Q1.] Write a Python Program to remove elements from set using remove() , discard() and pop().

Answer :

i). remove() method in a set removes an element from set . If the element is present in the set it will would be removed but the element doesn't exist then it raises a key error .

ii).discard() method in a set removes an element from set like remove() method , although if element is not present in the set it does not raises any key error .

iii).pop()method in a set removes an arbitrary element from set as a set is unordered . So any random element will be discarded from set .

PROGRAM:-

```
lim = int(input("Enter the limit of sets: "))
countries = set()
print("Enter the elements of Set")
for i in range(lim):
    ele = input()
    countries.add(ele)
print("The set is:", countries)

foundele = input("Enter the element to get eliminated from sets: ")

if foundele in countries:
    countries.discard(foundele)
    print("The removed element using .discard() method is:", foundele)
    try:
        countries.remove(foundele)
        print("The removed element using .remove() method is:", foundele)
    except KeyError:
        print("Element not found after using .discard() method.")
```

```
else:
    print("Element not found in the set.")


if countries:
    removed_element = countries.pop()
    print("The removed element using .pop() method is:", removed_element)
else:
    print("Set is empty after removing elements.")
```

OUTPUT:-

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

===== RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set1.py =====
Enter the limit of sets: 5
Enter the elements of Set
anil
sunil
naresh
mahesh
suresh
The set is: {'suresh', 'anil', 'sunil', 'naresh', 'mahesh'}
Enter the element to get eliminated from sets: anil
The removed element using .discard() method is: anil
Element not found after using .discard() method.
The removed element using .pop() method is: suresh
```


Q2.] Write a program to return a new set of identical items from two sets.

Answer :

i).**PROGRAM:-**

```
lim1 = int(input("Enter the limit of the set 1 : "))
lim2 = int(input("Enter the limit of the set 2"))
set1 = set()
set2 = set()
print("Enter the elements of set 1 : ")
for i in range(0,lim1):
```

```
    ele1 = input()
    set1.add(ele1)
print("Enter the elements of set 2 : ")
for j in range(0,lim2):
    ele2 = input()
    set2.add(ele2)

print("The set 1 is : " , set1)
print("The set 2 is : " , set2)
print("The identical elements from both sets are " , set1 & set2)
```

OUTPUT:-

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set2.py
Enter the limit of the set 1 : 5
Enter the limit of the set 2 3
Enter the elements of set 1 :
anil
sunil
mahesh
suresh
ramesh
Enter the elements of set 2 :
anil
sunil
mahesh
The set 1 is :  {'anil', 'suresh', 'mahesh', 'ramesh', 'sunil'}
The set 2 is :  {'anil', 'mahesh', 'sunil'}
The identical elements from both sets are  {'anil', 'mahesh', 'sunil'}
```

Q3.] Write a program to perform set operations :- Union , Intersection , difference and symmetric difference .

Answer :

i).**PROGRAM:-**

```
lim1 = int(input("Enter the limit of set 1 : "))
lim2 = int(input("Enter the limit of set 2 : "))
lim3 = int(input("Enter the limit of set 3 : "))
set1 = set()
set2 = set()
set3 = set()
print("Enter the elements of set 1 : ")
for i in range(0,lim1):
    ele1 = input()
    set1.add(ele1)
print("Enter the elements of set 2 : ")
for j in range(0,lim2):
    ele2 = input()
    set2.add(ele2)
print("Enter the elements of set 3 : ")
for k in range(0,lim3):
    ele3 = input()
    set3.add(ele3)

print("The set 1 is : " , set1)
print("The set 2 is : " , set2)
print("The set 3 is : " , set3)
print("The union of 3 sets are : " , set1 | set2 | set3)
print("The intersection of three sets are ", set1 & set2 & set3 )
print("The difference of 3 sets from set1 is " ,set1 - set2 - set3 )
print("The difference of 3 sets from set2 is " ,set2 - set1 - set3 )
print("The difference of 3 sets from set3 is " ,set3 - set2 - set1 )
```

print("The symmetric difference of 3 sets is : " , set1 ^ set2 ^ set3)

