

VASAVI COLLEGE OF ENGINEERING

AUTONOMOUS

(Affiliated to Osmania University)

Hyderabad - 500 031.

DEPARTMENT OF : CSE

NAME OF THE LABORATORY : PPLAB

Name : K. Sree Indira Sivani Roll No. 1602-21-733-052 Page No. 77

* PRELAB QUESTIONS - 6 :

1) What is tuple? Why is it called an immutable object?

A: Tuples are another data structure in python. It is similar to lists but differs only in 2 things.

→ First, a tuple is a sequence of immutable objects i.e. we cannot modify the values in a tuple.

→ Second, tuples are enclosed in parentheses.

2) List basic tuple operations:

A: The basic tuple operations are length, concatenation, repetition, membership, iteration, comparison, maximum, minimum, tuple().

3) What is zip() function? Give example:

A: Zip() is a built-in function that takes two or more sequences and "zips" them into a list of tuples. The tuple thus formed has one element from each sequence.

Ex:

t = (1, 2, 3, 4, 5)

l = ['a', 'b', 'c', 'd', 'e']

print(list(zip(t, l)))

O/P:
[(1, 'a'), (2, 'b'), (3, 'c'), (4, 'd'), (5, 'e')]

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PRELAB PROGRAMS:6

- 1) Given a number 'n', print a tuple consisting all the numbers from 1 to n that are divisible by 6 (or) are powers of 2.

A: l = [] ; s = [] ; t = []

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

for i in range(n):

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

 l.append(x)

for i in range(1, n):

 y = 2 ** i

 s.append(y)

for i in l:

 if i % 6 == 0 (or) i in s:

 t.append(i)

print(tuple(t))

Output:

Enter no. of elements: 5

Enter a no: 6

Enter a no: 8

Enter a no: 3

Enter a no: 7

Enter a no: 9

(6, 8)

* l = [] ; s = [] ; t = []

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

for i in range(1, n):

 l.append(i)

for i in range(1, n):

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```
x = 2**i
s.append(x)
for i in l:
    if i%6==0 or i in s:
        t.append(i)
print(tuple(t))
```

} Output:
Enter no. of elements: 6.
(2,4,6)

2) Write a python program to reverse a tuple:

```
t = []
n = int(input("Enter the no. of elements:"))
for i in range(n):
    x = int(input())
    t.append(x)
s = tuple(t)
print(tuple(t))
```

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- 3) Define a function which can generate and print a tuple where the values are square of numbers between 1 and 20.

* def square(x):
 return x**2
~~l = [] ;~~
for i in range(1, 21):
 l.append(i)
t = tuple(map(square, l))
print(t)

Output:

(1, 4, 9, 16, 25, 36, 49, 64, 81, 100,
121, 144, 169, 196, 225, 256,
289, 324, 361, 400).

- 4) WAP using function that returns the area and circumference of a circle whose radius is passed as an argument.

* def circle(r):
 return (2*3.14*r, 3.14*r**2)
r = float(input("Enter the radius:"))
(c, a) = circle(r)
print("Circumference =", c)
print("Area =", a).

Output:

Enter the radius: 7
Circumference = 43.96
Area = 153.86.

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* LAB PROGRAMS:

* AIM: Programs to illustrate the use of tuples and lists

1) WAP to swap 2 values using tuple assignment.

t = eval(input("Enter the values:"))

print("Before swapping:", t)

l = list(t)

print("Enter the values to be swapped:")

a = int(input())

b = int(input())

for i in range(len(l)):

if l[i] == a:

l[i] = b

elif (l[i] == b):

l[i] = a

m = tuple(l); print("After swapping=", m)

O/P:

Enter the values: 2,5,8,11

Before swapping = (2,5,8,11)

Enter the values to be swapped:

5
8

After swapping = (2,8,5,11)

2) WAP to accept a tuple and find the frequency of each element:

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

t = [] ; x = []

for i in range(n):

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

t1 = tuple(t); t.append(a)

print(tuple(t1)) t1 = tuple(t); print(t1)

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for i in range(n):

c = 1

if i not in x:

for j in range(i+1, n-1):

if t[i] == t[j]

x.append(t[i])

c=c+1

print("Frequency of ", t1[i], "is", c).

* Output:

Enter no. of elements: 5

Enter a no: 2

Enter a no: 7

Enter a no: 5

Enter a no: 2

Enter a no: 7

(2, 7, 5, 2, 7)

Frequency of 2 is 2

Frequency of 7 is 2

Frequency of 5 is 1

- 3) WAP to accept a list of tuples and remove all the tuples with length k (user should enter).

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```
* n=int(input("Enter the no. of tuples in the list :"))
s=[]
for i in range(n):
    l=[]
    x=int(input("Enter no. of elements in tuple :"))
    for j in range(x):
        r=int(input())
        l.append(r)
    s.append(tuple(l))
print(s)
c=int(input("Enter a length :"))
for i in s:
    if len(i) == c:
        s.remove(i)
print(s)
```

* Output:
Enter the no. of tuples in the list : 4
Enter ~~the~~ no. of elements in tuple : 3

1
2
3

Enter no. of elements in tuple : 2

4
5

Enter no. of elements in tuple : 1

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6

Enter ~~the~~ no. of elements in tuple : 3

7

8

9

$[(1, 2, 3), (4, 5), (6,), (7, 8, 9)]$

Enter a length : 3

$[(4, 5), (6,)]$

- 4) WAP to extract e-mail addresses from a given string using regular expressions:

→ import re
s = input("Enter a string: ")

p = "[0-9 a-zA-Z]*[@][gmail.com]*"

print(re.search(p, s))

→ Output:

Enter a string: sivanio4@gmail.comksis

<re.Match object; span=(0, 18), match='sivanio4@gmail.com'>

- 5) WAP that accepts a different no. of arguments and return the sum of only +ve values ~~of~~ passed to it.

def va(*num):

s = 0

for i in num:

 if i > 0:

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$s = i$
print("Sum = ", s)
va(0, -1, 7, 8, 2, -9) } Output:
Sum = 17

- 6) Consider a scenario where Shashank stores all his college friends' names in his contacts list with prefix CSE, then name of his friend followed by VCE as suffix. WAP to extract names of all his college friends from his list of contacts.

import re

l = []

x = int(input("Enter the no. of contacts:"))

for i in range(x):

n = input("Enter the name: ")
l.append(n)

print(l)

p = "[CSE][A-Z a-z]*[VCE]"

for i in l:

print(re.findall(p, i))

Output:

Enter the no. of contacts: 3

Enter the name: CSE Raj VCE

Enter the name: CSE Ritu VCE

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Enter the name: CSE Ram VCE

['CSE Raj VCE', 'CSE Ritu VCE', 'CSE Ram VCE']

['CSE Raj VCE']

['CSE Ritu VCE']

['CSE Ram VCE']

- f) WAP to accept a list of tuples & join all the tuples which have same first element.