PROGRAMMING FUNDAMENTAL LAB 9

SETS IN PYTHON

1. Write a program which will add your best five students name in a set. You will use a loop to insert names in set.

```
BestStudents=set()
for i in range(5):
    BestStudents.add(input("enter your best students:
print("my best students are: ",BestStudents)
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe
enter your best students:  inshara
enter your best students:  mahnoor
enter your best students:  izma
enter your best students:  aqsa
enter your best students:  abeeha
my best students are:  {'inshara', 'abeeha', 'aqsa', 'mahnoor', 'izma'}

Process finished with exit code 0
```

2. Write a program which will remove 2 friends who left NED.

```
My_Friends={'Mahnoor', 'Haya','Anshara','Izma','Arhama'}
for i in range(2):
    x=input('enter the name of friends who left NED:  ')
    My_Friends.remove(x)
print("list after removing:  ",My_Friends)
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:/Users
enter the name of friends who left NED:  Haya
enter the name of friends who left NED:  Arhama
list after removing:   {'Mahnoor', 'Anshara', 'Izma'}

Process finished with exit code 0
```

3. Write a program which will add your best dishes and then pop one by one until the set is empty.

```

Favorite_dishes=set()
for i in range(4):
    Favorite_dishes.add(input("Enter Your Best dishes:  "))
print("My best Dishes are:", Favorite_dishes)
while len(Favorite_dishes)!=0:
    Favorite_dishes.pop()
print("after Removing:", Favorite_dishes)
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\pyt
Enter Your Best dishes:  biryani
Enter Your Best dishes:  zinger
Enter Your Best dishes:  ras malai
Enter Your Best dishes:
My best Dishes are: {'zinger', 'ras malai', 'biryani', ''}
after Removing: set()

Process finished with exit code 0
```

4. Write a program which will store number of items in a set after each purchasing the items will be pop from the set and compare its price at the end program will give you the total amount of items have been sold. Also find the max amount and minimum amount of items sold.

```
dic={}
set1={'item1','item2','item3',"item4","item6"}
list1=[]
for i in range(len(set1)):
    dic[set1.pop()]=input('enter items price')
print(dic)
for j in dic.values():
    list1.append(j)
print(list1)
print("The maximum price item sold is {0}".format(max(list1)))
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:/Users/ad
enter items price200
enter items price488
enter items price999
enter items price233
enter items price87
{'item2': '200', 'item3': '488', 'item4': '999', 'item6': '233', 'item1': '87'}
['200', '488', '999', '233', '87']
The maximum price item sold is 999

Process finished with exit code 0
```

5. Write a program which will compare two sets, Set A and Set B. Both the sets have some students who love to play one is hockey and other one is cricket. 10 of them play both. Now using sets find how many of them are playing cricket only, if universal set is 40, students who play hockey ARE 21.

```
universal_set=set()
for j in range(1,41):
    universal_set.add(j)
hockey=set()
for i in range(1,22):
    hockey.add(i)
both_set=set()
for k in range(11,22):
    both_set.add(k)
hockey_only=hockey-both_set
cricket=universal_set-hockey_only
cricket_only=cricket-both_set
print("After comparison the students playing cricket only are: ",len(cricket_only),'including',cricket_only)
```

OUTPUT:

```
mming Labs\venv\Scripts\python.exe" "C:/Users/admin/PycharmProjects/Programming Labs/LLABTASK8.PY.py"
 cricket only are:  19 including {22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40}
```

6. A pet store keeps track of the purchases of customers over a four-hour period. The store manager

classifies purchases as containing a dog product, a cat product, a fish product, or product

for a different kind of pet. She found.

a. 83 purchased a dog product b. 101 purchased a cat product

c. 22 purchased a fish product d. 31 purchased a dog and a cat product e. 8 purchased a dog and a fish product

f. 10 purchased a cat and a fish product g. 6 purchased a dog, a cat and a fish product

h. 34 purchased a product for a pet other than a dog, cat or a fish. i. How many purchases were for a dog product only?

ii. How many purchases were for cat product only? iii. How many purchases for a dog or a fish product? iv. How many purchases were there in total?

```
dog=set(range(1,3))|set(range(7,13))|set(range(21,46))|set(range(51,101))
fish=set(range(1,3))|set(range(7,13))|set(range(3,7))|set(range(14,24))
cat=set(range(3,7))|set(range(7,13))|set(range(21,46))|set(range(201,267))
other=set(range(111,145))
onlydog=dog-(cat|fish)
onlycat=cat-(dog|fish)
onlyfish=fish-(dog|cat)
print("The purchases for a dog Pr. are",len(onlydog))
print("The purchases for a cAT Pr. are",len(onlycat))
print("The purchases for a dog Or fish Pr. are",len(onlydog|onlyfish))
print("The total purchases are",len(dog|cat|fish|other))
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:/Users/ac
The purchases for a dog Pr. are 50
The purchases for a cAT Pr. are 66
The purchases for a dog Or fish Pr. are 57
The total purchases are 194

Process finished with exit code 0
```

7. Solve the following problem of real world. A camp of international students has 110 students, as shown in the diagram. The diagram will

elaborate that all the students speak some kind of a language. We need to find out how many that speak none of them out of 110 students.