ii).**OUTPUT:-**

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)]
on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set3.py
Enter the limit of set 1 : 5
Enter the limit of set 2 : 4
Enter the limit of set 3 : 5
Enter the elements of set 1 :
anil
sunil
ramesh
suresh
rohan
Enter the elements of set 2 :
naresh
kishor
sachin
qwerty
Enter the elements of set 3 :
james
anil
jason
steve
rocky
The set 1 is :  {'anil', 'ramesh', 'sunil', 'rohan', 'suresh'}
The set 2 is :  {'naresh', 'sachin', 'qwerty', 'kishor'}
The set 3 is :  {'rocky', 'anil', 'jason', 'steve', 'james'}
The union of 3 sets are :  {'rocky', 'anil', 'ramesh', 'sachin', 'sunil', 'rohan', 'nare
sh', 'jason', 'steve', 'james', 'kishor', 'suresh', 'qwerty'}
The intersection of three sets are  set()
The difference of 3 sets from set1 is  {'ramesh', 'suresh', 'sunil', 'rohan'}
The difference of 3 sets from set2 is  {'naresh', 'sachin', 'qwerty', 'kishor'}
The difference of 3 sets from set3 is  {'rocky', 'jason', 'steve', 'james'}
The symmetric difference of 3 sets is :  {'rocky', 'ramesh', 'rohan', 'jason', 'steve',
'james', 'qwerty', 'sachin', 'sunil', 'naresh', 'suresh', 'kishor'}
```


Q4.] Write a Python program to check if a set is a subset of another set .

Answer :

i).**PROGRAM:-**

```
lim_set = int(input("Enter the limit of set : "))
lim_subset = int(input("Enter the  limit of subset : "))
sets= set()
subsets = set()
print("Enter the elements of set : ")
for i in range(0,lim_set):
```

```
    ele_set = input()
    sets.add(ele_set)
print("Enter the elements of subset : ")
for j in range(0,lim_subset):
    ele_subset = input()
    subsets.add(ele_subset)


print("The set is : " , sets)
print("The subset is " , subsets)
print("IF the entered subset is truely an subset of given set then it will return true else false ")
print(subsets.issubset(sets))
```

ii).**OUTPUT:-**

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set4.py
Enter the limit of set : 5
Enter the  limit of subset : 3
Enter the elements of set :
anil
sunil
mahesh
suresh
naresh
Enter the elements of subset :
anil
sachin
kishor
The set is :  {'naresh', 'suresh', 'sunil', 'anil', 'mahesh'}
The subset is  {'anil', 'sachin', 'kishor'}
IF the entered subset is truely an subset of given set then it will return true else false
False
```

Q5.] Write a python program to make use of frozensets().

Answer :

i).**PROGRAM:-**

```
lim = int(input("Enter the limit of set: "))
sets = set()
```

```
print("Enter the elements of set:")
for i in range(0, lim):
    ele = input()
    sets.add(ele)

print("The set before using frozenset():", sets)
frozen_set = frozenset(sets)
print("Enter an element to be added in set:")
ele = input()

try:
    frozen_set.add(ele)
    print("The set after using frozenset() is:", frozen_set)
except AttributeError:
    print("Cannot add elements to a frozenset.")
```


ii).**OUTPUT:-**

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set5.py
Enter the limit of set: 5
Enter the elements of set:
1
anil
2
sunil
3
The set before using frozenset(): {'anil', '1', 'sunil', '3', '2'}
Enter an element to be added in set:
10
Cannot add elements to a frozenset.
```

Q6.] Write a Python program to find and maximum and minimum element from a set .

Answer :

i).**PROGRAM:-**

```
lim = int(input("Enter the limit of the set :"))
sets = set()
print("Enter the elements of set : ")
for i in range(0,lim):
    ele = int(input())
    sets.add(ele)
print("The set is " , sets)
print("The maximum valued element in set is : " , max(sets))
print("The minimum valued element in set is : " , min(sets))
```


ii).**OUTPUT:-**

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set6.py
Enter the limit of the set :10
Enter the elements of set :
-5
-4
-3
-2
-1
0
1
2
3
4
The set is  {0, 1, 2, 3, 4, -1, -5, -4, -3, -2}
The maximum valued element in set is :  4
The minimum valued element in set is :  -5
```

Q7.] Write a Python Program to find the index of an item of a tuple

Answer :

i).**PROGRAM:-**

```
lim = int(input("Enter the limit of tuple : "))
tuple1 = ()
print("Enter the elements of tuple")
for i in range(0,lim):
    ele = input()
    tuple1 = tuple1 + (ele,)
print("The tuple is : " , tuple1)
found_index = input("Enter the element whose is to be found : ")
for i in range(0,lim):
    if tuple1[i] == found_index :
        print("The element is found at " , i ,"value")
        break

    elif (i==lim-1 and tuple1[i] != found_index):
        print("The element is not found in tuple ")
```


OUTPUT:-

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/HP/AppData/Local/Programs/Python/Python312/set7.py
Enter the limit of tuple : 10
Enter the elements of tuple
anil
sunil
gavashkar
sachin
tendulkar
james
steve
jason
harley
davidson
The tuple is :  ('anil', 'sunil', 'gavashkar', 'sachin', 'tendulkar', 'james', 'steve', 'jason', 'harley', 'davidson')
Enter the element whose is to be found : jason
The element is found at  7 value
```