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Name of the Laboratory	: Machine Learning & Data Analytics Lab
Sub. Code	: SCSA 2601
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Jemisha
22/3/22

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Name of the Laboratory :

Sub. Code :

Name of the Staff In-Charge :



#1. a. Handling Input and output

```
print("Handling Input and output")
n=int(input("Enter a number to be multiplied by 5 :"))
print("Your answer for 5 x {0} is {1}".format(n,n*5))
```

Handling Input and output

Enter a number to be multiplied by 5 :6

Your answer for 5 x 6 is 30

Expt. No. 1(a)

Page No. 1

Expt. Name. Handling Input and Output

Date : _____

Aim:

To write a python program Handling Input and Output.

Algorithm:

step1: start

step2: get the input from the user

step3: print the output by multiplying the input value by 5

step4: stop

Program:

```
print("Handling Input and Output")
n = int(input("Enter a number to be multiplied by 5: "))
print("Your answer for 5x{} is {}".format(n, n*5))
```

Result:

The above program is executed successfully and the output is verified.

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Jyoti
22/3/22

#b. Looping Construts|

```
print("Looping constructs")
n=int(input("Enter a Number to get their Multiplication tables :"))
for i in range(1,11):
    print("{0} x {1} = {2}".format(n,i,n*i))
```

Looping constructs

Enter a Number to get their Multiplication tables :6

6 x 1 = 6

6 x 2 = 12

6 x 3 = 18

6 x 4 = 24

6 x 5 = 30

6 x 6 = 36

6 x 7 = 42

6 x 8 = 48

6 x 9 = 54

6 x 10 = 60

Expt. No. 1 (b)

Page No. 2

Expt. Name. Looping Constructs

Date : _____

Aim:

To write a python program using Looping constructs

Algorithm:

step 1: start

step 2: Get the input from the user

step 3: Using for loop given range between 1 and 11

step 3.1: print the multiplication of input value and number

step 4: stop

Program:

```
print("Looping Constructs")
n=int(input("Enter a number to get their Multiplication tables:"))
for i in range(1,11):
    print("{} x {} = {}".format(n, i, n*i))
```

Result:

The above program is executed successfully and the output is verified.

Ques 22/3/22

```
#c.Arrays, Lists, Sets and Dictionaries
import array as arr
print("Arrays, Lists, Sets and Dictionaries\n")
print("Arrays")
a = arr.array('i', [1, 2, 3])
for i in range (0, 3):
    print (a[i], end = " ")
print()
print("Appending Lists\n")
l1 = ["a", "b" , "c"]
l2 = [1, 2, 3]
for x in l2:
    l1.append(x)
print("appended list : ", end=" ")
print(l1)
print("\nAppending Sets\n")
s1 = {"a", "b" , "c"}
s2 = {1, 2, 3}
set3 = s1.union(s2)
print("appended Set : ", end=" ")
print(set3)
car = {'brand': 'Ford', 'model': 'Mustang', 'year': 1964}
print("\nDetails of car before updating : \n{0}".format(car))
car["color"]="white"
print("\nDetails of a car after updating : \n{0}".format(car))
```

Arrays, Lists, Sets and Dictionaries

Arrays

1 2 3

Appending Lists

appended list : ['a', 'b', 'c', 1, 2, 3]

Appending Sets

appended Set : {1, 2, 3, 'c', 'a', 'b'}

Details of car before updating :

{'brand': 'Ford', 'model': 'Mustang', 'year': 1964}

Details of a car after updating :

{'brand': 'Ford', 'model': 'Mustang', 'year': 1964, 'color': 'white'}

Expt. No. 1 (c)

Page No. 3

Expt. Name. Arrays, List, set and Dictionaries

Date:

Aim:

To write a python program using Arrays, lists, set and Dictionary.

Algorithm:

step 1: start

step 2: import array library

step 3: print the array given in the code

step 4: initialize two lists

step 5: Append the two lists and print it

step 6: Initialize two sets

step 7: Append the two sets and print it

step 8: Initialize a dictionary

step 9: update the dictionary and print it

step 10: stop

Program:

```
import array as ar
print("Arrays, Lists, sets and Dictionary")
print("Arrays")
a=ar.array('i',[1,2,3])
for i in range(0,3):
    print(a[i],end=" ")
print()
print("Appending Lists\n")
L1=[“a”, “b”, “c”]
L2=[1, 2, 3]
for x in L2:
    L1.append(x)
```

Expt. No. _____

Page No. 4

Expt. Name. _____

Date : _____

print("Append lists : ", end="")

print(L1)

print("In Appending sets. \n")

S1 = {"a", "b", "c"}

S2 = {1, 2, 3}

SCT3 = S1. Union(S2)

print("Append set : " end="")

print(SCT3)

CAR = {'brand': 'Ford', 'model': 'Mustang', 'year': 1964}

print("In Details of car before updating: In %s".format(CAR))

CAR['Color'] = "white"

print("In Details of a car after updating: In %s".format(CAR))

Result:

The above program is executed successfully and the output is verified

(JEL/22/3/22)

