In [1]:
```
### Question - 1
'''
Write a Python program to calculate the factorial of a number.
'''
def calculate_factorial(num):
    if num==0 or num==1:
        return 1
    else:
        return num*calculate_factorial(num-1)

def main():
    num=int(input("Enter number : "))
    factorial=calculate_factorial(num)
    print(f"Factorial of {num} is {factorial}")

if __name__=='__main__':
    main()
```

```
Enter number :  5
Factorial of 5 is 120
```

In [8]:
```
###  Question - 2
'''
Write a Python program to generate prime numbers between 1 to n, where n is provide
the user.
'''
def isPrime(num):
    for i in range(2,int(num**0.5)+1):
        if num%i == 0:
            return False
    return True

def main():
    num=int(input("Enter a  number : "))
    print(f"Prime numbers between {1} to {num} are :")
    for el in range(2,num+1):
        if isPrime(el):
            print(el,end=" ")

if __name__=='__main__':
    main()
```

```
Enter a  number :  50
Prime numbers between 1 to 50 are :
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
```

In [5]:
```
### Question - 3
'''
 Write a Python program to find the sum and average of numbers in a given list.
'''

def main():
    numbers=list(map(int,input("Enter numbers seprated by space : ").split()))
    sum_nums=sum(numbers)
    average=sum_nums/len(numbers)
```

```
    print(f"Sum of numbers is {sum_nums} and average of numbers is {average}")

if __name__=="__main__":
    main()
```

```
Enter numbers seprated by space :  1 2 3 4 5 6 7
Sum of numbers is 28 and average of numbers is 4.0
```

In [10]:
```
### Question - 4
'''
 Given two sets, set1 and set2, write a Python program to find their union, interse
'''
def main():
    set1={1,2,5,4,5,11}
    set2={9,6,5,10,3,1}
    union_set=set1 | set2  # union of set1 and set2
    intersection_set=set1 & set2 # intersection of set1 and set2
    print(f"Intersection of set1 and set2 is - {intersection_set}")
    print(f"Union of set1 and set2 is - {union_set}")

if __name__=="__main__":
    main()
```

```
Intersection of set1 and set2 is - {1, 5}
Union of set1 and set2 is - {1, 2, 3, 4, 5, 6, 9, 10, 11}
```

In [19]:
```
### Question - 5
"""
Given a list of numbers, write a Python program to count the number of times an ele
list and create a dictionary with element:count as key:value pairs
"""
def main():
    numbers=[1,4,3,2,4,2,3,4,6,9,0,2,1,4]
    ncd = {} # num count dict
    for el in numbers:
        if el in ncd:
            ncd[el]+=1
        else:
            ncd[el]=1
    print(f"Dictionary of numbers count is : {ncd}")

if __name__=="__main__":
    main()
```

```
Dictionary of numbers count is : {1: 2, 4: 4, 3: 2, 2: 3, 6: 1, 9: 1, 0: 1}
```

In [ ]:
```

```

In [14]:
```
### Question - 6
"""
Write a Python program to swap the first two and last two characters in a given str
"""
def main():
    mystr = input("Write word for string : ")
    swapped_str=mystr[-1:-3:-1]+mystr[2:-2]+mystr[1::-1]
    print(f"After swapping first two character of string with last two , string con
```

```
if __name__=="__main__":
    main()
```

```
After swapping first two character of string with last two , string converted to -
dlllo woreh
```

In [10]:
```
### Question - 7
"""
 Write a Python program to create a text file having names of ten Indian cities.
"""

def main():
    i_c_n= input("Enter ten indian cities name seprated by ','  : ").split(',') # i
    if len(i_c_n) < 10:
        print('Cities names are less than 10 ')
    else:
        fh=open("Question_7.txt",'w')
        for city in i_c_n :
            fh.write(city.strip()+'\n')

if __name__=="__main__":
    main()
```

```
Enter ten indian cities name seprated by ','  :  chennai, new delhi , hydrabad , c4,
c5, c6 , c7 , c8 , c9, c10
```

In [9]:
```
### Question - 8
"""
Write a Python program to create a text file having five lines about your college u
"""
def main():
    lines=[]
    for _ in range(5):
        line=input("Write a line about your columnlege : ")
        lines.append(line+" \n")

    # create text file to write the lines about columnlege
    with open('Question_8.txt','w') as fh:
        fh.writelines(lines)

if __name__=="__main__":
    main()
```

```
Write a line about your college :  my college name is dduc
Write a line about your college :  this is college of du
Write a line about your college :  it has all subject courses like science , commerc
e , arts
Write a line about your college :  it is spread in 2 hectares
Write a line about your college :  its address is Dwarka sector 2
```

In [6]:
```
### Question - 9
'''Write a Python program which reads the data from two input files having Employee
merges them into one output file. '''
def main():
    file1='Question_9_input1.txt'  # input file 1   ( in both file employee names a
    file2='Question_9_input2.txt'   # input file 2
```

```
    output_file="Question_9_output.txt"  # output file ,  will contain employee nam
    names=[]
    with open(file1, 'r') as fh:
        names.extend(fh.readlines())  # fh.readlines()  return list of lines
        names[len(names)-1]+="\n"  # add new line char to last element of list

    with open(file2, 'r') as fh:
        names.extend(fh.readlines())

    with open(output_file, 'w') as fh :
        fh.writelines(names)   # write all lines in output file

if __name__=="__main__":
    main()
```

In [7]:
```
### Question - 10
''' Write a Python program to count the number of vowels in a file and write the vo
dictionary. '''
def main():
    filename="Question_10.txt"  # input file
    MyDict={}                    # dictionary contains count of vowel
    vowels=['a','i','o','u','e']
    with open(filename, 'r') as fh :
        content=fh.read().lower()
        for el in vowels:
            count=content.count(el)   # count occurence of a vowel in content
            MyDict[el]=count          # create dict element of that vowel

    print(MyDict)

if __name__=="__main__":
    main()
```

```
{'a': 80, 'i': 64, 'o': 74, 'u': 16, 'e': 105}
```

In [16]:
```
# Question - 11
''' Write a Python program to create a CSV file having student data: RollNo, Enroll
Course, Semester.
'''

import csv

def main():
    with open('Question_11.csv','w') as fh:
        writer=csv.writer(fh)
        writer.writerow(['RollNo', 'Enrollment_No', 'Name','Course','Semester'])  #
        stu_no=int(input("Enter no. of student"))
        print(f"Enter student specific details for {stu_no} students \n ")
        for i in range(stu_no):
            print(f"{i+1} Student details : - ")
            name=input("Enter Student name : ")
            course=input("Enter Course : ")
            semester=int(input("Enter Semester: "))
            roll_no=int(input("Enter Roll number: "))
            enroll_no=int(input("Enter Enrollment number : "))
            writer.writerow([roll_no,enroll_no,name,course, semester])
```

```
if __name__=="__main__":
    main()
```

```
Enter student specific details for 2 students

1 Student details : -
2 Student details : -
```

In [7]:
```
# Question - 12
'''
 Write a Python program library to read the CSV file created in the above program a
records of II semester students.
'''
import csv
def main():
    with open('Question_11.csv','r') as fh:
        csv_reader=csv.DictReader(fh)
        header = next(csv_reader)
        print("Semester II students records   : ")
        students=[]    # will store semester 2 students records
        for row in csv_reader:
            # print(type(row['Semester']),row['Semester'])
            if row['Semester'] == '2':
                students.append(row)
                print(row)

if __name__=="__main__":
    main()
```

```
Semester II students records   :
{'RollNo': '1532', 'Enrollment_No': '44253432', 'Name': 'steven', 'Course': 'BSC pc
s', 'Semester': '2'}
```

