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Assignment-1

Que1. Find the sum of the series (1 + x + x2/2! + . . . + xn/n!).

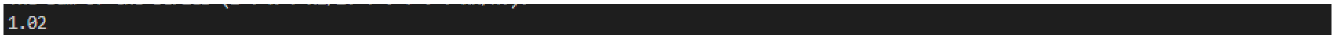
Number x and n should be entered at run time.

Ans.

Code :

```
def factorial(n):
    if n==0:
        return 1
    return n*factorial(n-1)
def find_sum(x,n):
    total=1
    for i in range(1,n+1):
        total=total+(pow(x,i)/factorial(n))
        return total
x=int(input("Input Value of X: "))
n=int(input("Enter value of n: "))
print('The sum of the series (1 + x + x2/2! + . . . + xn/n!):- ')
print(round(find_sum(x,n),2))
```

OUTPUT:



```
1.02
```

Que2. WAP to create a list of 100 random numbers between 100 and 900. Count and print the:

(i) All odd numbers

(ii) All even numbers

(iii) All prime numbers

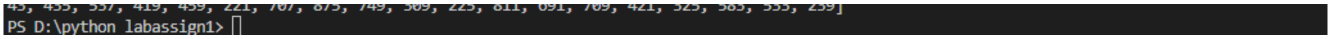
Ans.

Code:

```
import random
def ShowRandomno():
    temp_arr=[]
    for i in range(0,101):
        temp_arr.append(random.randint(100,900))
    return temp_arr
def ShowOddNumber(temp_list):
    temp_oddno=[]
    temp_evenno=[]
    for i in range(0,100):
        if temp_list[i]%2==0:
            temp_evenno.append(temp_list[i])
        elif temp_list[i]%2==1:
            temp_oddno.append(temp_list[i])
    print('Odd Number are:- '+ str(temp_oddno))
    print('Even Number are:- '+ str(temp_evenno))
def ShowPrimeNumber(temp_list):
    temp_primeno=[]
    flag=0
    for j in range(0,100):
        for i in range(2, int(temp_list[j]/2)+1):
            if (temp_list[j] % i) == 0:
                break
            else:
                flag=1
        if flag==1:
            temp_primeno.append(temp_list[j])
            flag=0
    print('Prime Number are:- '+ str(temp_primeno))

temp_list=ShowRandomno()
```

```
print('Here is list of Random Numbers: ')

print(temp_list)

ShowOddNumber(temp_list)

ShowPrimeNumber(temp_list)
```

OUTPUT:



```
43, 435, 537, 419, 459, 221, 707, 873, 749, 309, 225, 811, 691, 709, 421, 325, 583, 535, 239]
PS D:\python labassign1> 
```

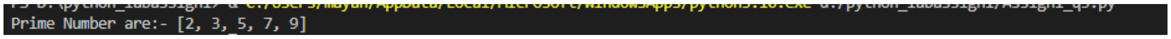
Que3. Find the prime numbers between two given numbers.

Ans.

Code:

```
def ShowPrimeNumber(num1,num2):

    temp_primeno=[]

    flag=0

    for j in range(num1,num2+1):

        if j==2:

            temp_primeno.append(j)

        if j==3:

            temp_primeno.append(j)

        for i in range(2, int(j/2)+1):

            if (j % i) == 0:

                break

            else:

                flag=1

        if flag==1:

            temp_primeno.append(j)

            flag=0

    print('Prime Number are:- '+ str(temp_primeno))

ShowPrimeNumber(2,9)
```

OUTPUT:



```
PS D:\python_labassign1> & C:/Users/mayan/AppData/Local/Microsoft/WindowsApps/python3.10.exe d:/python_labassign1/Assign1_q3.py
Prime Number are:- [2, 3, 5, 7, 9]
```

Que4. Find the common elements from two lists.

Code:

```
def find_duplicates(dump,temp):
    data=[]
    a=[]
    b=[]
    if len(dump)>len(temp):
        a=dump.copy()
        b=temp.copy()
    else:
        a=temp.copy()
        b=dump.copy()
    length_a=len(a)
    length_b=len(b)
    for i in range(0,length_a):
        # print(a[i],b[i])
        for j in range(0,length_b):
            if a[i] == b[j]:
                data.append(a[i])
    print('Duplicates in Given lists are: ')
    print(data)


    return None
dump=[1,2,4,5,6]
temp=[1,8,5,9]
find_duplicates(dump,temp)
```

OUTPUT:

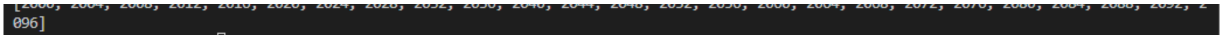
```
[1, 3]
```

Que5. Print the leap years between any two years. The limit of the years should be entered at execution time.

Code:

```
def find_leapyear():
    left=int(input('Enter 1st limit:-'))
    right=int(input('Enter 2nd limit:-'))
    if left>right:
        temp=right
        right=left
        left=temp
    print('Leap Years in given range are: ')
    leap_year=[]
    while left<right:
        if left%4==0 and left%100!=0:
            leap_year.append(left)
        if left%100==0 and left%400==0:
            leap_year.append(left)
        left=left+1
    print(leap_year)
find_leapyear()
```

OUTPUT:



```
[2000, 2004, 2008, 2012, 2016, 2020, 2024, 2028, 2032, 2036, 2040, 2044, 2048, 2052, 2056, 2060, 2064, 2068, 2072, 2076, 2080, 2084, 2088, 2092, 2
096]
```

Que6. Write a Python Program to input basic salary of an employee and calculate its Gross salary according to following: Basic Salary <= 10000 : HRA = 20%, DA = 80% Basic Salary <= 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA =95%.

