**Part A**

1. **Write a python program to print prime numbers from a given range.**

**->**

for i in range(2,int(input(" Enter end range "))+1):

for x in range(2,i):

if(i%x==0):

break

else:

print(i,end=",")

Output:

Enter end range 25

2,3,5,7,11,13,17,19,23,

1. **Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 32000(both included).**

**->**

for i in range(2000,3201,5):

if(i%7==0):

print(i, end=",")

Output:

2030,2065,2100,2135,2170,2205,2240,2275,2310,2345,2380,2415,2450,2485,2520,2555,2590,2625,2660,2695,2730,2765,2800,2835,2870,2905,2940,2975,3010,3045,3080,3115,3150,3185,

1. **Write a program to count the number of characters (character frequency) in a string and number of words in a sentence.**

**->**

n=input("Enter string ")

l=0

a=n.split()

print(" No. of words is ",len(a))

for i in a:

l+=1

print(" Length of %s is %d"%(i,len(i)))

Output:

Enter string hii hello how r you bye

No. of words is 6

Length of hii is 3

Length of hello is 5

Length of how is 3

Length of r is 1

Length of you is 3

Length of bye is 3

>>>

1. **Write a program to search .py files in the current working directory.**

**->**

import os

for i in os.listdir():

if(i.endswith(".py")):

print(i)

Output:

1a.py

2a.py

3a.py

4a.py

1. **Write a program to count number of lines in a file.**

**->**

f= open("test.txt",'r')

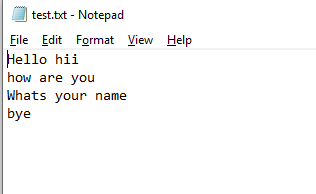
i=0

while(f.readline()!=''):

i+=1

print(" No. of line in file is ",i)

f.close()



Output:

No. of line in file is 4

1. **Write a program to copy the contents of one file to another. If the destination file is already existing, then print “File already exists”.**

**->**

import os

f1=open("test.txt",'r')

r=f1.read()

f1.close()

if(os.path.exists("disti.txt")):

print("File already exists ")

else:

f2=open("disti.txt",'w')

f2.write(r)

f2.close()

print("Content of disti.txt")

for i in open("disti.txt").read().split("\n"):

print(i)

Output:

Content of disti.txt

Hello hii

how are you

Whats your name

Bye

Output:

File already exists

1. **With a given integral number n, write a program to generate a dictionary that contains (i, i\*i) such that is an integral number between 1 and n (both included) and then the program should print the dictionary.**

**->**

d={}

for i in range(1,int(input("Enter n "))+1):

d.update({i:i\*i})

print(d)

Output:

Enter n 5

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25}

1. **Write a program to find second largest and second smallest number in given list.**

**->**

l=[]

for i in range(0,int(input("Enter limit "))):

l.append(int(input("Enter ")))

l.sort()

print("Second largest is %d second smallest is %d"%(l[-2],l[1]))

Output:

Enter limit 5

Enter 8

Enter 9

Enter 7

Enter 1

Enter 6

Second largest is 8 second smallest is 6

1. **Write a recursive function to print factorial of a given number.**

**->**

def fact(n):

if(n==0):

return 1

if(n==1):

return 1

return(n\*fact(n-1))

n=int(input("Enter n "))

print("Factorial is ",fact(n))

Output:

Enter n 5

Factorial is 120

1. **Write a class as student and methods to read and display name and USN.**

**->**

class student:

nm=""

usn=""

def read(self):

self.nm=input("Enter Name ")

self.usn=input("Enter usn ")

def display(self):

print("Name :%s\nUSN :%s "%(self.nm,self.usn))

s=student()

s.read()

s.display()

Output:

Enter Name abcd

Enter usn 12ab

Name :abcd

USN :12ab

1. **Design a user interface to enter the name and marks in five subjects for a student. Write a function to calculate the sum and average of these marks. Display the result in a message box.**

**->**

from tkinter import \*

from tkinter import messagebox

def comp():

tot=(m1.get()+m2.get()+m3.get()+m4.get())

avg=tot/4

messagebox.showinfo("","Sum = %d\naverage = %d"%(tot,avg))

root=Tk()

m1=IntVar()

m2=IntVar()

m3=IntVar()

m4=IntVar()

Label(root,text="Name :").pack()

Entry(root).pack()

Label(root,text="Marks1 :").pack()

Entry(root,textvariable=m1).pack()

Label(root,text="Marks2 :").pack()

Entry(root,textvariable=m2).pack()

Label(root,text="Marks3 :").pack()

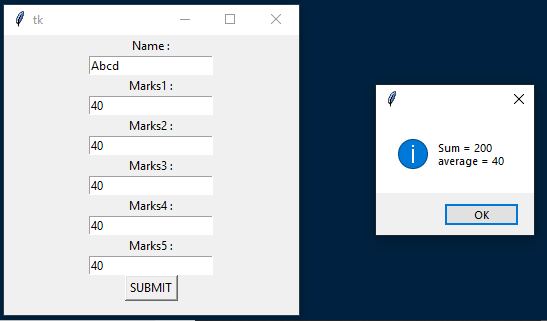
Entry(root,textvariable=m3).pack()

Label(root,text="Marks4 :").pack()

Entry(root,textvariable=m4).pack()

Button(root,text="SUBMIT",command=comp).pack()

Output:



**Part B**

1. **Given two .txt files that have list of numbers that are overlapping. File a.txt has a list of prime numbers under 1000 and the other b.txt file has a list of numbers upto 1000. Write a program to find an overlapping of numbers.**

**->**

Method 1: create the both files inside python program

f1=open("a.txt",'w')

for i in range(2,1001):

for x in range(2,i):

if(i%x==0):

break

else:

f1.write(str(i)+"\n")

f1.close()

f2=open("b.txt",'w')

for i in range(1001):

f2.write(str(i)+"\n")

f2.close()

r1=open("a.txt").read()

r2=open("b.txt").read()

for i,j in ((x,y) for x in r1.split() for y in r2.split()):

if(i==j):

print(i)

Output:

2

3

5

7

11

13

17

19

23

29

31

37

41

43

997

>>>

Method 2: Use the both files from already existing file

#first manually create a.txt with content prime numbers upto 1000

#first manually create a.txt with content numbers upto 1000

r1=open("a.txt").read()

r2=open("b.txt").read()

for i,j in ((x,y) for x in r1.split() for y in r2.split()):

if(i==j):

print(i)

1. **Write a program to implement Rock paper scissor game (hint: Ask for player plays(using input), compare them, print out a message of congrats to the winner and ask if the players want to start a new game).**

**->**

print(" 1. Rock\n 2. Scissor\n 3. Paper \n chose\n")

while True:

a=int(input(" Player 1: "))

b=int(input(" Player 2: "))

if(a==1 and b==2):

print(" congrats Player 1 ")

elif(a==2 and b==1):

print(" congrats Player 2 ")

if(a==2 and b==3):

print(" congrats Player 1 ")

elif(a==3 and b==2):

print(" congrats Player 2 ")

if(a==3 and b==1):

print(" congrats Player 1 ")

elif(a==1 and b==3):

print(" congrats Player 2 ")

if(a==b):

print("Tie")

if(input(" press yes to start a new game ")=="yes"):

continue

else:

break

Output:

1. Rock

2. Scissor

3. Paper

chose

Player 1: 1

Player 2: 1

Tie

press yes to start a new game yes

Player 1: 1

Player 2: 2

congrats Player 1

press yes to start a new game yes

Player 1: 2

Player 2: 3

congrats Player 1

press yes to start a new game yes

Player 1: 1

Player 2: 3

congrats Player 2

press yes to start a new game

>>>

1. **Design a program that takes a list of lists and sort the list according to the second element in the sub list.**

**->**

nested\_list = [[22, "c","ds"], [1, "b","ads"], [3, "a","bda"]]

sorted\_list = sorted(nested\_list, key=lambda x: x[2])

1. **Write a program to create a dictionary with key as first character and value as words starting with that character.**

**->**

st=input("Enter string ")

d={}

for i in st.split():

if(i[0] in d.keys()):

d[i[0]].append(i)

else:

d.update({i[0]:[i]})

print(d)

Output:

Enter string Hello world this is a test string

{'H': ['Hello'], 'w': ['world'], 't': ['this', 'test'], 'i': ['is'], 'a': ['a'], 's': ['string']}

1. **Write a program to perform division operation on two random numbers. If the denominator is 0 then print an error message using exception handling mechanism of python else copy the random numbers and the result to a file and display the file contents.**

**->**

import random

try:

a=random.randint(0,5)

b=random.randint(0,5)

c=a/b

f=open("res.txt",'w')

f.write(" a= %d b= %d result= %f "%(a,b,c))

f.close()

r=open("res.txt").read()

print(" contents of file :",r)

except:

print("Error! denominator is zero")

Output:

contents of file : a= 1 b= 3 result= 0.333333

>>>

contents of file : a= 4 b= 4 result= 1.000000

>>>

Error! denominator is zero

>>>

1. **Write a program to create a class called “Book” with instance variables such as “title” and “pages”. Demonstrate addition of books to display the total number of pages in the books.**

**->**

class Book:

title=""

pages=0

def \_\_init\_\_(self,t,p):

self.title=t

self.pages=p

def \_\_add\_\_(self,other):

return(Book(self.title,self.pages+other.pages))

a=Book("A",30)

b=Book("A",40)

c=a+b

print(c.pages)

Output:

70

1. **Write a program to create a class called complex and perform arithmetic operations like subtraction and multiplication on complex numbers.**

**->**

class complex:

def read(self):

print("a+ib and x+iy")

self.a=int(input(" Enter a=:"))

self.b=int(input(" Enter b=:"))

self.x=int(input(" Enter x=:"))

self.y=int(input(" Enter y=:"))

self.ch=input(" Enter - or \* : ")

def comp(self):

if(self.ch=='-'):

print(" a+ib - x+iy = %d + i %d"%(self.a-self.x,self.b-self.y))

elif(self.ch=='\*'):

print(" a+ib \* x+iy = %d + i %d"%(self.a\*self.x-self.b\*self.y,self.a\*self.y+self.b\*self.x))

else:

print("INVALID")

ob=complex()

ob.read()

ob.comp()

Output:

a+ib and x+iy

Enter a=:3

Enter b=:2

Enter x=:1

Enter y=:7

Enter - or \* : \*

a+ib \* x+iy = -11 + i 23

>>>

a+ib and x+iy

Enter a=:6

Enter b=:4

Enter x=:-7

Enter y=:5

Enter - or \* : -

a+ib - x+iy = 13 + i -1

>>>

a+ib and x+iy

Enter a=:1

Enter b=:1

Enter x=:1

Enter y=:1

Enter - or \* : &

INVALID

>>>

1. **Design a program to open the file dialog and select the file. Read the contents of the file and display that in a text area.**

**->**

from tkinter import \*

from tkinter import filedialog

root=Tk()

root.fn=filedialog.askopenfilename(initialdir="/",filetypes=(("python files",".py"),("all files","\*.\*")))

print(root.fn)

root.title=root.fn

t=open(root.fn).read()

T=Text(root,height=100,width=100)

T.pack()

T.insert(END,t)

root.mainloop()

1. **Design an interface to enter two numbers and calculate and display its sum, difference and average. Display the difference in red color, if result is <0.**

**->**

from tkinter import \* # import all the functions of ktinter

def comp(): #function invoked from submit button

x=op.get()

if(x==1): # addition a+b

res=(var1.get()+var2.get())

elif x==2: # difference a-b

res=(var1.get()-var2.get())

else:

res=(var1.get()+var2.get())/2 # average of a & b

var.set(res)

if(res<0):

l1.config(fg="red") # changes color of text in result if <0

root=Tk() # master window

root.title(" Compute")# change title from tk to compute

var1=IntVar()

var2=IntVar()

var=StringVar()

op=IntVar()

Label(master=root,font=4,text="a=").grid(row=0,column=0)#Label & grid to together

e1=Entry(root,bd=4,text=var1)# variable for Entry to use get function

e1.grid(row=0,column=1)

Label(master=root,font=4,text="b=").grid(row=1,column=0)

e2=Entry(root,bd=4,text=var2)

e2.grid(row=1,column=1)

# Radiobutton

Radiobutton(root,text="sum",variable=op,value=1).grid(row=2,column=0)# for addition

Radiobutton(root,text="diff",variable=op,value=2).grid(row=3,column=0)# for differnce

Radiobutton(root,text="avg",variable=op,value=3).grid(row=4,column=0)# for average

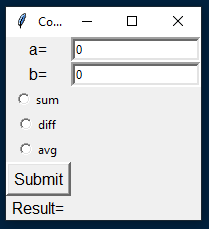
Button(root,text="Submit",font=4,bd=3,command=comp).grid(row=5,column=0)# submit button to invoke comp function

Label(root, font=4,text="Result=").grid(row=6,column=0)

l1=Label(root,textvariable=var)

l1.grid(row=6,column=1)

root.mainloop()



1. **Create a user interface that generates random colors on each click and count the number of mouse clicks. Display a message after very five clicks.**

**->**

from tkinter import \*

from tkinter import messagebox # importing message box

import random # importing random to create radom colors

global count

count=0 #local variable for counting clicks

root=Tk() #creating window

root.title("colour buttons") # title of window

colours = ['Red','Blue','Green','Pink','Black',

'Yellow','Orange','White','Purple','Brown'] #colors on each click

def colo(): #function to counting clocks

global count

count+=1

random.shuffle(colours)

b.config(bg = str(colours[0]))

if(count%5==0):

#message box if count =5

messagebox.showinfo("5 clicks","5 clicks are done")

b=Button(root,text = "Click Me",command =colo,bg="blue")

b.grid(row = 2, column = 2)

root.mainloop()

**11.Write a NumPy program to get the floor, ceiling and truncated values of the elements of a numpy array.**

import numpy as np

x = np.array([-1.6, -1.5, -0.3, 0.1, 1.4, 1.8, 2.0])

print("Original array:")

print(x)

print("Floor values of the above array elements:")

print(np.floor(x))

print("Ceil values of the above array elements:")

print(np.ceil(x))

print("Truncated values of the above array elements:")

print(np.trunc(X))

**12,13 .Placement data distribution across various branches and companies is shown in the table**

**below for the academic year 2020.Perform data analysis using numpy, pandas, matplotlib**

**python libraries for the following scenarios.**

**a)Display the branch name with highest no of total placements across all the companies.**

**b)Display the company name with highest no of total placements across all the branches.**

**c)Display branch name and company name having highest no of placements.(e.g,’CSE’-‘DXC’)**

**d)Draw a pie chart showing distribution of total placements across all the branches.**

**e)Draw a pie chart showing distribution of total placements across all the companies.**

