

Q1) What is a tuple? What is the difference between list and tuple?

Tuple: Tuple is collection of heterogenous elements.

it is immutable. and it is indexed and ordered allows duplicate values.

elements written in parenthesis ()

Feature	List	Tuple
Mutability	Lists can be changed by adding or removing elements (mutable)	Tuples can't be changed by adding or removing elements (immutable)
Syntax	Lists can be defined using square brackets []	Tuples can be defined using parentheses ()
Performance	Lists are slower due to dynamic size and mutability	Tuples are faster due to static size and immutability
Methods	Lists has more built-in methods (e.g., append, remove)	Tuples has fewer built-in methods (e.g., count, index)
Use Cases	Suitable for collections of items that may change	Ideal for fixed collections of items
Memory Usage	Lists consume more memory due to flexibility	Tuples consume less memory due to immutability

Q2) Create a heterogenous tuple and perform all type of slicing in that tuple?

```
t=(0,1,23,1.3,True,"lava","loo",4+1j)
print(t[2])
print(t[-2])
print(t[2:5])
print(t[-5:-2])
print(t[:])
print(t[::-1])
print(t[2:5:2])
print(t[-5:-2:2])
```

```
loo
(23, 1.3, True)
(1.3, True, 'lava')
(0, 1, 23, 1.3, True, 'lava', 'loo', (4+1j))
((4+1j), 'loo', 'lava', True, 1.3, 23, 1, 0)
(23, True)
(1.3, 'lava')
```

```
...Program finished with exit code 0
Press ENTER to exit console.
```

Q3) convert this data in to tuple

t=(2,)

```
t=(2,)
print(type(t),t)
```

```
s 'tuple'> (2,)
```

Q4) l=[1,2,3,4,5,6,1,8,8,9]

find the index of second occurred element : 1 from l, write your code?

```
L=[1,2,3,4,5,6,1,8,8,9]
print(L.index(1,2))
```

```
6
```

Q5)

1-merge two lists of first 10 even no. and odd nos.

```
main.py [1, 3, 5, 7, 9, 2, 4, 6, 8, 10]
1 L1=[1,3,5,7,9]
2 L2=[2,4,6,8,10]
3 L3=L1+L2
4 print(L3)
5
6 ...Program finished with exit code 0
Press ENTER to exit console.
```

2-create a list of even nos. till 7, 4 times

```
main.py [1, 3, 5, 7, 1, 3, 5, 7, 1, 3, 5, 7, 1, 3, 5, 7]
1 L1=[1,3,5,7]
2
3 L3=L1*4
4 print(L3)
5
6 ...Program finished with exit code 0
Press ENTER to exit console.
```

3-Explain difference between

pop and remove,

```
8
9 list = [10, 20, 9.5, "lava", True, 40, 80]
10
11 p=list.pop()#1 it will remove last element
12 print(p)      #2 it also returns the popped value
13 list.pop(2)#3 it takes index as argument
14
15 list.remove('lava')# 1 it takes value of list as argument
16               # 2 and remove 1st matching value
17 # list.remove()# 3 it will raise TypeError
18 print(list)
19
20
```

input

```
80
[10, 20, True, 40]
```

4-append and extend,

```
8
9 list = [10, 20, 9.5, "lava", True, 40, 80]
10
11 # -----append()-----
12 #it add one or iterable at end of list
13 # it adds an entire iterable as a single element on one index
14 # list length is increased by 1
15 list.append([8,9])
16 print(list,len(list))
17
18 # -----extend()-----
19 # it add one or iterable at end of list
20 # it adds an entire iterable on different index
21 # list length is increased by number of elements
22 list.extend([10,20,40,67])
23 print(list,len(list))
24
25
26
```

input

```
[10, 20, 9.5, 'lava', True, 40, 80, [8, 9]] 8
[10, 20, 9.5, 'lava', True, 40, 80, [8, 9], 10, 20, 40, 67] 12
```

5-insert and update,

```
main.py
1 L1=[1,3,5,7]
2 L1.insert(2,80)#it will insert the
3 # element at given position without deleting
4 # and it shifts remaining elements to next index
5 print(L1)
6 L1[1]=90
7 #it delete the element at that position
8 # and insert that element
9 print(L1)
10
11
12
```

```
[1, 3, 80, 5, 7]
[1, 90, 80, 5, 7]
[1, (6, 8), 80, 5, 7]

...Program finished with exit code
0
Press ENTER to exit console.
```

6-del and clear

```
8
9 list = [10, 20, 9.5, "lava", True, 40, 80]
10
11 # -----del-----
12 #delete is keyword
13 del list[2] # it can delete one element or more
14 # del list # 2 it deletes entire list with structure of list
15 # it doesn't return deleted value
16 print(list)
17 #-----clear-----
18 # clear is method
19 list.clear() # it delete entire elements of list
20 #structure remain same
21 print(list)
22
23
24
```

```
input
[10, 20, 'lava', True, 40, 80]
[]
```