehension
matrix3=[]
for i in range(2): # 0 1
    row=[]
    for j in range(2): # 0 1
        row.append(matrix1[i][j]+matrix2[i][j])
    matrix3.append(row)
print(matrix3)
```

```
# comprehension
matrix3=[[matrix1[i][j]+matrix2[i][j] for j in range(2)] for i in range(2)]
print(matrix3)
```

Output:

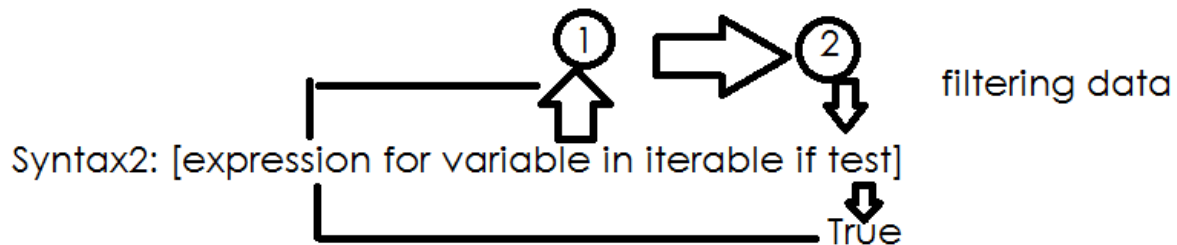
```
enter the elements of matrix1
enter any value1
enter any value2
```

enter any value3
enter any value4
enter the elements of matrix2
enter any value5
enter any value6
enter any value7
enter any value8
[[6, 8], [10, 12]]
[[6, 8], [10, 12]]

Syntax: [expression for variable in iterable if test]

Syntax1: [expression for variable in iterable]

Syntax2: [expression for variable in iterable if test]



Example:

```
numList=[1,6,8,4,6,3,2,12,11,67,45,67,98,45,34,42,50]
```

```
print(numList)
```

```
# without comprehension
```

```
evenList=[]
```

```
for value in numList:
```

```
    if value%2==0:
```

```
        evenList.append(value)
```

```
print(evenList)
```

```
# using comprehension
```

```
evenList=[value for value in numList if value%2==0]
```

```
oddList=[value for value in numList if value%2!=0]
```

```
print(evenList)
print(oddList)
```

Output:

```
[1, 6, 8, 4, 6, 3, 2, 12, 11, 67, 45, 67, 98, 45, 34, 42, 50]
[6, 8, 4, 6, 2, 12, 98, 34, 42, 50]
[6, 8, 4, 6, 2, 12, 98, 34, 42, 50]
[1, 3, 11, 67, 45, 67, 45]
```

Example:

```
studentList=[['naresh','A'],
              ['suresh','B'],
              ['kishore','A'],
              ['ramesh','C'],
              ['rajesh','B']]
```

```
studentListA=[stud for stud in studentList if stud[1]=='A']
studentListB=[stud for stud in studentList if stud[1]=='B']
studentListC=[stud for stud in studentList if stud[1]=='C']
```

```
print(studentList)
print(studentListA)
print(studentListB)
print(studentListC)
```

Output:

```
[['naresh', 'A'], ['suresh', 'B'], ['kishore', 'A'], ['ramesh', 'C'], ['rajesh', 'B']]
[['naresh', 'A'], ['kishore', 'A']]
[['suresh', 'B'], ['rajesh', 'B']]
[['ramesh', 'C']]
```

Example:

```
namesList=['naresh','suresh','raman','kishore','kiran','ramesh']
```

```
namesList1=[name for name in namesList if name[0]=='k']
namesList2=[name for name in namesList if name[0]=='r' and name[-1]=='h']
print(namesList)
print(namesList1)
print(namesList2)
```

Output:

```
['naresh', 'suresh', 'raman', 'kishore', 'kiran', 'ramesh']  
['kishore', 'kiran']  
['ramesh']
```

create list with alphabets from A-Z.

```
list1=[chr(value) for value in range(65,91)]
```

create list with alphabets from a-z

```
list2=[chr(value) for value in range(97,123)]
```

Operators and functions belongs to list

1. max()
2. min()
3. sorted()
4. sum()
5. len()
6. any()
7. all()

