

# VASAVI COLLEGE OF ENGINEERING

AUTONOMOUS

(Affiliated to Osmania University)  
Hyderabad - 500 031.

DEPARTMENT OF : CSE

NAME OF THE LABORATORY : PP LAB

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## PRELAB QUESTIONS-5:

- 1) What is the difference between list and strings? Give examples:

Ans:

LIST	STRING
1) It is a sequence in which elements are returned as a list of ',' separated values.	1) Collection of characters arranged together within single or double quotes.
2) Lists are mutable.	2) Strings are immutable
3) Ex: l = [1,2,3,4,5]	3) Ex: s = "Python"

- 2) What are the operations used to remove elements in the given list?

Ans: \* pop(): Returns the element it deleted

- If index is specified it deletes the specific object.

- If no index is given, it deletes the last element.

\* remove(): If we do not know the index; we can directly specify the object

- 3) What are filter() and map() functions? Give examples:

Ans: filter(): Constructs a list from those elements of the list for which a function returns true.

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\* Syntax: filter(function, sequence)

Ex: even = list(filter(check, range(2, 22)))  
print(even)

```
def check(x):  
    if (x%2==0 or x%4==0):  
        return 1.
```

map(): Applies a particular function to every element of list  
and returns the modified list.

\* Syntax: map(function, sequence)

Ex: def add(x):  
 x+=2  
 return x  
l = [1, 2, 3, 4, 5]  
l = list(map(add, l))  
print(l)

## PRELAB PROGRAMS : 5

1) WAP to traverse a list of numbers in the reverse order:

\*  
l = []  
n = int(input("Enter no. of elements: "))  
for i in range(n):  
 x = int(input("Enter no: "))

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```
l.append(x)
print(l)
for i in range(len(l)-1, -1, -1):
    print(l[i], end=" ")
```

Output:  
Enter no. of elements: 5  
Enter a no: 4  
Enter a no: 8  
Enter a no: 12  
Enter a no: 16  
Enter a no: 20.

2) WAP to split the list of numbers into even and odd number list:

```
* l = [] ; ol = [] ; el = []
n = int(input("Enter the no. of elements:"))
for i in range(n):
    x = int(input("Enter a no:"))
    l.append(x)
for i in l:
    if i % 2 == 0:
        el.append(i)
    else:
        ol.append(i)
print(l)
print(el)
print(ol)
```

Output:  
Enter the no. of elements: 6  
Enter a no: 2  
Enter a no: 11  
Enter a no: 7  
Enter a no: 13  
Enter a no: 30  
Enter a no: 14  
[2, 11, 7, 13, 30, 14]  
[2, 30, 14]  
[11, 7, 13]

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- 3) Write a program to find the largest and smallest value in a list of n numbers.

\*  $l = []$   
 $n = \text{int}(\text{input}("Enter the no. of elements:"))$   
 $\text{for } i \text{ in range}(n):$   
     $x = \text{int}(\text{input}("Enter a no:"))$   
     $l.append(x)$   
 $\text{for } i \text{ in range}(\text{len}(l)):$   
         $\text{for } j \text{ in range}(\text{len}(l) - 1):$   
             $\text{if } l[j] > l[j + 1]:$   
                 $t = l[j]$   
                 $l[j] = l[j + 1]$   
                 $l[j + 1] = t$   
 $\text{print("Maximum=", } l[\text{len}(l) - 1])$   
 $\text{print("Minimum=", } l[0])$

### Output:

Enter the no. of elements: 4  
Enter a no: 2  
Enter a no: 9  
Enter a no: 13  
Enter a no: 7  
Maximum= 13  
Minimum= 2.

- 4) WAP to Search for an element an in the list.

\*  $l = []$ ; flag = 0  
 $n = \text{int}(\text{input}("Enter the no. of elements:"))$   
 $\text{for } i \text{ in range}(n):$   
     $x = \text{int}(\text{input}("Enter a no:"))$   
     $l.append(x)$   
 $y = \text{int}(\text{input}("Enter no. to be searched:"))$

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for i in l:

if i == y:

flag = 1

if flag == 0:

print("Not found")

else:

print("Found")

Output:

Enter the no. of elements: 4

Enter a no: 16

Enter a no: 29

Enter a no: 41

Enter a no: 56

Enter no. to be searched: 41

Found.

- 5) WAP to display elements at alternative positions in the list.

\* l = []

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

for i in range(n):

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

l.append(x)

for i in range(len(l)):

if i % 2 == 0:

print(l[i])

Output:

Enter the no. of elements: 5

Enter a no: 8

Enter a no: 3

Enter a no: 7

Enter a no: 9

Enter a no: 2

8

3

7

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## \* LAB PROGRAMS: 5

\* AIM: To illustrate the use of lists and strings.

1) WAP to remove the duplicates from the list:

\*  $l = []$ ;  $t = []$

$x = \text{int}(\text{input}("Enter the no. of elements:"))$

for  $i$  in range( $x$ ):

$n = \text{int}(\text{input}("Enter no:"))$

$l.append(n)$

$\text{print}(l)$

for  $i$  in  $l$ :

if  $i$  not in  $t$ :

$t.append(i)$

$\text{print}(t)$ .

## \* Output:

Enter no. of elements: 5

Enter no: 7

Enter no: 13

Enter no: 2

Enter no: 7

Enter no: 12

[7, 13, 2, 7, 12]

[7, 13, 2, 12]

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- 2) WAP to input a list of n numbers and calculate the cube of each number:

\*  $l = []$

$n = \text{int}(\text{input}("Enter no. of elements in the list :"))$

for  $i$  in range( $n$ ):

$s = \text{int}(\text{input}("Enter no:"))$

$l.append(s)$

$c = [i ** 3 \text{ for } i \text{ in } l]$

$\text{print}("Cubes = ", c).$

Output:

Enter no. of elements in list : 6

Enter no: 11

Enter no: 15

Enter no: 26

Enter no: 8

Enter no: 9

Enter no: 7

Cubes = [1331, 3375, 17576, 512, 729, 343]

- 3) WAP to sort a list of n numbers (using sorting technique).

$l = []$

$n = \text{int}(\text{input}("Enter the no. of elements :"))$

for  $i$  in range( $n$ ):

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```

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

for i in range(len(l)):
    for j in range(len(l)-1):
        if(l[j] < l[j+1]):
            t = l[j]
            l[j] = l[j+1]
            l[j+1] = t.

print("Sorted list =", l)
  
