In [14]:

```
str1 = 'abc'
str2 = 'abcda'
```

In [4]:

```
type(str1)
type(str2)
```

Out[4]:

```
str
```

In [7]:

```
str1 is str2
```

Out[7]:

```
False
```

In [11]:

```
id(str1[0])
```

Out[11]:

```
140386509654256
```

In [16]:

```
id(str2[4])
```

Out[16]:

```
140386509654256
```

In [18]:

```
str1[0]='b'
```

```
---------------------------------------------------------------------------
-----
TypeError                                 Traceback (most recent call
last)
<ipython-input-18-9d6e7e18ccc8> in <module>
----> 1 str1[0]='b'

TypeError: 'str' object does not support item assignment
```

In [34]:

```
list1 = ['a','b','c']
list2 = ['a','b','c','d','7',7]
```

In [25]:

```
list1 in list2

list1[0]='r'
list1
```

Out[25]:

```
['r', 'b', 'c']
```

In [27]:

```
id(list1)
```

Out[27]:

```
140386786786368
```

In [29]:

```
id(list2)
```

Out[29]:

```
140386526043776
```

In [33]:

```
list1[1] in list2[1]
```

Out[33]:

```
True
```

In [37]:

```
list1 + list2 + [2.4,7.8]
```

Out[37]:

```
['a', 'b', 'c', 'a', 'b', 'c', 'd', '7', 7, 2.4, 7.8]
```

In [55]:

```python
#while

# i = 0
# while(i<len(list1)):
#     print(list1[i],end = ' ')
#     i=i+1

#for
list1=['a','b','c','d','e']
for i in range(1,3):
    print(list1[i],end = ' ')

#for
print()
print("Other Approach")
for i in list1[1:5:2]:
    print(i,end=' ')
```

```
b c
Other Approach
b d
```

In [59]:

```python
for i,j in enumerate(list1[3:5]):
    print(j,i)
```

```
d 0
e 1
```

In [89]:

```python
list1 = ['a','b','c','d','e']
list2 = ['z','o'] + list1  #insert at beginning
print(list2)
list1.insert(2,'f')   #insert at index 2
print(list1)
list1.append('z')     #insert at end

list1.remove('z')     #remove value
list1.sort()
list1.reverse()
list1[:]=[]

```

```
['z', 'o', 'a', 'b', 'c', 'd', 'e']
['a', 'b', 'f', 'c', 'd', 'e']
```

list1 = [1,2,3]

list1.insert(2,44) list1.append(33) list1.remove(2) del list1[:]

e_list = [] n=int(input()) for i in range(n): val = int(input()) e_list.append(val) print(e_list)

In [104]:

```
list1 = [1,2,3]
list2 = [22,11]

list1.insert(0,list2)
list1
```

Out[104]:

```
[[22, 11], 1, 2, 3]
```

In [112]:

```
#insert element at beginning of list

# list1 =[1,2,3]
# list2 = [22,11]
# list1[:0] = list2
# list1
# # list1[-1]

#insert element at specific index of list

#insert(index, value)

idx=int(input())
list1 = ['a','b','c']
val = input()
list2 = list1[:idx]+[val]+list1[idx:]
list2

#remove(val)
list1 = ['a','b','c']
val = input()

```

```
2
d
```

Out[112]:

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

In [232]:

```

list1 = ['a','b','c']
list1.insert(3,'f')
print(list1)
```

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

In [ ]:

```

```

In [233]:

```
#Apppend


list1 = ['a','b','c']

list2 = ['p','q','r']

list1[:0] = list2
#list1 = list2
list1


```

Out[233]:

```
['p', 'q', 'r', 'a', 'b', 'c']
```

In [257]:

```
list1 = ['a','b','c']
list2 = ['p']
list1[5:6] = list2
list1
```

Out[257]:

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

In [252]:

```
#add list at beginning

list1 = ['a','b','c']
list2 = ['p']
list1[:0]=list2
print(list1)
```

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

In [241]:

```
#add list at beginning

list1 = ['a','b','c']
list2 = ['p']
list1[1:1] = list2
print(list1)


# # # insert at end

print(list1+list2)


#insert at index
mylist=['a','b','c']
index = int(input("index= "))
val = input("value= ")
# for i in range(len(list1)):
# #    # print(i)
#     if i == index:
mylist=mylist[:index]+[val]+mylist[index:]
print(mylist)

# # for idx, i in enumerate(mylist):
# #     if idx == index:
# #         mylist = mylist[:idx] + [val] + mylist[idx:]
# #print(mylist)

list[:]
```

```
['p', 'a', 'b', 'c']
['p', 'a', 'b', 'c', 'p']
index= 2
value= 33
['a', 'b', '33', 'c']
```

