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**1,** A bicyclist cycles around a circular park with a pathway connecting two opposite end points of the path of length 7kms. Develop a logic that computes the total distance covered by the cyclist for a given set of rounds cycled. Input : Enter No. of Rounds : 10 Output : ‘x’ Kms travelled.

noOfrounds=int(input('Enter No.of Rounds:'))

radius=7/2

circum=radius\*2\*(3.14)

print(str(noOfrounds\*circum)+"kms travelled.")

**2,** A fixed set of positive integers is dictated by the mathematics professor during a puzzle contest. The professor asks the students to find a pair of numbers that result in a given sum. Code a logic that can automate this puzzle. Use the below input for your exercise. Case – 1 Input : arr = [1, 2, 3, 4, 6] & Sum = 8 Output : 2,6

l=list(map(int,input("").strip().split()))

s=int(input())

c=0

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

for j in range(0,len(l)):

if(l[i]!=l[j]):

if((l[i]+l[j])==s):

if(c==0):

print(l[i],end=",")

print(l[j])

c=c+1

if(c==0):

print("no pairs found")

**3,** Alice is a cryptanalyst who is in charge of transmitting messages to bob without any intruder getting hands on it. Alice thinks of transmitting the message by reversing it with a random character appended as prefix to the encoded message. Input : Pentafox Ouput: Oxofatnep

import random

import string

s=input()

reverse=s[::-1]

result=random.choice(s)

print(result.upper(),end="")

print(reverse)

**4,** As a computer engineer, you are requested to reduce the storage space needed to store the textual content in the computer. Write a logic that can compress the content as given in the below example. Input : All is well. Output : Al2 is wel2 (Character followed by its number of occurrence)

s=input("")

i = 0

while( i < len(s) - 1) :

count=1

while s[i] == s[i + 1] :

i += 1

count += 1

if i + 1 == len(s):

break

if count==1:

print(str(s[i]),end="")

elif count>1:

print(str(s[i]) + str(count),end="")

i+=1

**5,** In a puzzle contest, the chairman of your English club posts a problem to compare a given pair of words and eliminate all common characters in them. To speed up the process of judging, the computer club head was requested to prepare computer logic. Please code a solution to the above problem applying your own skillset.

Input : Word-1: Rajesh Word-2: Ganesh Output : RjGn

test\_str1 = input('word1:')

test\_str2 = input('word2:')

res = ''.join(sorted(set(test\_str1) ^ set(test\_str2)))

print (str(res))

**6,** A school camp is organized by a school to support the process of preparing their students for an examination. They are in need of a study timetable that has following assumptions: Assumptions: 1. Total Days of Camp – 5 Days 2. Total Hours a day – 5 Days 3. Total Subjects – 5 Subjects Note: The timetable should not follow the same order and should be in random everyday. Prepare code logic to help the School.

import random

def createMatrix(n):

x=random.sample(["sub1","sub2","sub3","sub4","sub5"],n)

y=random.sample(range(n),n)

return list(x[i:]+x[:i]for i in y)

N=5

m=createMatrix(N)

for i in m:

print(i)

**7,** The alphabetical value is represented from 1-26 for characters A-Z respectively. Using this principle generate a crypto decoder that can generate the message for transmitted sequence of alphabetical values. Input : 1,2,3,4,26 Output : ABCDZ

l=['A','B','C','D','E','F','G','H','I','J','K','L','M','N','O','P','Q','R','S','T','U','V','W','X','Y','Z']

m=list(map(int,input("").strip().split(",")))

for i in range(len(m)):

k=m[i]

print(l[k-1],end="")