```

Output:

Enter the no. of elements: 5  
 Enter no: 12  
 Enter no: 8  
 Enter no: 15  
 Enter no: 52  
 Enter no: 39  
 Sorted list = [52, 39, 15, 12, 8]

4) NAP to add 2 matrices using list:

$$l = [[10, 20, 30], [40, 50, 60]]$$

$$v = [[1, 2, 3], [4, 5, 6]]$$

$$r = [[0, 0, 0], [0, 0, 0]]$$

for i in range(len(l)):

    for j in range(len(l[i])):

$$r[i][j] = l[i][j] + v[i][j]$$

for k in r:

    print(k)

Output:

$$[11, 22, 33]$$

$$[44, 55, 66]$$

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- 5) WAP to display all the numbers from 1 to n that are divisible by 6 (or) powers of 2:

\*  $x = \text{int}(\text{input}("Enter the no. of elements:"))$

$l = [] ; n = []$

for i in range(1, x):

$y = 2^{**}i$

$n = \text{append}(y)$

for i in range(1, x):

if  $i \% 6 == 0$  or i in n:

$l.append(i)$

print(l)

{ Output:

Enter the no. of elements : 7

[2, 4, 6]

- 6) WAP that converts a list of temperatures in Celsius to Fahrenheit:

\* def convert(c):

return  $((9*c)/5) + 180$

{ Output:

$l = []$

$x = \text{int}(\text{input}("Enter no. of temperatures:"))$

for i in range(x):

$z = \text{float}(\text{input}())$

$l.append(z)$

print("Temperature in Celsius = ", l)

print("Temperature in Fahrenheit = ", list(map(convert, l)))

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Output:

Enter no. of temperatures: 5

32

37

26.5

48

33.4

Temperature in Celsius = [32.0, 37.0, 26.5, 48.0, 33.4]

Temperature in Fahrenheit = [237.6, 246.6, 227.7, 266.4, 240.12]

7) Write a program to find the median of list of numbers:

\* l = []

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

for i in range(n):

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

l.append(x)

l = sorted(l)

print(l)

mid = len(l) // 2

if n % 2 == 0:

med = (l[mid] + l[mid - 1]) / 2

else:

med = l[mid]

print("Median =", med).

Output:

Enter the no. of elements: 5

Enter a no: 11

Enter a no: 8

Enter a no: 6

Enter a no: 12

Enter a no: 9

[6, 8, 9, 11, 12]

Median = 9.

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8) Matrix Multiplication:

\*  $L = \begin{bmatrix} [1, 2, 3], [4, 5, 6] \end{bmatrix}, \begin{bmatrix} [13, 14, 15] \end{bmatrix}$

$S = \begin{bmatrix} [7, 8, 9], [10, 11, 12] \end{bmatrix}, \begin{bmatrix} [16, 17, 18] \end{bmatrix}$

$R = \begin{bmatrix} [0, 0, 0], [0, 0, 0] \end{bmatrix}, \begin{bmatrix} [0, 0, 0] \end{bmatrix}$

for i in range(len(L)):

    for j in range(len(S[0])):

        for k in range(len(S)):

$$r[i][j] += L[i][k] * S[k][j]$$

Output:

~~$\begin{bmatrix} [75, 81, 87], [174, 189, 204], [471, 513, 555] \end{bmatrix}$~~

for g in r:

    print(r)

Output:

$\begin{bmatrix} [75, 81, 87], [174, 189, 204], [471, 513, 555] \end{bmatrix}$

9) WAP to generate fibonacci series till n terms & store it in a list. Then find the sum of even-valued terms: