**1.**

l=[4,3,2,8,5,4511,4,5,9,0,9,7,1,6]

s=list(set(l)) # To remove Duplicat elements from list

#Using any sorting algorithm to sort

for i in range(len(s)-1):

    for j in range(len(s)-1):

        if s[j+1]<s[j]:

            s[j],s[j+1]=s[j+1],s[j]

# print(s)

print(f"The second highest element of the list is {s[-2]}")

2.

l=[4,3,2,8,5,4511,4,5,9,0,9,7,1,1,6,3,6]

# l=[0,0,0,1,1,1,2,2,2,3,3,3,9]

# 1st way: Using typecasting

# l=list(set(l))

# print(l)

#2nd way: Using for loop & extra list

# s=[]

# for i in l:

#     if i not in s:

#         s.append(i)

# print(s)

#3rd way: without using extra list

i=0

while i<len(l):

    while( l[i] in l[i+1::]):  #if condition checks only once thus removing single duplicate

        l.remove(l[i])

    i+=1

print(sorted(l))

3.

#### Cant reduce length of list

l=[1,4,7,2,9,5]

def delete(l):

    index=int(input())

    if not 0<=index<=len(l):

        print("Invalid index")

    for i in range(index,len(l)-1):

        l[i]=l[i+1]

while 1:

    delete(l)

    print(l,len(l))

4.

# Write Python program to perform left rotation of array elements by two positions.

a=[1,2,3,4,5]

# print(a[2:]+a[:2])

# OR

for i in range(2):

    x=a[0]

    for i in range(len(a)-1):

        a[i]=a[i+1]

    a[-1]=x

print(a)

5

# From given list of numbers, create a list of square of prime numbers .

# l1 = [1, 4, 6, 11,15, 24, 19, 25, 27, 30,17]

l1 = [1, 4, 6, 11,15, 24, 19, 25, 27, 30,17]

# l1=[x for x in range(100)]

def primesquare(l):

    p=[]

    for i in l:

        c=0

        if i==1 or i==0:

            continue

        for j in range(2,(i//2)+1):

            if i%j==0:

                c+=1

                break

        if not c:

            p.append(i\*\*2)

    print(p)

primesquare(l1)

6

# 6. Read a given file and extract the integers from each line, concatenate all the

# integers present in the same line and print the sum of all these integers. eg: <File content>

# He is 32 yrs old and his son is 7 yrs old . She is 27 yrs old and her daughter is 2 yrs old .

# Output : 599 ## calculation : Integers on Line 1 + Line 2 = 327 + 272 = 599

f=open('f1.txt','r')

l=f.readlines()

ans=0

for i in l:

    x=''

    for j in i:

        if j.isnumeric():

            x+=j

    ans+=int(x)

f.close()

print(ans)

7.

# 7 .Reverse the below string without changing the

# position of special characters . s = "adfw$vf&yvy\*ugv%uy"

s = "adfw$vf&yvy\*ugv%uy"

l=[]

op=[]

for i,ele in enumerate(s):

    if ele.isalpha():

        op.append(ele)

    else:

        l.extend([i,ele])

# print(l,op)

op=op[::-1]

for i in range(0,len(l),2):

    op.insert(l[i],l[i+1])

op=''.join(op)

# op=op[1:]

print(s)

print(op)

8

# 8. Write a function in Python that accepts a credit card number. It should return a string

# where all the characters are hidden with an asterisk except the last four. For eg.,

# if the credit card no. is “4509876278910046”, then function should return“\*\*\*\*\*\*\*\*\*\*\*\*0046”.

cn='4509876278910046'

def creditnumber(s):

    op=''

    for i in range(len(s)-4):

        op+='\*'

    return  op+s[len(s)-4:]

print(cn)

print(creditnumber(cn))

9

# 9. For the given sentence, return the average word length. sentence = "I need to work very

# hard to learn more about algorithms in Python!" Note: Remember to remove punctuation first.

sentence = "I need to work,,, very... hard to learn more about algorithms in Python!"

def average(s):

    ss=''

    avg=0

    for i in s:

        if i.isalpha() or i==' ':

            ss+=i

    l=ss.split(' ')  #['I', 'need', 'to',.....]

    for i in l:

        avg+=len(i)

    return avg//len(l)

    # print(l,avg)

print(average(sentence))

10

# 10. Sort the list of integers in descending order without using inbuilt functions .

l = [56,2,13,1,78,4,6]

#bubble sort

for i in range(len(l)-1):

    for j in range(len(l)-1):

        if l[j]<l[j+1]:

            l[j],l[j+1]=l[j+1],l[j]

print(l)

11.

# 11. From the given list, check if the element is an integer then return square of that

# element and if element is a string then return the same string 2 times. Output should

# be in list format. a = [8,9,10,"f",5,8,"d"]

# Output should be : [64, 81, 100, 'ff', 25, 64, 'dd']

a = [8,9,10,'f',5,8,'d']

def func(l):

    ls=[]

    for i in l:

        if type(i) is int:

            ls.append(i\*i)

        else:

            ls.append(i\*2)

    return ls

print(func(a))

12

# 12. Write a Python Program to Reverse the Content of a File.

# Input :-

# I am

# new to this

# world of

# Python. Output :- Python.world of

# new to this

# I am

f=open('f2.txt','r')

l=f.readlines()

f.close()

l=l[::-1]

# print(l)

f=open('f2.txt','w')

for i in l:

    f.write(i)

f.close()

13

# 13. Write a python program to take 2 inputs(numbers) from user. Divide the greater

# number by the smaller number. Validate the user inputs, it should be integer type

# only . If the input is not integer, raise exception and catch it. Also, if divisor is 0, catch

# the exception raised.

def twonos():

    try:

        x=int(input())

        y=int(input())

        mx=max(x,y)

        mn=min(x,y)

        ans=mx/mn

    except ValueError as e:

        print("input should be of integer type only... ")

    except ZeroDivisionError as e:

        print("Cannot devide anything by zero")

    else:

        print(ans)

while 1:

    twonos()

14.

# 14. In the given list, check if the element is None, replace it with the recent value .

# l = [1,None,None,3,None,4]

# Output should be : [1,1,1,3,3,4]

l = [1,None,None,3,None,4]

for i in range(len(l)):

    if not l[i]:

        l[i]=l[i-1]

print(l)

15.

# 15. Create a new dictionary using the list and dictionary defined below. The keys of

# the new dictionary will be the elements in the list so we will iterate over the

# elements in list. If the element is also in the dictionary, the value will be the values of

# that key in the dictionary. Otherwise, the value will be the length of the key.

# I/p:

# lst = ['data','science','artificial', 'intelligence'] dct = {'data': 5, 'science': 3, 'machine':

# 1, 'learning': 8}

# O/p:

# {'artificial': 10, 'data': 5, 'intelligence': 12, 'science': 3}

l = ['data','science','artificial', 'intelligence']

d = {'data': 5, 'science': 3, 'machine':1, 'learning': 8}

#create new dictionary

#conditions

#1. key should be element in list & value should be its length

#2. if element already exist in the other dict then just add that key-value pair here

op={}

for i in l:

    if i in d:

        op.update({i:d[i]})

    else:

        op.update({i:len(i)})

print(op)

16.

# 16. Write a function in Python that accepts one numeric parameter. This parameter will be the

# measure of an angle in radians. The function should convert the radians into degrees and then

# return that value. Do not use inbuilt functions.

# Note : Angle in Radians × 180°/π = Angle in Degrees.

def angle(r):

    d=r\*180/3.14159

    return d

print(angle(10))

19.

# 19. Write a Python program to extract year, month, date and time using Lambda.

# I/p:

# 2020-01-15 09:03:32.744178

# O/p :

# Year : 2020

# Month : 1

# Day : 15

# Time : 09:03:32.744178

a=lambda x: f' Year:{x[:4]}\n Month:{x[5:7]}\n Day:{x[8:10]}\n Time:{x[11:]}'

print(a('2020-01-15 09:03:32.744178'))

21.

# 21. Write a program that takes one or more filenames as arguments and prints all

# the lines which are longer than 40 characters. Note :Use generator to solve this

# question.

def filename(\*arg):

    for i in arg:

        f=open(f"{i}",'r')

        x=f.readlines()

        f.close()

        for j in x:

            if len(j)>40:

                print('from',i)

                print(j)

filename('f1.txt','f2.txt','f3.txt')

Rhombus pattern

n=int(input('enter any number:'))

x=''

s=n-1

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

    for j in range(s):

        print(' ',end='')

    s=s-1

    if x=='':

        x+=str(i)

        # print(' '\*(n-i))

        print(x)

    else:

        x=x+str(i)

        x=str(i)+x

        print(x)

s=1

for i in range(n-1):

    for j in range(s):

        print(' ',end='')

    s=s+1

    x=x[1:-1]

    print(x)