In [177]:

```
mylist=['a','b','c']
index = int(input("index= "))
val = int(input("value= "))
for idx, val in enumerate(mylist):
    if idx == index:
        mylist = mylist[:idx] + [val] + mylist[idx:]

print(mylist)
```

```
index= 2
value= 33
['a', 'b', 'c', 'c']
```

In [122]:

```
#concatenate


list1 = ['a','b','c']

list2 = ['p','q','r']

list1 + list2

```

Out[122]:

```
['a', 'b', 'c', 'p', 'q', 'r']
```

In [185]:

```
#remove value

list1 = ['a','b','c']

val = input("Enter value from list to be deleted..")

# Printing original list
print ("original list : ",list1)

list2 = []
for i in list1:
    if i!=val:
        list2.append(i)
        #list2 = list2 + [i]
print ("List after element removal is : ",list2)

```

```
Enter value from list to be deleted..c
original list :  ['a', 'b', 'c']
List after element removal is :  ['a', 'b']
```

In [197]:

```
#remove value at index

list1=['a','b','c','d','e','f']
index = int(input("index= "))

for i in range(len(list1)):
    if i == index:
        list1=list1[:i]+list1[i+1:]
print(list1)
```

```
index= 0
['b', 'c', 'd', 'e', 'f']
```

In [260]:

```python
#Reverse a list

list1=['a','b','c','d','e','f']
list1.reverse()
#print(list1[::-1])
print(list1)
```

```
['f', 'e', 'd', 'c', 'b', 'a']
```

In [80]:

```python
#Sorting

e_list = []

#Take input from user list elements
n = int(input("Please enter the Total Number of List Elements: "))
for i in range(n):
    value = int(input())
    e_list.append(value)
print(e_list)
# #sorting in ascending order
# for i in range (n):
#     for j in range(i + 1, n):
#         if(e_list[i] > e_list[j]):
#             temp = e_list[i]
#             e_list[i] = e_list[j]
#             e_list[j] = temp

# print("Element After Sorting List in Ascending Order is : ", e_list)
```

```
Please enter the Total Number of List Elements: 4
1
2
3
4
[1, 2, 3, 4]
```

In [265]:

```python
cities = ['Mumbai','Mangalore','Delhi','Manali','Pune','Surat','Madras']

m_cities = [i for i in cities if 'M' in i]
print(m_cities)
```

```
['Mumbai', 'Mangalore', 'Manali', 'Madras']
```

In [220]:

```
#List Comprehension
#List comprehension offers a shorter syntax when you want to create a new list bas


cities = ['Mumbai','Mangalore','Delhi','Manali','Pune','Surat','Madras']

m_cities = []

for i in cities:
    if 'M' in i:
        m_cities.append(i)

print(m_cities)


#using list comprehension
#newlist = [expression for item in iterable if condition == True]
#The return value is a new list, leaving the old list unchanged.

newlist = [i for i in cities if "M" in i]
print(newlist)

#condition is like a filter that only accepts the items that evaluate to True.
newlist = [i for i in cities if i != "Mumbai"]
print(newlist)

#The condition is optional and can be omitted:

newlist = [i for i in cities]
print(newlist)


#The iterable can be any iterable object, like a list, tuple, set etc.

newlist = [i for i in range(10)]
print(newlist)

#Accept only numbers lower than 5:

newlist = [i for i in range(10) if i < 5]
print(newlist)

# Expression
# The expression is the current item in the iteration,
#but it is also the outcome, which you can manipulate before it ends up like a lis

newlist = [i.upper() for i in cities]
print(newlist)

#Set all values in the new list to 'hello':

newlist = ['hello' for i in cities]
print(newlist)

#The expression can also contain conditions,
#not like a filter, but as a way to manipulate the outcome:

newlist = [i if i != "Pune" else "Mumbai" for i in cities]
```

```
print(newlist)
```

```
['Mumbai', 'Mangalore', 'Manali', 'Madras']
['Mumbai', 'Mangalore', 'Manali', 'Madras']
['Mangalore', 'Delhi', 'Manali', 'Pune', 'Surat', 'Madras']
['Mumbai', 'Mangalore', 'Delhi', 'Manali', 'Pune', 'Surat', 'Madras']
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
[0, 1, 2, 3, 4]
['MUMBAI', 'MANGALORE', 'DELHI', 'MANALI', 'PUNE', 'SURAT', 'MADRAS']
['hello', 'hello', 'hello', 'hello', 'hello', 'hello', 'hello']
['Mumbai', 'Mangalore', 'Delhi', 'Manali', 'Mumbai', 'Surat', 'Madra
s']
```

In [1]:

```python
# lis = ["Even number" if i % 2 == 0
#         else "Odd number" for i in range(8)]
# print(lis)

lis = []
for i in range(8):
    if i%2 == 0:
        lis.append("Even Number")
    else:
        lis.append("Odd Number")

print(lis)
```

```
['Even Number', 'Odd Number', 'Even Number', 'Odd Number', 'Even Numbe
r', 'Odd Number', 'Even Number', 'Odd Number']
```

In [22]:

```python
num_list = [1,2,3,4,5,6]
#print(num_list)
num_list[1] = 100
#num_list.insert(1,2)
print("Original List",num_list)
# del num_list[:]
# print(num_list)
# num_list.append(3)
num_list[2] = [11,22,33]
print("Nested list-",num_list[2][2])

# del num_list
# print(num_list)
```

```
Original List [1, 100, 3, 4, 5, 6]
Nested list- 33
```

In [26]:

```
list1 = [1,2,3]
list2 = [3,4,5]

list3 = []
list3.insert(0,list1)
list3.insert(1,list2)

list3[1][2]
```

Out[26]:

```
5
```

In [53]:

```
list1 = []

list2 = list1
len(list2)
print(list1)
list1 + list2

sorted(list1)

```

```
[]
```

Out[53]:

```
[]
```

In [73]:

```
list1 =[1,2,3]
list2 = list1
list1.remove(2)
#print(list1.insert(2,'f'))
list1.append(5)
print(list1.append(5))
list1
```

```
None
```

Out[73]:

```
[1, 3, 5, 5]
```

In [78]:

```
list1 = []
list1.append([4])
list1[0][0]
```

Out[78]:

```
4
```

In [81]:

```
e_list = []
n = int(input("Enter number of elements in list"))

for i in range(n):
    val = int(input())
    e_list.append(val)

print(e_list)
```

```
Enter number of elements in list2
1
2
[1, 2]
```

In [193]:

```
# Python code implementation for 1D matrix.

# e_list = []
# n = int(input("Enter number of elements in list"))

# for i in range(n):
#     val = int(input())
#     e_list.append(val)

# print(e_list)


# Python code implementation for 2D two-dimensional matrix using for loop.

n_rows = int(input("Enter number of rows:"))
n_col = int(input("Enter number of columns:"))

#initialize empty matrix
matrix = []

for i in range(n_rows):
    matrix1 = []
    for j in range(n_col):
        val = int(input())
        matrix1.append(val)
    matrix.append(matrix1)

print(matrix)

#Print like matrix
for i in range(n_rows):
    for j in range(n_col):
        print(matrix[i][j],end = ' ')
    print()
```

```
Enter number of rows:2
Enter number of columns:3
1
2
3
4
5
6
[[1, 2, 3], [4, 5, 6]]
1 2 3 
4 5 6 
```

In [116]:

```
a=10
b=20

a,b = b,a


```

In [136]:

```
list1 = [1,2,3]
# idx = int(input())
# for i in range(len(list1)):
#     print(i)

for idx,i in enumerate(list1):
    print(idx,i)

# list2 = list1[:idx]+list1[(idx+1) : ]
# print(list2)
```

```
0 1
1 2
2 3
```

In [156]:

```
list1 = [1,2,3,2,4]

# for i in list1:
#     if(i == 2):
#         list1.remove(2)


for idx,i in enumerate(list1):
    print(idx,i)
    if (idx in range(2,4)):
        list1.remove(i)


list1
```

```
0 1
1 2
2 3
3 4
```

Out[156]:

```
[1, 2, 2]
```

In [162]:

```
list1 = [1,2,3,4,5,6]
for i,element in enumerate(list1):
    if i % 2 == 0:
        pass
    else:
        list1.remove(element)
list1
```

Out[162]:

```
[1, 3, 4, 6]
```

In [164]:

```
del list1[2:4]
```

In [173]:

```
list1 = [1,2,3,4,5,6]
a = len(list1)
# print(a)
for i in range(len(list1)):
    print(i)
```

```
0
1
2
3
4
5
```

In [188]:

```
list1 = [1,2,3,4,5,6]

list2 = ['a','b']

list1.insert(2,list2)
print(list1)
list1[2][0]
```

```
[1, 2, ['a', 'b'], 3, 4, 5, 6]
```

Out[188]:

```
'a'
```

In [180]:

```
a,b = b,a
```

In [194]:

```
list1 = [[1,2,3],[4,5,6]]
list1[0][1]


```

Out[194]:

```
2
```

In [201]:

```
list1 = [1,2,3,4,5,6]

# list1.remove(2)

# list1
del list1

list1

```

```
---------------------------------------------------------------------------
-----
NameError                                 Traceback (most recent call
last)
<ipython-input-201-36e025ea0ad7> in <module>
      6 del list1
      7
----> 8 list1

NameError: name 'list1' is not defined
```

In [206]:

```
list1 = [1,2,3]

del list1[:]

list1

```

Out[206]:

```
[]
```