

VASAVI COLLEGE OF ENGINEERING

(AUTONOMOUS)
(Affiliated to Osmania University)

Hyderabad - 500 031.

DEPARTMENT OF

: CSE

NAME OF THE LABORATORY : PPLAB

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PRELAB QUESTIONS: 8

- 1) How can you iterate on values in a set?
* Since sets are unordered; we cannot access the elements using index. But we can loop through set items using a for loop (i) ask if a specified value is present in a set by using the "in" keyword.
- 2) How do you find the elements in set S1 that are not in S2?
* We should use the difference function on these 2 sets.
 $\Rightarrow s1.difference(s2)$.
- 3) Give an example to show how to
(i) Add an element to a set:
(ii) Add all the elements of another set to an existing set:

```
s = set([1, 2, 3, 4, 5])
t = set([6, 7, 8])
s.add(9)
s.update(t)
print(s)
```

O/P:

{1, 2, 3, 4, 5, 6, 7, 8}
- 4) What is the result of passing a dictionary to a set?

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- 5) Differentiate between a set and a tuple:

Set	Tuple
→ Sets are immutable.	→ Tuples are mutable.
→ These are unordered datatypes.	→ These are ordered datatypes.
→ Enclosed in flower brackets.	→ Enclosed in parentheses.
→ Used when data is unordered.	→ Used when data can be accessed through indices.

- 6) How can you remove the intersection of a 2nd set from the 1st set?

* We can use the symmetric difference method on both the sets; so as to get the elements which are present in set s1 and s2 but not in common.

Ex: $s1 = \{1, 2, 3, 4, 5\}$

$s2 = \{set([1, 3, 6, 7, 8])\}$

$\text{print}(s1 \cdot \text{symmetric_difference}(s2))$

O/P:

$\{2, 4, 5, 6, 7, 8\}$

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PRELAB PROGRAMS: 8

1) Write a python program on sets to remove items from the sets.

* $s = \text{set}([1, 2, 3, 4, 5])$ } O/P:
 $s.\text{clear}()$ {
 $\text{print}(s)$

2) Write a python program to intersection of 2 sets.

* $n = \text{int}(\text{input}("Enter no. of elements in s1:"))$; $l = []$
for i in range(n):
 x = int(input())
 l.append(x)
print("s1 = ", set(l))
 $m = \text{int}(\text{input}("Enter no. of elements in s2:"))$; ~~k = []~~
for i in range(m):
 y = int(input())
 k.append(y)
print("s2 = ", set(k))
print(s1.intersection(s2))

O/P:

Enter no. of elements in s1: 2.

5

7

Enter no. of elements in s2: 3

6

8

9

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7
8
{7}

3) Write a python program to find the maximum & minimum value in a set:

```
* s = set([1, 2, 3, 4, 5])  
print(max(s))  
print(min(s))
```

O/P:
= 5
1

LAB PROGRAMS : 8

1) WAP to find the number of vowels in a given string using sets:

```
* sv = input("Enter a string:")  
vowels = {'a', 'e', 'i', 'o', 'u', 'A', 'E', 'I', 'O', 'U'}  
c = 0  
for i in sv:  
    k = set(i)  
    if k.issubset(vowels):  
        c += 1  
print("No. of vowels = ", c)
```

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O/P:

Enter a string: Sivani Kolluri

No. of vowels = 6

2) WAP to find common elements in three lists using sets:

* $S_1 = [2, 1, 3, 4, 5]$

$S_2 = [2, 1, 7, 9, 10]$

$S_3 = [1, 6, 8, 2]$

$S = []$

$L = []$

for i in S_1 :

 for k in S_2 :

 if i == k:

 s.append(i)

for i in S_3 :

 for k in s:

 if i == k:

 l.append(i)

print ("The common elements are: ", set(l))

\$ O/P:

The common elements
are: {2, 1}

3) Create a book_set consisting of titles of the books you have at home. Create another set of horror books you like. Display the following

a) How many horror books you have at home and their names?

b) The books available with you other than horror.

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books = {'abc', 'deft', 'sar', 'efgh'}

horrors = {'deft', 'efgh'}

print("No. of horror books:", len(horrors))

print("Horror books:", horrors)

print("Books other than horrors:", books.difference(horrs))

O/P:

No. of horror books: 2

Horror books: {'deft', 'efgh'}

Books other than horrors: {'abc', 'sar'}

4) WAP to display all the subsets of a given set:

* import 'itertools'

s = list(map(int, input().split()))

for i in range(0, len(s)+1):

k = []

for j in itertools.combinations(set(s), i):

k.append(j)

print(k)

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O/P: 1 2 3 4

$[()]$

$[(1), (2), (3), (4)]$

$[(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)]$

$[(1, 2, 3), (1, 2, 4), (1, 3, 4), (2, 3, 4)]$

$[(1, 2, 3, 4)]$

- 5) Write a program to create a one dimensional array in python using Numpy and search whether a given element is present in the array or not

*
`import numpy
n = int(input("Enter the no. of elements:"))`

`l = []`

`for i in range(n):`

`x = int(input("Enter no:"))`

`l.append(x)`

`print(numpy.array(l))`

`a = numpy.array(l)`

~~for~~
`k = int(input("Enter the element to be searched:"))`

`for i in a:`

`if i == k:`

`print ("Found")`

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else:

print ("Not found")

O/P: Enter the no. of elements : 5

Enter no : 15

Enter no : 11

Enter no : 13

Enter no : 9

Enter no : 2

[15 11 13 9 2]
Enter the element to be searched : 7

Not found.

Q) WAP to create a one dimensional array and display the elements in the reverse order:

* import numpy

n = int(input("Enter the no. of elements:"))

for l = []

for i in range(n):

x = int(input("Enter no:"))
l.append(x)

print(numpy.array(l)); s = numpy.array(l)

print("Reverse order:", s[::-1])

O/P:

Enter the no. of elements: 5

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Enter no: 7

Enter no: 2

Enter no: 41

Enter no: 29

Enter no: 52.

[7 2 41 29 52]

Reverse Order: [52 29 41 2 7]

7) WAP to create 2 two dimensional arrays & multiply them.

* import numpy as np

m = int(input("Enter the no. of rows:"))

n = int(input("Enter the no. of columns:"))

a = list(map(int, input("Enter the values of 1st array:").split()))

b = list(map(int, input("Enter the values of 2nd array:").split())))

aa = np.array(a)

bb = np.array(b)

A = aa.reshape(m, n)

B = aa.reshape(n, m)

C = A.dot(B)

print(c).

O/P:

Enter the no. of rows: 2

Enter the no. of columns: 2

Enter the values of 1 array: 1 2 3 4

Enter the values of 2 array: 11 22

[[5 5]
[11 11]]

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- 8) WAP to count the no. of non-zero values in an array:

```
import numpy as np
m=int(input("Enter the no. of rows:"))
n=int(input("Enter the no. of columns:"))
aa=np.array(a)
a=list(map(int,input("Enter the values:").split()))
aa=np.array(a)
A=aa.reshape(m,n)
c=0
for i in range(m):
    for j in range(n):
        if(A[i,j]!=0):
            c+=1
print("No. of non zero elements:",c)
```

O/P:

Enter the no. of rows: 2
Enter the no. of columns: 3

Enter the values: 1 2 0 4 3 0

No. of non zero elements: 4

- 9) WAP to create a n-dimensional array & reshape it and check the output for different combinations:

```
import numpy as np
m=int(input("Enter the no. of rows:"))
```

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```
n = int(input("Enter the no. of columns:"))
a = list(map(int, input("Enter the values:").split()))
aa = np.array(a)
bb = np.array(
A = aa.reshape(m,n)
B = aa.reshape(n,m)
C = aa.reshape(m*n,1)
print(A, '\n', B, '\n', C)
if (m % 2 == 0 or n % 2 == 0):
    D = aa.reshape(2, int(m*n/2))
    print('\n', D)
```

O/P:

Enter the no. of rows: 4
Enter the no. of columns: 1
Enter the values: 1 2 3 4

```
[[1]
[2]
[3]
[4]]
[[1 2 3 4]]
[[1]
[2]
[3]
[4]]
[[1 2]
[3 4]]
```

Enter the no. of rows: 4
Enter the no. of columns: 2
Enter the values: 12 34 56 78 9

```
[[12]
[34]
[56]
[78]]
[[1 2 3 4]
[56 78]]
[[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]]
```