In [20]:
```
### Question - 13
'''
 Write a Python program using tkinter library to create a GUI to enter registration
'''
from tkinter import *


# function to handle submit form action
def submit_form():
    global entry_name, entry_email,entry_phone
    name=entry_name.get()
    email=entry_email.get()
    phone=entry_phone.get()
    print(f" Name - {name} \n Email - {email} \n Phone - {phone}")

def main():
    global entry_name, entry_email,entry_phone
    wind=Tk()
    wind.geometry("500x500")
    wind.title("Event Registration Form")

    # form inputs label
    name_label=Label(wind,text="Name :").grid(row=1,column=1)
```

```
    email_label=Label(wind,text="Email :").grid(row=2,column=1)
    phone_label=Label(wind,text="Phone No :").grid(row=3,column=1)

    # form inputs
    entry_name=Entry(wind)
    entry_name.grid(row=1,column=2,padx=10,pady=5)
    entry_email=Entry(wind)
    entry_email.grid(row=2,column=2,padx=10,pady=5)
    entry_phone=Entry(wind)
    entry_phone.grid(row=3,column=2,padx=10,pady=5)

    # Submit form button
    Button(wind,text="Register", command=submit_form).grid(row=4,column=1,padx=10,p
    wind.mainloop()


if __name__=="__main__":
    main()
```

```
Name - Aakash
Email - Kumar
Phone - Jha
```

In [ ]:

```
### Question - 14
'''
Write a Python program using tkinter library to create a calculator to perform addi
multiplication and division of two numbers entered by the user.
'''
from tkinter import *
import math

# function to handle click event
def click(event):
    global  scvalue,Screen
    try:
        text=event.widget.cget('text')

        Screen.update()
        if text=="=":
            if scvalue.get().isdigit():
                value=int(scvalue.get())
            else :
                value=eval(scvalue.get())
            scvalue.set(value)
            Screen.update()

        elif text=="C":
            scvalue.set("")
            Screen.update()

        else:
            scvalue.set(scvalue.get()+text)

    except SyntaxError:
        scvalue.set('Error')
        Screen.update()
```

```
        print('Error')

def main():
    window=Tk()
    window.geometry('440x580')
    window.config(bg='grey')
    global Screen,scvalue
    scvalue=StringVar()
    Screen=Entry(window,textvariable=scvalue,font='comicsanms 40 bold')
    Screen.pack(pady=10,padx=5)

    f1=Frame(window,bg='white')
    f1.pack(pady=5,side=BOTTOM)
    f2=Frame(window,bg='white')
    f2.pack(pady=5,side=BOTTOM)
    f3=Frame(window,bg='white')
    f3.pack(pady=5,side=BOTTOM)
    f4=Frame(window,bg='white')
    f4.pack(pady=5,side=BOTTOM)

    list1=['0','1','2','3','4','5','6','7','8','9','+','-','*','/','%','=','C','**'
    for i in list1:
        if list1.index(i)<5:
            b=Button(f4,text=i,bg='black',fg='white',font='lucida 37 bold')
            b.pack(side=LEFT,padx=5,pady=5)
            b.bind('<Button-1>',click)


        elif list1.index(i)<10 and list1.index(i)>=5:
            b=Button(f3,text=i,bg='black',fg='white',font='lucida 37 bold')
            b.pack(side=LEFT,padx=5,pady=5)

            b.bind('<Button-1>',click)
        elif  list1.index(i)>=10 and list1.index(i)<15:
            b=Button(f2,text=i,bg='black',fg='white',font='lucida 37 bold')
            b.pack(side=LEFT,padx=5,pady=5)
            b.bind('<Button-1>',click)
        elif list1.index(i)>=15 and list1.index(i)<20:
            b=Button(f1,text=i,bg='black',fg='white',font='lucida 31 bold')
            b.pack(side=LEFT,padx=2,pady=5)
            b.bind('<Button-1>',click)

    #  display window
    window.mainloop()

if __name__=="__main__":
    main()
```

In [24]:

```
### Question - 15
'''
Write a Python program using tkinter library to create an age calculator to calcula
entered
'''

from tkinter import *
```

```
from datetime import datetime

def Age_Calculator():
    # Get the entered date, month, and year
    day = date_entry.get()
    month = month_entry.get()
    year = year_entry.get()

    try:
        # Convert the entered values to integers
        birth_date = datetime(int(year), int(month), int(day))
        today = datetime.now()

        # Calculate the age
        age = today.year - birth_date.year - ((today.month, today.day) < (birth_dat

        # Display the age
        result_label.config(text=f"Your age is: {age} years")
    except ValueError:
        result_label.config(text="Invalid date entered. Please try again.")

def main():
    global date_entry, month_entry, year_entry, result_label
    wind = Tk()
    wind.title('Age Calculator')
    wind.geometry('500x400')

    Label(wind, text="Enter Date:").grid(row=0, column=0, padx=10, pady=5)
    Label(wind, text="Enter Month:").grid(row=1, column=0, padx=10, pady=5)
    Label(wind, text="Enter Year:").grid(row=2, column=0, padx=10, pady=5)

    date_entry = Entry(wind)
    date_entry.grid(row=0, column=1, padx=10, pady=5)

    month_entry = Entry(wind)
    month_entry.grid(row=1, column=1, padx=10, pady=5)

    year_entry = Entry(wind)
    year_entry.grid(row=2, column=1, padx=10, pady=5)

    Button(wind, text='Submit', command=Age_Calculator).grid(row=3, columnspan=2, p

    result_label = Label(wind, text="")
    result_label.grid(row=4, columnspan=2, pady=10)

    wind.mainloop()

if __name__ == "__main__":
    main()
```

In [35]:

```
### Question - 16
'''
Write a Python program using tkinter library to read student details, namely, RollN
Name, Course, Semester, through a form and write the entered student details to a C
'''
import csv
```

```
from tkinter import *

def submit_details():
    # Get the entered details
    roll_no = roll_no_entry.get()
    enrollment_no = enrollment_no_entry.get()
    name = name_entry.get()
    course = course_entry.get()
    semester = semester_entry.get()

    # Write the details to a CSV file
    with open('student_details_16.csv', 'a', newline='') as file:
        writer = csv.writer(file)
        writer.writerow([roll_no, enrollment_no, name, course, semester])

    # Clear the entries after submission
    roll_no_entry.delete(0, END)
    enrollment_no_entry.delete(0, END)
    name_entry.delete(0, END)
    course_entry.delete(0, END)
    semester_entry.delete(0, END)

    confirmation_label.config(text="Details submitted successfully!")

def main():
    global roll_no_entry, enrollment_no_entry, name_entry, course_entry, semester_e

    wind = Tk()
    wind.title('Student Details')
    wind.geometry('500x400')

    Label(wind, text="Roll No:").grid(row=0, column=0, padx=10, pady=5)
    Label(wind, text="Enrollment No:").grid(row=1, column=0, padx=10, pady=5)
    Label(wind, text="Name:").grid(row=2, column=0, padx=10, pady=5)
    Label(wind, text="Course:").grid(row=3, column=0, padx=10, pady=5)
    Label(wind, text="Semester:").grid(row=4, column=0, padx=10, pady=5)

    roll_no_entry = Entry(wind)
    roll_no_entry.grid(row=0, column=1, padx=10, pady=5)

    enrollment_no_entry = Entry(wind)
    enrollment_no_entry.grid(row=1, column=1, padx=10, pady=5)

    name_entry = Entry(wind)
    name_entry.grid(row=2, column=1, padx=10, pady=5)

    course_entry = Entry(wind)
    course_entry.grid(row=3, column=1, padx=10, pady=5)

    semester_entry = Entry(wind)
    semester_entry.grid(row=4, column=1, padx=10, pady=5)

    Button(wind, text='Submit', command=submit_details).grid(row=5, columnspan=2, p

    confirmation_label = Label(wind, text="")
    confirmation_label.grid(row=6, columnspan=2, pady=10)
```

```
    wind.mainloop()

if __name__ == "__main__":
    main()
```

In [ ]:

In [ ]: