LISTS

List Operations

Acessing Items

```
Numbers = [1,2,3,4,5]
Mixed = [1,"Hello", 3.14]
print(numbers[0]) #Output: 1
print(numbers[-1]) #Output: 5

1
5
```

Modifying Items

```
numbers[0] = 10
print(numbers)

[10, 2, 3, 4, 5]
```

Adding Items

`append()`

```
numbers.append(6)
numbers

[10, 2, 3, 4, 5, 6, 6]
```

`insert()`

```
numbers.insert(1,15)
numbers

[10, 15, 2, 3, 4, 5, 6, 6]
```

Removing Items

`remove()`

```
numbers.remove(2)
numbers

[10, 15, 3, 4, 5, 6, 6]
```

`pop()`

```
numbers.pop(2)
numbers
```

```
[10, 15, 4, 5, 6, 6]
```

`len()`

```
len(numbers)
numbers
```

```
[10, 15, 4, 5, 6, 6]
```

`sort()`

```
numbers.sort()
numbers
```

```
[4, 5, 6, 6, 10, 15]
```

`reverse()`

```
list.reverse(numbers)
numbers
```

```
[15, 10, 6, 6, 5, 4]
```

CREATING A TUPLE

```
Coordinates = (10,20,30)
Coordinates
```

```
(10, 20, 30)
```

Accessing Items in a Tuple

```
print(Coordinates[0])
```

```
10
```

CREATING THE DICTIONARY

```
STUDENT = {
    "NAME":"ALICE",
    "AGE":20,
    "GENDER":"MALE"
}
```

Acessing and Modifying Items

-Acessing:

```
print(STUDENT["NAME"])
```

```
ALICE
```

-Modifying:

```
STUDENT["AGE"] = 21
STUDENT
```

```
{'NAME': 'ALICE', 'AGE': 21, 'GENDER': 'MALE'}
```

Adding

```
STUDENT["GRADE"] = "A"
STUDENT
```

```
{'NAME': 'ALICE', 'AGE': 21, 'GENDER': 'MALE', 'GRADE': 'A'}
```

```
number = int(input("enter a number:"))
reverse_number = 0
temp = number

while temp > 0:
     digit = temp % 10
     reverse_number = reverse_number * 10 + digit
     temp = temp // 10
if number == reverse_number:
    print(f" {number} pali")
else:
    print(f" {number} not pali")
```

```
enter a number:50
 50 not pali
```

-Removing

```
del STUDENT["GENDER"]
STUDENT
```

```
{'NAME': 'ALICE', 'AGE': 21, 'GRADE': 'A'}
```

Iterating Through a Dictionary

```
for key, value in STUDENT.items():
  print(key, value)
```

```
NAME ALICE
AGE 21
GRADE A
```

SET

CREATING A SET

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

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

SET OPERATIONS

-Adding Items

```
numbers.add(6)
numbers

{1, 2, 3, 4, 5, 6}
```

-Removing Items

```
numbers.remove(2)
numbers

{1, 3, 4, 5, 6}
```

HANDS ON PRACTICE

1.Manipulating Lists

```
fruits = ["apple", "banana", "cherry"]
fruits.append("orange")
fruits.remove("banana")
print(fruits)

['apple', 'cherry', 'orange']

#creating a dictionary
book={
  "title":"python basics",
  "author":"john doe",
  "year":2021
}
print(book["title"])
book["year"]=2022
print(book)
```

```
python basics
{'title': 'python basics', 'author': 'john doe', 'year': 2022}

#working with sets
set1={1,2,3,4}
set2={3,4,5,6}
print("union:",set1|set2)
print("intersection:",set1 & set2)
print("difference:",set1 - set2)

union: {1, 2, 3, 4, 5, 6}
intersection: {3, 4}
difference: {1, 2}

#merge two lists
list1=[1,2,3]
list2=[4,5,6]
merged_list=list1+list2
print("merged_list:",merged_list)

merged_list: [1, 2, 3, 4, 5, 6]

#dictionary operations
student={"name":"john","age":21,"grade":85}
student["marks"]=90
print("updated marks:",student["marks"])

updated marks: 90

#find the maximum and minimum in a list
numbers=[10,20,30,40,50]
print("maximum:",max(numbers))
print("minimum:",min(numbers))

maximum: 50
minimum: 10

#count 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)

{1: 1, 2: 2, 3: 3, 4: 4}

#sort a list of tuples by the second element
tuples=[("a",5),("b",2),("c",8)]
sorted_tuples=sorted(tuples,key=lambda x:x[1])
print(sorted_tuples)
```

```
[('b', 2), ('a', 5), ('c', 8)]
```

```
#palindrome or not
number=int(input("enter a number: "))
reverse_number=0
temp=number

while temp>0:
            digit=temp%10
            reverse_number=reverse_number*10+digit
            temp=temp//10

if number==reverse_number:
    print(f" {number} is palindrome")
else:
    print(f" {number} is not palindrome")
```

```
enter a number: 66
 66 is palindrome
```

```
#palindrome or not
number=input("enter a number: ")
if str(number)==str(number)[::-1]:
    print("palindrome")
else:
    print("not palindrome")
```

```
enter a number: 55
palindrome
```