Example:

```
# Write a program to read 2x2 matrix and display

matrix=[]

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

print(matrix)
```

Output:

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

Example:

```
# Write a program to read M students N subject marks
# and calculate total,avg

m=int(input("Enter value of M"))
n=int(input("Enter value of N"))
marks=[]

for i in range(m):
    stud=[]
    for j in range(n):
        s=int(input("Enter Marks "))
        stud.append(s)
    marks.append(stud)

for i in range(m):
    tot=sum(marks[i])
    avg=tot/n
    result="pass"
```

```
    for s in marks[i]:
        if s<40:
            result="fail"
            break
    print(f'{marks[i]}\t{tot}\t{avg:.2f}\t{result}')
```

Output:

```
Enter value of M2
Enter value of N3
Enter Marks 60
Enter Marks 70
Enter Marks 80
Enter Marks 30
Enter Marks 99
Enter Marks 98
[60, 70, 80] 210    70.00 pass
[30, 99, 98] 227    75.67 fail
```

Example:

```
# Write a program to add two matrices

matrix1=[]
matrix2=[]

print("Input elements of matrix1")
for i in range(2):
    row=[]
    for j in range(2):
        value=int(input("Enter value"))
        row.append(value)
    matrix1.append(row)

print("Input elements of matrix2")
for i in range(2):
    row=[]
    for j in range(2):
        value=int(input("Enter value"))
        row.append(value)
    matrix2.append(row)
```

```
print(matrix1)
print(matrix2)
matrix3=[]
for i in range(2):
    row=[]
    for j in range(2):
        row.append(matrix1[i][j]+matrix2[i][j])

    matrix3.append(row)

print(matrix3)
```

Output:

```
Input elements of matrix1
Enter value1
Enter value2
Enter value3
Enter value4
Input elements of matrix2
Enter value5
Enter value6
Enter value7
Enter value8
[[1, 2], [3, 4]]
[[5, 6], [7, 8]]
[[6, 8], [10, 12]]
```

https://www.hackerrank.com/challenges/nested-list/problem?isFullScreen=false

```
n=int(input())
records=[]
for i in range(n):
    name=input()
    grade=float(input())
    records.append([name,grade])

grades=[]
```

```
for i in range(n):
   grades.append(records[i][1])

grades.sort()
fm=min(grades)
c=grades.count(fm)
sm=grades[c]
names=[]
for i in range(n):
   if records[i][1]==sm:
      names.append(records[i][0])

names.sort()
for name in names:
   print(name)
```

List Comprehensions

For constructing a list, a set or a dictionary Python provides special syntax called “displays”, each of them in two flavors:

- either the container contents are listed explicitly, or [10,20,30,40,50],[“naresh”,”suersh”,”ramesh”]

- they are computed via a set of looping and filtering instructions, called a *comprehension*.

Syntax1:[value/expression for variable in iterable]
Syntax2:[value/expression for variable in iterable if test]

```
>>> list1=[0 for i in range(100)]
>>> print(list1)
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
>>> list2=[input() for i in range(5)]
10
```

```
20
30
40
50
>>> print(list2)
['10', '20', '30', '40', '50']
```

create a list with sqr's all integers from 1 to 100

without comprehension

```
list1=[]

for num in range(1,101):
    list1.append(num**2)
```

```
list1=[num**2 for num in range(1,101)]
```