Code:

```
def calc(salary,temp):
    return (salary//100)*temp
def find_grossalary():
    b_salary=int(input('Enter Basic salary (rs):- '))
    if b_salary <= 10000:
        hra=20
        da=80
    elif b_salary<=20000:
        hra=25
        da=90
    elif b_salary>20000:
        hra=30
        da=95
    gross_salary=calc(b_salary,hra)+calc(b_salary,da)+b_salary
    print(gross_salary)
find_grossalary()
```

OUTPUT:

```
5625000
```

Que7. Write a Python program to check the validity of password input by users.

Validation:

▯ At least 1 letter between [a-z] and 1 letter between [A-Z].

▯ At least 1 number between [0-9].

▯ At least 1 character from [$#@].

▯ Minimum length 6 characters.

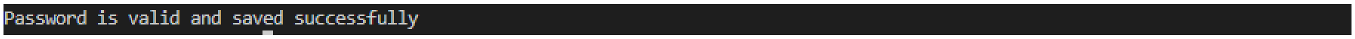
▯ Maximum length 16 characters.

Code:

```
import string
```

```
def checkpass():
    password= input('Enter Your Password(it must have 1 lower digit,1 upper digit,1 num,1 special digit): ')
    print(len(password))
    if len(password)<8:
        print('pass should have more than 8 digit')
        return None
    l,u,d,alpha = 0,0,0,0
    for i in password:
        if i.islower():
            l+=1
        if i.isupper():
            u+=1
        if i.isdigit():
            d+=1
        if i=='@' or i=='$' or i=='*' or i=='_':
            alpha+=1
    if l>=1 and u>=1 and d>=1 and alpha>=1:
        print('Password is valid and saved successfully')
    else:
        print('Invalid Password')
checkpass()
```

OUTPUT:



```
Password is valid and saved successfully
```

Que8. Create a List L having data as= [10, 20, 30, 40, 50, 60, 70, 80].

(i) WAP to add 200 and 300 to L.

(ii) WAP to remove 10 and 30 from L.

(iii) WAP to sort L in ascending order.

(iv) WAP to sort L in descending order.

Code:

```
def do_que8():
    l=[10, 20, 30, 40, 50, 60, 70, 80]
    # (i) WAP to add 200 and 300 to L.
    l.append(200)
    l.append(300)
    print('Appending 200 and 300 in given list: ')
    print(l)
    # (ii) WAP to remove 10 and 30 from L.
    l.remove(10)
    l.remove(30)
    print('Removing 10 and 30 in given list: ')
    print(l)
    # (iii) WAP to sort L in ascending order.
    l.sort()
    print('Sorted Order of given list: ')
    print(l)
    # (iv) WAP to sort L in descending order.
    l.reverse()
    print('Descending Order of given list: ')
    print(l)
do_que8()
```

OUTPUT:

```
[300, 200, 80, 70, 60, 50, 40, 20]
```

Que9. D is a dictionary defined as D= {1:”One”, 2:”Two”, 3:”Three”, 4: “Four”, 5:”Five”}.

(i) WAP to add new entry in D; key=6 and value is “Six”

(ii) WAP to remove key=2.

(iii) WAP to check if 6 key is present in D.

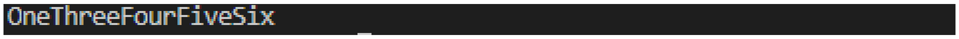
(iv) WAP to count the number of elements present in D.

(v) WAP to add all the values present in D.

Code:

```
def do_que9():
    D= {1:"One", 2:"Two", 3:"Three", 4: "Four", 5: "Five"}
    count=0
    # (i) WAP to add new entry in D; key=6 and value is “Six”
    D[6]='Six'
    print('Added key=6 and value is “Six” Dictionary: ')
    print(D)
    # (ii) WAP to remove key=2.
    D.pop(2)
    print('Removed key=2 from Dictionary: ')
    print(D)
    # (iii) WAP to check if 6 key is present in D.
    print('Value of Key 6 Dictionary: ')
    print(D[6])
    # (iv) WAP to count the number of elements present in D.
    for i in range(0,len(D)):
        count+=1
    print('Count of Dictionary Elements: ')
    print(count)
    # (v) WAP to add all the values present in D.
    value=list(D.values())
    allvalues=''
    for i in range(0,len(value)):
        allvalues= allvalues + value[i]
    print('Sum of all Values in Dictionay: ')
    print(allvalues)
do_que9()
```

OUTPUT:



```
OneThreeFourFiveSix
```

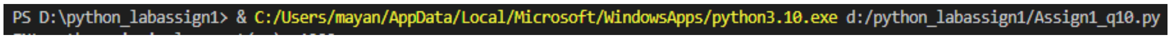
Que10. (i) Write a function which takes principal amount, interest rate and time. This function returns compound interest. Call this function to print the output.

Code:

```
def calculate_compundinterest():
    principal=int(input('ENter the principal amount(rs): '))
    Interest=float(input('ENter the Interest Rate(decimal): '))
    time=int(input('ENter the time(years): '))

    compund=principal*pow((1+Interest/100),time)-principal
    print('Compound Interest of Entered Values : ')
    print(compund)
```

OUTPUT:

Saved this file as Assign1_q10.py as it is also visible in pic



```
PS D:\python_labassign1> & C:/Users/mayan/AppData/Local/Microsoft/WindowsApps/python3.10.exe d:/python_labassign1/Assign1_q10.py
```

(ii) Save this function (as a module) in a python file and call it in another python file.

Code:

```
from Assign1_q10 import calculate_compundinterest
calculate_compundinterest()
```

OUTPUT: