DAY 1 : S.KANISHMA (192211289)

1. Given two strings “s” and “t”, determine if they are isomorphic. Two strings “s” and “t” are isomorphic if the characters in “s” can be replaced to get “t”. All occurrences of a character must be replaced with another character while preserving the order of characters. No two characters may map to the same character, but a character may map to itself.

Constraints

 s and t consist of any valid ascii character.

File Edit Format Run Options Window Help

```
max_char=256
def isomorphic(str1, str2):
    m=len(str1)
    n=len(str2)
    if m!=n:
        return False
    mark=[False]*max_char
    map=[-1]*max_char
    for i in range(n):
        if map[ord(str1[i])]==-1:
            if mark[ord(str2[i])]==True:
                return False
            mark[ord(str2[i])]=True
            map[ord(str1[i])]=str2[i]
        elif map[ord(str1[i])]!= str2[i]:
            return False
    return True

#main
a=str(input("Enter string 1: "))
b=str(input("Enter string 2: "))
print(isomorphic(a,b))
```

OUTPUT:

```
==== RESTART: C:/Users/
Enter string 1: egg
Enter string 2: add
True
>>>
==== RESTART: C:/Users/
Enter string 1: people
Enter string 2: peoples
False
>>>
```

2.write a python function sumsquare (1) that takes a nonempty list of integers, and returns a list [odd,even], where odd is the sum of squares of all the odd numbers in l and even is the sum of squares of all the squares of all the even numbers in l.

assign python 1.py - C:/Users/Kanishma Sanjeevi/AppData/Local/Programs/Python/Pythc

File Edit Format Run Options Window Help

```
def sumsquare(l):
    odd=0
    even=0
    for i in l:
        if i%2==0:
            even = even + i**2
        else:
            odd = odd + i**2
    l=[odd,even]
    return(l)
l=[]
a=int(input("enter number of elements:"))
for i in range(0,a):
    ele=int(input("enter the value:"))
    l.append(ele)
print(l)
print(sumsquare(l))
```

OUTPUT:

le Edit Shell Debug Options Window Help

```
Python 3.11.1 (tags/v3.11.1:a7a450f, Dec  6 2022, 19:58:39) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Local/Programs/Python/Python311/assign python 1.py
enter number of elements:4
enter the value:1
enter the value:5
enter the value:7
enter the value:3
[1, 5, 7, 3]
[84, 0]
>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Local/Programs/Python/Python311/assign python 1.py
enter number of elements:0
[]
[0, 0]
```

3. Write an algorithm to determine if a number n is happy. A happy number is a number defined by the following process:

 Starting with any positive integer, replace the number by the sum of the squares of its digits.

 Repeat the process until the number equals 1 (where it will stay), or it loops endlessly in a cycle which does not include 1.

 Those numbers for which this process ends in 1 are happy. Return true if n is a happy number, and false if not.

OUTPUT:

py assignment 2.py - C:/Users/Kanishma Sanjeevi/AppData/Local

File Edit Format Run Options Window Help

```
def sumsquare(n):
    sq=0
    while(n!=0):
        digit=n%10
        sq+=digit*digit
        n//=10
    return sq
def happy(n):
    s=set()
    s.add(n)
    while(True):
        if(n==1):
            return True
        n=sumsquare(n)
        if n in s:
            return False
        s.add(n)
    return False
n=int(input("Enter a number:"))
if(happy(n)):
    print("Yes,n is happy:)")
else:
    print("No, n is sad:(")
```

OUTPUT:

File Edit Shell Debug Options Window Help

```
Python 3.11.1 (tags/v3.11.1:a7a450f, Dec  6 2022, 19:58
:39) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for
more information.
>>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Local/Pro
grams/Python/Python311/py assignment 2.py
Enter a number:10
Yes,n is happy:)
>>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Local/Pro
grams/Python/Python311/py assignment 2.py
Enter a number:4
No, n is sad:(
>>>
```

4. Given an integer x, return true if x is palindrome integer

```
n=int(input("Enter a number:"))
temp=n
reverse=0
while(n>0):
    digital=n%10
    reverse=reverse*10+digital
    n=n//10
if(temp==reverse):
    print("The number is a palindrome")
else:
    print("The number is not a palindrome")
```

OUTPUT:

```
Enter a number:4
The number is a palindrome

= RESTART: C:/Users/Kanishma Sa
y 01 4thq.py
Enter a number:15
The number is not a palindrome
```

5. A bakery sells loaves of bread for 185 rupees each. Day old bread is discounted by 60 percent. Write a program that begins by reading the number of loaves of day old bread being purchased from the user. Then your program should display the regular price for the bread, the discount because it is a day old, and the total price. All of the values should be displayed using two decimal places, and the decimal points in all of the numbers should be aligned when reasonable values are entered by the user.

```
a=int(input("Number of Fresh Loaves purchased:"))
b=int(input("Number of Day Old Loaves purchased:"))
print("\n")
print("Regular Price: Rs.185")
print("Amount of new loaves:",a*185)
print("Amount of day old loaves:",(a*185)+(60/100))
print("Total Amount to be paid:",(a*185)+(a*185)+(60/100))
```

