

## DATA STRUCTURES

creating list with same data type

```
a=[1,3,2,4,5,6,7]
print(a)

[1, 3, 2, 4, 5, 6, 7]
```

with different data type

```
b=[1,3.5,"hello"]
print(b)

[1, 3.5, 'hello']
```

## LIST OPERATIONS

Accessing items

```
print(a[0])
print(b[2])
print(a[3])

1
6
4
```

Modifying items

```
a[3]=99
a
b[2]="hey"
b

[1, 3.5, 'hey']
```

Append items

```
a.append(88)
a
b.append("world")
b

[1, 3.5, 'hey', 'world']
```

Removing items

```
a.remove(88)
a
[1, 3, 2, 5, 6, 7, 88]
b.remove("hey")
b
[1, 3.5, 'world']
```

removing items by index

```
a.pop(3)
a
[1, 3, 2, 6, 7, 88]
```

USING len(), sort() and reverse()

```
len(a)
6
len(b)
2
a.sort()
a
[1, 2, 3, 6, 7, 88]
a.reverse()
a
[88, 7, 6, 3, 2, 1]
```

TUPLE

Creating a tuple

```
a=(1,2,3,4,5,6,7,8,9,10)
print(a)
(1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
```

accessing a tuple

```
a[6]
7
```

## DICTIONARIES

### Creating a dictionary

```
m={"name":"Honey","age":19,"gender":"female"}  
m  
{'name': 'Honey', 'age': 19, 'gender': 'female'}
```

### Modifying a dictionary

```
m["age"]=18  
m  
{'name': 'Honey', 'age': 18, 'gender': 'female'}  
  
m["name"]="Megha"  
m  
{'name': 'Megha', 'age': 18, 'gender': 'female'}
```

### add to a dictionary

```
m["dance form"]="bharatanatyam"  
m  
{'name': 'Megha', 'age': 18, 'gender': 'female', 'dance form':  
'bharatanatyam'}
```

### removing from dictionary

```
del m["gender"]  
m  
{'name': 'Megha', 'age': 18, 'dance form': 'bharatanatyam'}
```

## SETS

### Creating a set

```
x={1,2,3,4,5}  
x  
{1, 2, 3, 4, 5}
```

### adding items to the set

```
x.add(18)  
x
```

```
{1, 2, 3, 4, 5, 18}
```

```
x.remove(1)
```

```
x
```

```
{2, 3, 4, 5, 18}
```

intersection , union , difference of set

```
set1={1,2,3,4,5}
```

```
set2={3,4,7,9,2}
```

```
set1 & set2
```

```
{2, 3, 4}
```

```
set1 | set2
```

```
{1, 2, 3, 4, 5, 7, 9}
```

```
set1 - set2
```

```
{1, 5}
```

Merging of 2 lists

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

```
b=[4,5,6]
```

```
merged_list=a+b
```

```
merged_list
```

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

Dictionary operation

```
m={'name': 'Megha', 'age': 18, 'dance form': 'bharatanatyam'}
```

```
print("name:",m["name"])
```

```
name: Megha
```

Frequency of elements in a list

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

```
frequency={}
```

```
for num in numbers:
```

```
    frequency[num]=frequency.get(num,0)+1
```

```
    print("frequency of elements:",frequency)
```

```
frequency of elements: {1: 1}
```

```
frequency of elements: {1: 1, 2: 1}
```

```
frequency of elements: {1: 1, 2: 2}
```

```

frequency of elements: {1: 1, 2: 2, 3: 1}
frequency of elements: {1: 1, 2: 2, 3: 2}
frequency of elements: {1: 1, 2: 2, 3: 3}
frequency of elements: {1: 1, 2: 2, 3: 3, 4: 1}
frequency of elements: {1: 1, 2: 2, 3: 3, 4: 2}
frequency of elements: {1: 1, 2: 2, 3: 3, 4: 3}
frequency of elements: {1: 1, 2: 2, 3: 3, 4: 4}

```

To find max and mini of list

```

honey=[2,4,6,8,10,12,14]
print("maximum:",max(honey))
print("minimum:",min(honey))

maximum: 14
minimum: 2

```

sort a list of tuples by the second element

```

tuple=[(1, 'apple'), (2, 'banana'), (3, 'cherry')]
sorted_tuple=sorted(tuple, key=lambda x:x[1])
print("sorted tuple:", sorted_tuple)

sorted tuple: [(1, 'apple'), (2, 'banana'), (3, 'cherry')]

```

Palindrome numbers

```

number=int(input("enter a number:"))
reverse_number=0
temp=number
while temp>0:
    digit=temp%10
    reverse_number=reverse_number*10+digit
    temp//=10
if number==reverse_number:
    print(f"{number} palindrome number")
else:
    print(f"{number} is not palindrome")

enter a number454
454 palindrome number

```

Palindrome 2

```

number=input("enter a number:")
if str(number)==str(number[::-1]):
    print(f"{number}", "is a palindrome")
else:
    print(f"{number}", 'is nat a palindrome')

```

```
enter a number:sos  
sos is a palindrome
```