Find how many students speak a. English and Spanish but not French? b. Neither English, Spanish, nor French? c. French, but neither English nor Spanish? d. Only one of the three languages? e. Exactly two of the three languages?

As a programmer your task is to verify that above Venn diagram is correctly filled.

```
spanish=set(range(10))
english=set(range(25))
english_french=set(range(17))
english_spanish=set(range(20))
spanish_french=set(range(9))
english_spanish_french=set(range(13))
total=set(range(110))
neither_ofThese=set(range(5))
print('students speaking English, spanish but not french',len(english_spanish))
print('students neither speaking English, spanish  nor french',len(neither_ofThese))
print('students speaking french, but neither english nor spanish',len(french))
print('students speaking only one of the three',len(english)+len(french)+len(spanish))
print('students speaking exactly two of the three',len(english_spanish)+len(english_french)
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:/Users/admin/P
students speaking English, spanish but not french 20
students neither speaking English, spanish  nor french 5
students speaking french, but neither english nor spanish 11
students speaking only one of the three 46
students speaking exactly two of the three 46

Process finished with exit code 0
```

PROGRAMMING FUNDAMENTAL LAB SESSION 10

FILE I/O HANDLING

1. Write a function stats() that takes one input argument: the name of a text file. The function should print, on the screen, the number of lines, words, and characters in the file .your function should open the file only once.

```
import os
def stats(filename):
    File_opening=open(filename, 'r')
    content=File_opening.read()
    line=content.split('\n')
    print("LINE COUNT: ", len(line))
    word=content.split()
    print('WORD COUNT:  ',len(word))
    rep=content.replace(" "," ")
    char=len(list(rep))
    print("character count:  ", char)
stats("C:\\Users\\admin\\Desktop\\education.txt")
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:/Users/admin/PycharmProjects/Pro
LINE COUNT:  1
WORD COUNT:   39
character count:   211

Process finished with exit code 0
```

2. Implement function distribution() that takes as input the name of a file (as a string). This one-line file will contain letter grades separated by blanks. Your function should print the distribution of grades.

OUTPUT:

```
def distribution(filename):
    file=open(filename,'r')
    data=file.read()
    a=data.split()
    print("student who get A are:", a.count("A"))
    print("student who get A+ are:", a.count("A+"))
    print("student who get A- are:", a.count("A-"))
    print("student who get B are:", a.count("B"))
    print("student who get B+ are:", a.count("B+"))
    print("student who get B- are:", a.count("B-"))
    print("student who get C are:", a.count("C"))
    print("student who get C+ are:", a.count("C+"))
    print("student who get D are:", a.count("D"))
distribution('C:\\Users\\admin\Desktop\\grades.txt')
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\
student who get A are: 5
student who get A+ are: 3
student who get A- are: 0
student who get B are: 6
student who get B+ are: 0
student who get B- are: 4
student who get C are: 7
student who get C+ are: 2
student who get D are: 5

Process finished with exit code 0
```

3. Implement function duplicate() that takes as input the name (a string) of a file in the .current directory and returns True if the file contains duplicate words and False otherwise.

```
19
20  def duplicate(filename):
21      file=open(filename,'r')
22      data=file.read()
23      a=data.split()
24      b=[]
25      for i in a:
26          if i not in b:
27              b.append(i)
28      return len(b)!=len(a)
29  print(duplicate("C:\\Users\\admin\\Desktop\grades.txt"))
30
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs'
True

Process finished with exit code 0
```

4.. The function abc() takes the name of a file (a string) as input. The function should .4

open the file, read it, and then write it into file abc.txt with this modification: Every ' occurrence of a four-letter word in the file should be replaced with string 'xxxx abc ('example.txt') > >> Note that this function produces no output, but it does create file abc.txt in the current folder.

```
34  import os
35  def abc(file):
36      f1=open(file, "r+")
37      real=f1.read()
38      f1.close()
39      splittingList=real.split()
40      for i in range(len(splittingList)):
41          if len(splittingList):
42              splittingList[i]==4
43          else:
44              continue
45      f2=open("C:\\Users\\admin\Desktop\\grades.txt","w")
46      new=' '.join(splittingList)
47      f2.write(new)
48      f2.close()
49  file=open("C:\\Users\\admin\\Desktop\\inshara.txt")
50  file.write("I am doing software engineering from NED")
51  file.close()
52  os.chdir("C:")
53  abc('C:\\Users\\admin\\Desktop\\inshara.txt')
54
```