OUTPUT:

```
Number of Fresh Loaves purchased:16
Number of Day Old Loaves purchased:25


Regular Price: Rs.185
Amount of new loaves: 2960
Amount of day old loaves: 2960.6
Total Amount to be paid: 5920.6
```

6. Given n non-negative integers a1,a2,a3,...an where each represents a point at coordinate (i,ai) . „ n „ vertical lines are drawn such that the two endpoints of line i is at (i, ai) and (i,0). Find two lines, which together with x-axis forms a container, such that the container contains The most water.The program should return an integer which corresponds to the maximum area of water that can be contained (maximum area instead of maximum volume sounds weird but this is the 2D plane we are working with for simplicity).

Note: You may not slant the container

```
def maxarea(a,len):
    area=0
    for i in range(len):
        for j in range(i+1,len):
            area=max(area,min(a[j],a[i]*(j-i)))
    return area
l=[]
a=int(input("Enter number of elements:"))
for i in range(0,a):
    ele=int(input("Enter the value:"))
    l.append(ele)
print(l)
print("\n")
length=len(l)
print(maxarea(l,length))
```

OUTPUT:

```
Enter number of elements:4
Enter the value:2
Enter the value:1
Enter the value:3
Enter the value:5
[2, 1, 3, 5]


5
```

7. Given an integer n, return the number of strings of length n that consist only of vowels (a, e, i, o, u) and are lexicographically sorted. A string s is lexicographically sorted if for all valid i, s[i] is the same as or comes before s[i+1] in the alphabet.

```
def countstring(n,start):
    if n==0:
        return 1
    count=0
    for i in range(start,5):
        count+=countstring(n-1,i)
    return count
def countvowel(n):
    return countstring(n,0)
n=int(input("Enter the length of the string:"))
print(countvowel(n))
```

OUTPUT:

```
Enter the length of the string:3
35

= RESTART: C:/Users/Kanishma Sanj
Enter the length of the string:15
3876
```

9. A party has been organised on a cruise. The party is organised for a limited time (T). The number of guests entering (E[i]) and leaving (L[i]) the party at every hour is represented aselements of the array. The task is to find the maximum number of guests present on the cruise at any given instance within T hours.

```
E=[]
L=[]
T=int(input("Enter value of T: "))
for i in range(T):
    e=int(input("enter the ENTRY list: "))
    E.append(e)
print(E)
print("\n")
for i in range(T):
    l=int(input("enter the LEAVING list: "))
    L.append(l)
print(L)
print("\n")
Sum=0
Max=0
for i in range(T):
    Sum+=E[i]-L[i]
    Max=max(Sum,Max)
print("Maximum no. of guests present on cruise: ",Max)
```

OUTPUT:

```
File  Edit  Shell  Debug  Options  Window  Help
Python 3.11.1 (tags/v3.11.1:a7a450f, Dec  6 2022,
19:58:39) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()"
for more information.
>>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Loca
l/Programs/Python/Python311/py 9qn day1.py
Enter value of T: 4
enter the ENTRY list: 5
enter the ENTRY list: 6
enter the ENTRY list: 7
enter the ENTRY list: 8
[5, 6, 7, 8]


enter the LEAVING list: 4
enter the LEAVING list: 1
enter the LEAVING list: 1
enter the LEAVING list: 8
[4, 1, 1, 8]


Maximum no. of guests present on cruise:  12
```

10.Modify string by replacing characters by alphabets whose distance from that character is equal to its frequency Given a string S consisting of N lowercase alphabets, the task is to modify the string S by replacing each character with the alphabet whose circular distance from the character is equal to the frequency of the character in S.

```
File  Edit  Format  Run  Options  Window  Help
def frequency(s):
    freq=[0]*26
    n=len(s)
    for i in range(n):
        freq[ord(s[i])-ord('a')]+=1
    for i in range(n):
        add=freq[ord(s[i])-ord('a')]%26
        if (ord(s[i])+add<=ord('z')):
            s[i]=chr(ord(s[i])+add)
        else:
            add=(ord(s[i])+add)-(ord('z'))
            s[i]=chr(ord('a')+add-1)
    print("".join(s))

#main
string=input("Enter a string: ")
frequency([i for i in string])
```

OUTPUT:

```
ile  Edit  Shell  Debug  Options  Window  Help
Python 3.11.1 (tags/v3.11.1:a7a450f, Dec  6 2022
, 19:58:39) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license(
)" for more information.
>>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Lo
cal/Programs/Python/Python311/py day qn10.py
enter a string: apple
brrmf
>>>
= RESTART: C:/Users/Kanishma Sanjeevi/AppData/Lo
cal/Programs/Python/Python311/py day qn10.py
enter a string: orange
psbohf
```