#2. a.Modules and Functions|

```
def add(x,y):  
    print("Sum of {0} + {1} = {2} ".format(x,y,x+y))  
def sub(x,y):  
    print("Difference of {0} - {1} = {2} ".format(x,y,x-y))  
def mul(x,y):  
    print("Product of {0} x {1} = {2} ".format(x,y,x*y))  
def div(x,y):  
    print("Quotient of {0} / {1} = {2} ".format(x,y,x/y))  
add(2,3)  
sub(5,3)  
mul(10,5)  
div(10,2)
```

Sum of 2 + 3 = 5

Difference of 5 - 3 = 2

Product of 10 x 5 = 50

Quotient of 10 / 2 = 5.0

Expt. No. 2(a)

Page No. 5

Expt. Name. Modules and Function

Date: _____

Aim:

To write a python program using Modules and Function

Algorithm:

step 1: start

step 2: Create a function for sum, difference, multiplication and Division

step 3: Perform the respective operations in their function

step 4: Call the function with the parameters

step 5: stop

Program:

```
def add(x, y):  
    print("sum of {} + {} = {}".format(x, y, x+y))  
def sub(x, y):  
    print("Difference of {} - {} = {}".format(x, y, x-y))  
def mul(x, y):  
    print("Product of {} * {} = {}".format(x, y, x*y))  
def div(x, y):  
    print("Quotient of {} / {} = {}".format(x, y, x/y))
```

add(2, 3)

sub(5, 3)

mul(10, 5)

div(10, 2)

Result:
2 2 3 5 2

The above program is executed successfully and the output is verified.



#b. File Handling

```
fo = open("data.txt", "wb")
print ("File Name: ", fo.name)
print ("Mode of Opening: ", fo.mode)
print ("Is Closed: ", fo.closed)
```

File Name: data.txt

Mode of Opening: wb

Is Closed: False

Expt. No. 2(b)

Page No. 6

Expt. Name. File Handling

Date : _____

Aim:

To write a python program using File Handling

Algorithm:

step 1: start

step 2: take the file as input

step 3: print the file name, mode of opening

step 4: stop

Program:

```
fo = open ("data.txt", "wb")
print ("Mode of opening: ", fo.name)
print ("File name: ", fo.name)
print ("Is closed: ", fo.closed)
```

Result:

The above program is executed successfully and the output is verified.

Q3/22/22



```
#c.Exception Handling|
```

```
a = [1, 2, 3]
```

```
try:
```

```
    print ("Second element = %d" %(a[1]))
```

```
    # Throws error since there are only 3 elements in array
```

```
    print ("Fourth element = %d" %(a[3]))
```

```
except:
```

```
    print ("An error occurred")
```

```
Second element = 2
```

```
An error occurred
```

Expt. No. 2(c)

Page No. 7

Expt. Name. Exception Handling

Date : _____

Aim:

To write a python program using Exception Handling

Algorithm:

step 1: start

step 2: initialize a list

step 3: Using try print the elements

step 4: Using except print the error occurred

step 5: Stop

Program:

a = [1, 2, 3]

try:

 print("Second element = ", a[1])

 print("Fourth element = ", a[3])

except:

 print("An error occurred")

Result:

The above program is executed successfully and the output is verified.

Ques 21/3 for



#3. write python code to , find the second highest value from the given input list |

```
arr=[6, 5, 2, 1, 6, 4]
arr.sort()
print("second highest element in list is :",arr[-2])
```

Second highest element in list is : 6

Expt. No. 3

Page No. 8

Expt. Name. Given list, find second highest value

Date: _____

Aim:

To write a python program to find the second highest value in a given list

Algorithm:

step 1: start

step 2: initialize the array

step 3: sort array using sort method

step 4: print the second last element in the list

step 5: Stop

Program:

```
arr = [6, 5, 2, 1, 6, 4]
```

```
arr.sort()
```

```
print("second highest element in list is:", arr[-2])
```

Result:

The above program is executed successfully and the output is verified.

✓
Jen 22/3/22

#4.Count the special characters, alphabets, digits, lowercase and uppercase characters.|

```
def count_chars(str):
    upper,lower,special_char,digit=0,0,0,0
    for i in range (len(str)):
        if str[i]>='A' and str[i]<='Z':
            upper=upper+1
        elif str[i]>='a' and str[i]<='z':
            lower=lower+1
        elif str[i]>='0' and str[i]<='9':
            digit=digit+1
        elif str[i]!=' ':
            special_char=special_char+1
    print("Upper Case chars : ",upper)
    print("Lower Case chars : ",lower)
    print("Special chars : ",special_char)
    print("Digits : ",digit)
    print("Alphabets : ",upper+lower)
str=input()
count_chars(str)
```

Sathyabama 2019 @

Upper Case chars : 1

Lower Case chars : 9

Special chars : 1

Digits : 4

Alphabets : 10

Expt. Name. Count the special character, alphabet, digits, lowercase character Date: _____

Aim:

To write a python program on counting the special character, alphabets, digits, lowercase and uppercase character

Algorithm:

Step 1: Start

step 2: Get the string input from the user

step 3: Initialize upper, lower, special-char and digit to zero

step 4: for loop for the length of the string

step 4.1: check if the char is between A and z, then
increment upper to one else go to step 4.2step 4.2: check if the char is between a and z, then increment
lower to one else go to step 4.3step 4.3: check if the char is between 0 to 9, then increment
digit to one else increment special-char to 1

step 5: print upper, lower, special-char, digit, Alphabet.

step 6: Stop

Program:

```
def count_chars(str):
    upper, lower, special_char, digit = 0, 0, 0, 0
    for i in range(len(str)):
        if str[i] >= 'A' and str[i] <= 'Z':
            upper = upper + 1
        elif str[i] >= 'a' and str[i] <= 'z':
            lower = lower + 1
        elif str[i] >= '0' and str[i] <= '9':
            digit = digit + 1
        else:
            special_char = special_char + 1
    print("Upper case letters: ", upper)
    print("Lower case letters: ", lower)
    print("Special characters: ", special_char)
    print("Digits: ", digit)
```

Expt. No. _____

Page No. 10

Expt. Name. _____ Date : _____

if str[i] != " ":

 special_char = special_char + 1

```
print ("Upper case chars : ", upper)
print ("Lower case chars : ", lower)
print ("special chars : ", special_char)
print ("Digits ", digit)
print ("Alphabets : ", upper + lower)
```

```
str = input()
count_chars(str)
```

Result:

The above program is executed successfully and the output is verified

Ques ✓ 22/3/22

#5. For given Input String (s) and Width (w). Wrap the string into a paragraph of width w.

```
import textwrap  
s=input("Input a string: ")  
w = int(input("Input the width of the paragraph: ").strip())  
print("Result: ")  
print(textwrap.fill(s,w))
```

Input a string: sathyabama

Input the width of the paragraph: 3

Result:

sat

hya

bam

a

Expt. No. 5

Page No. 11

Expt. Name. Wrap the string into a paragraph of width Date :

Aim:

To write a python program for given input string (s) and width(w). Wrap the string into a paragraph of width w.

Algorithm:

step 1: start

step 2: import textwrap library

step 3: Get the string input from the user

step 4: Get the width input from the user

step 5: print the output using .fill function

step 6: stop

Program:

```
import textwrap
s = input('Input a string :')
w = int(input('Input the width of the paragraph :')) strip()
print ('Result :')
print (textwrap.fill(s,w))
```

Result:

The above program is executed successfully and the output is verified

22/3/22

Q #6 Print of the String "Welcome". Matrix size must be N X M. (N is an odd natural number, and #M is 3 times N.).

```
a=input('Enter the string:')
n, m = map(int,input("value of n m:").split())
pattern = [('|'+'*'(2*i + 1)).center(m, '-') for i in range(n//2)]
print('\n'.join(pattern + [a.center(m, '-')] + pattern[::-1]))
```

Enter the string:Welcome

value of n m:10 20

```
-----|,-----  
----|,.,|,.,|,----  
--|,.,|,.,|,.,|,---  
|,.,|,.,|,.,|,.,|,  
|,.,|,.,|,.,|,.,|,.  
----Welcome----  
|,.,|,.,|,.,|,.,|,.,|,  
|,.,|,.,|,.,|,.,|,  
--|,.,|,.,|,.,|,.,---  
----|,.,|,.,|,----  
-----|,-----
```

Expt. No. 6

Page No. 12

Expt. Name. Print a string, matrix size $N \times M$, should use 1, and Date:

Aim:

To write a python program to print "Welcome", Matrix size $\overset{\text{should}}{N \times M}$, where N is odd number and M is 3 times of N. The design should have "Welcome" in the center. The design should only use 1, . and - characters.

Algorithm:

step 1: start

step 2: Get the string input from the user

step 3: Get the value of n and m from the user

step 4: calculate the pattern

step 5: print the pattern

step 6: stop

Program:

```
a = int(input("Enter the string: "))
n, m = map(int, input("Value of nm: ").split())
pattern = [('1.' * (2*i+1)).center(m, '-') for i in range(n//2)]
print('\n'.join(pattern + [a.center(m, '-')] + pattern[::-1]))
```

Result:

The above program is executed successfully and the output is verified.

QJL 22/3/22

```
[ ] #7.Consider a function f(X) = X3. Input is 'N' list. Each list contains 'M' elements. From the list, End  
#the maximum element. Compute  
def f(x):  
    return x**3  
N=int(input("Enter N:"))  
M=int(input("Enter M:"))  
l=[]  
mx=[]  
for i in range(N):  
    for j in range(M):  
        l.append(int(input("enter elements:")))  
mx.append(max(l))  
l=[]  
Z=int(input("Enter Z:"))  
s=0  
for i in mx:  
    s+=f(i)  
print(s%Z)
```

Enter N:2

Enter M:4

enter elements:7

enter elements:2

enter elements:8

enter elements:2

enter elements:9

enter elements:1

enter elements:9

enter elements:3

Enter Z:8

1