

Write a python program using function to calculate the simple interest. Suppose the customer is a senior citizen. He is being offered 12 percentage rate of interest; for all other customers, the ROI is 10 percentage.

Sample Input:

Enter the principal amount: 200000

Enter the no of years: 3

Is customer senior citizen (y/n): n

Sample Output:

Interest: 60000

Python 2.7

Run

Save

```
1. a=int(input("enter the principal amount:"))
2. b=int(input("enter the no of years:"))
3. sen_cit=input("is customer service citizen(y/n):")
4. if sen_cit=='y':
5.     rate=12
6. else:
7.     rate=10
8.
9. si=(a*b*rate)/100
10. print("interest :",si)
```

SIMATS Python IDE

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## Questions

PEQ1.

Write a python program to find the sum of the series  $1!/1+2!/2+3!/3+4!/4+5!/5$ 

Input N=5

Output :

The sum of the series is : 34

## Test Cases

$$1)(1^1) + (2^2) + (3^3) + (4^4) + (5^5)$$

$$2)1 + 1/2 + 1/3 + 1/4 + \dots + 1/N$$

$$3)(5^4)+(1^3)+(3^2)+(4^1)$$

Python 2.7

Run

Save

```
1. N=int(input("enter the N value:"))
2. sum=0
3. for i in range(N!(N+1):
4.     sum=sum+i
5. print(sum)
```

5

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## Questions

PEQ24.

Write a python program to print the following pattern.  
Sample Input:  
Number of rows:5

Sample output:

```
2  
4      4  
16     16    16  
256    256   256   256  
65536  65536 65536 65536 65536
```



Python 2.7

Run

Save

```
1. n=int(input())  
2. x=2;  
3. for i in range(1,n+1):  
4.     for j in range(i):  
5.         print(x,end=" ")  
6.         x=x*x  
7.     print()
```

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Write a python program to print the given number is Perfect number or not?

Sample Input:

Given Number: 6

Sample Output:

Its a Perfect Number

1. 17
2. 26!
3. 143
4. 84.1
5. 963



Python 2.7

Run Save

```
1. n=int(input("enter the number:"))
2. sum=0
3. for i in range(1,n):
4.     if(n%i==0):
5.         sum=sum+i
6. if sum==n:
7.     print("the num is perfect num")
8. else:
9.     print("the num is not a perfect num")
10.
```

**Questions**

PEQ22.

Write a python program to print the prime numbers between the range

Sample Input:

M = 1

N = 10

Sample Output:

2,3,5,7

Python 2.7

Run

Save

```
1. M=int(input())
2. N=int(input())
3. print("the prime number between M to N")
4. for num in range(M,N +1):
5.     if num >1:
6.         for i in range(2,num):
7.             if(num % i==0):
8.                 break
9.         else:
10.             print(num)
```

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## Questions

PEQ27.

Write a Python program to find all the combinations of digits of a given number.

Sample Input:

123

Sample Output:

123

132

213

231

312

321

4

## Test Cases

1. 789
2. 1456
3. -856
4. 1001
5. 555

Python 2.7 Run Save

```
1. n=input("enter the number")
2. for i in range(3):
3.     for j in range(3):
4.         for k in range(3):
5.             if i!=j and j!=k and k!=i:
6.                 print(n[i],n[j],n[k])
```

123

**Questions**

PEQ23.

Write a Python program to check whether a given year is a Leap year or not.

**Test Cases**

1. 1947

2. 1936

3. 0

4. 2000

5. -1428

**Sample Input:**

Enter year : 1947

**Sample Output:**

Given year is Non Leap Year

Leap Year: 1944

Python 2.7

Run

Save

```
1. year=int(input("enter the year:"))
2. if (year%4==0 and year%100!=0 and year%400==0):
3.     print(year,"is leap year")
4. else:
5.     print(year,"is not leap year")
6.
7.
8.
9.
```

## Questions

PEQ21.

Given an integer  $x$  as numeric data type. Write a python program to return true if  $x$

An integer is a palindrome when it reads the same backward as forward.

For example, 121 is a palindrome while 123 is not.

## Test Cases

1. Input:  $x = 121$

Output: true

Explanation: 121 reads

2. Input:  $x = -121$

Output: false

Explanation: From left

3. Input:  $x = 10$

Output: false

Explanation: Reads 01 f

Python 2.7

Run

Save

```
1. n=int(input("enter a num:"))
2. temp=n
3. rev=0
4. while(n>0):
5.     dig=n%10
6.     rev=rev*10+dig
7.     n=n//10
8. if(temp==rev):
9.     print("this value is a palindrome:")
10. else:
11.     print("this value is not palindrome:")
```



Type here to search



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Questions  
PEQ25.

Test Cases

Write Python program to merge two sorted arrays in non increasing order.

Sample Input:

Arr1=[12.5,67.8,56.0,34.88]  
Arr2=[11.7,89.99]

Output: 89.99, 67.8, 56.0, 34.88, 12.5, 11.7

Python 2.7

Run

Save

```
1. list1=[12.5,67.8,56.0,34.88]
2. list2=[11.7,89.99]
3. list3=list1+list2
4. list3.sort(reverse=True)
5. print("output:",list3)
```

Your In...

Enter the element:13

Enter the element:4

Python 2.7

Run

Save

```
1. n=int(input("enter the number of elements : "))
2. for i in range(1,n+1):
3.     a=int(input("enter the element: "))
4.     sumeven=0
5.     sumodd=0
6.     if(a%2==0):
7.         sumeven=sumeven*sumeven+1
8.     else:
9.         sumodd=sumodd*sumodd+1
10.    print(sumeven)
11.    print(sumodd)
```

x +

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Questions  
PEQ29.

Write a python program to print the following pattern.

Sample Input:

Enter the Character to be printed:+

Number of rows.: 5

+  
++  
++  
++ +  
++ + +

Test Cases

- 1.1, 0  
2. -1, -1  
3. \$, 5  
4. ^, 7  
5. @, -1

Python 2.7 Run Save

```
1. n=int(input("enter the number: "))  
2. for i in range(n+1):  
3.     for j in range(i+1):  
4.         print('+',end=" ")  
5.     print()
```

5

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enter the number: +

+

## Questions

PEQ30.

Write a python program to find the square, cube of the given decimal number.

Sample Input:

Given Number: 0.6

Sample Output:

Square Number: 0.36

Cube Number: 0.216

## Test Cases

1. 12 2. 0 3. -0.5 4. 14.2

```
Python 2.7 Run Save
1. num=float(input("Enter a decimal number:"))
2. sq=num**2
3. print("square of given number:",sq)
4. cube=num**3
5. print("cube of a given number:",cube)
```



4)This is my first trip

Python 2.7

Run

Save

```
1. sentence=input("enter the sentence:")
2. words=sentence.split()
3. initials=[word[0].upper() for word in words]
4. output=".".join(initials) + "."
5. print(output)
6.
```

This is a cat

I

enter the sentence:T.I.A.C.

Given a positive integer N. The task is to find  $1^2 + 2^2 + 3^2 + \dots + N^2$ .

Input : N = 4

Output : 30

Explanation:

$$\begin{aligned}&= 1^2 + 2^2 + 3^2 + 4^2 \\&= 1 + 4 + 9 + 16 \\&= 30\end{aligned}$$

4

Python 2.7 Run Save

```
1. n=int(input("enter the numbers:"))
2. sum=0
3. for i in range(n+1):
4.     sum=sum+i*i
5. print(sum)
```

enter the numbers:

Questions  
PEQ33.

Write a python program to print the pattern.  
Enter the number of rows:4

0.1  
0.1 0.2  
0.1 0.2 0.3  
0.1 0.2 0.3 0.4

## Test Cases

- 1) 0
- 2) -1
- 3) 4.5
- 4) 6
- 5) 5

Python 2.7

Run

Save

```
1. n=int(input("enter the numbers:"))
2.
3. for i in range(1,n+1):
4.     for j in range(1,i+1):
5.         print(j/10,end=" ")
6.     print()
```

4

enter the numbers:0.1  
0.1 0.2  
0.1 0.2 0.3  
0.1 0.2 0.3 0.4

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## Questions

PEQ5.

Write a python program to find the Mean, Median and Mode of given numbers?

Sample Input:

Array of elements = {16, 18, 27, 16, 23, 21, 19}

Sample Output:

Mean = 20

Median = 19

Mode = 16

## Test Cases

1. Array of elements = {26, 28, 37, 26, 33, 31, 29}

2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, 1.9}

3. Array of elements = [0, 100, 100, 270, 100, 230, 210, 190, 0]

4. Array of elements = {200, 180, 100, 270, 100, 230, 210, 190, 20}

5. Array of elements = {100, 200, 100, 100, 100, 100, 100, 100, 100, 20}

PEQ37

PEQ38

PEQ39

PEQ4

PEQ40

PEQ41

PEQ42

PEQ43

PEQ44

PEQ45

PEQ46

PEQ47

Python 2.7

Run

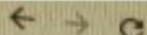
Save

Logout

```
1. import statistics
2. num=[16,18,27,16,23,21,19]
3. mean=statistics.mean(num)
4. print(mean)
5. median=statistics.median(num)
6. print(median)
7. mode=statistics.mode(num)
8. print(mode)
```

16,18,27,16,23,21,19

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Questions  
PEQ43.

Write a Python program to remove duplicates present in the below array.  
Input: Arr=[12,23,45,45,67,88,12]  
Output: Arr=[12,23,45,67,88]

Test Cases

Test cases1: [12,55,56,78,90,76,12,55,56,76]  
Test cases2: [a,b,c, A,B,C]

Python 2.7

Run

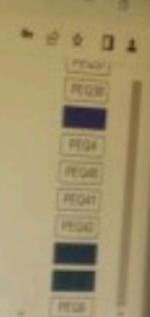
Save

```
1. duplicate=[12,23,45,45,67,88,12]
2. duplicate=list(set(duplicate))
3. duplicate.sort()
4. print(duplicate)
```

Your Input Goes Here...!!

[12, 23, 45, 67, 88]

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Questions  
PEQ39

Test Cases

DAYA B  
15/01/2017

Write a program to input a sentence and convert it into uppercase and count and display the total number of words starting with a letter 'A'.

Example:

Sample Input: advancement and application of information technology are ever chang!  
Sample Output : ADVANCEMENT AND APPLICATION OF INFORMATION TECHNOLOGY ARE EVER CHAN  
Total number of words starting with letter A' = 4.

PEQ37  
PEQ38  
PEQ39  
PEQ40  
PEQ41  
PEQ42  
PEQ43

Python 2.7

Run

Save

Code

```
1. sentence=input("enter the sentence:")
2. a=sentence.upper()
3. words=a.split()
4. count=0
5. for i in words:
6.     if i.startswith("A"):
7.         count=count+1
8. print(a)
9. print(count)
```

I

advancement and application of  
information technology are every  
changing.

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## Questions

PEQ38.

## Test Cases

Write a Python Program to generate and print Letters from A to Z and their Unicode

## Sample Input &amp; Output

A-65

B-66

.

Z-90

The screenshot shows a Python IDE interface with the following components:

- Top bar: Python 2.7, Run, Save.
- Code editor:

```
1. for letter in range(65,91):
2.     print(chr(letter),"-",letter)
```
- Output window: Displays the letter 'I'.
- Right panel: Your Input G
- Bottom right corner: I - 73, J - 74, K - 75.

← C

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Enter the number: -4

Enter the number: 10

Enter the number: -1

Sample Output:

The average of negative numbers is: -5.0

The average of positive numbers is : 8.666666667

Python 2.7

Run

Save

```
1. pos_enco,sumpos=0,0
2. neg_enco,sumneg=0,0
3. a=int(input())
4. while(a!= -1):
5.     if a<0:
6.         neg_enco=neg_enco+1
7.         sumneg=sumneg+a
8.     else:
9.         pos_enco=pos_enco+1
10.        sumpos=sumpos+a
11.    a=int(input())
12. print(sumneg/neg_enco)
13. print(sumpos/pos_enco)
```



C

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Maps

N = 3

Sample Output:

1 st Maximum Number = 89

3 rd Minimum Number = 25

Sum = 114

Difference = 64



```
1. a=int(input("enter the number: "))
2. arr=[]
3. for i in range(a):
4.     b=int(input())
5.     arr.append(b)
6. print(arr)
7. list1=sorted(arr)
8. print(list1)
9. n=int(input("enter the max:"))
10. m=int(input("enter the min:"))
11. print()
12. min=list1[m-1]
13. max=list1[-n]
14. sum=max+min
15. diff=max-min
16. print("maxi no: ",max)
17. print("mini NO: ",min)
18. print("sum: ",sum)
19. print("diff: ",diff)
```

Input:

S1: Hai welcome to learn coding. It is fun to learn!!!  
S2: learn  
S3: teach

Output:

Hai welcome to teach coding. It is fun to teach!!!

Python 2.7

Run

Save

```
1. s1=input( )  
2. s2=input( )  
s3=input( )  
s1=s1.replace(s2,s3)  
print(s1)
```

Write a program to read a character until a \* is encountered. Also count the number

Sample Input:

Enter \* to exit..

Enter any character: W

Enter any character: d

Enter any character: A

Enter any character: G

Enter any character: g

Enter any character: H

Enter any character: \*

- 1. r, r, o, o, o
- 2. S, Q, I, K, 7, J, M
- 3. M, J, L, &, @, G
- 4. D, K, I, 6, L, \*
- 5. \*, K, A, e, 1, 8, %, \*

Python 2.7

Run

Save

```
1. uc_count=0
2. lc_count=0
3. digit_count=0
4. while True:
5.     char=input( )
6.     if char=='*':
7.         break
8.     if char.islower():
9.         lc_count+=1
10.    elif char.isupper():
11.        uc_count+=1
12.    elif char.isdigit():
13.        digit_count +=1
14.    print("uppercase count:",uc_count)
15.    print("lowercase count:",lc_count)
16.    print("digit count:",digit_count)
```

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**Questions**

PMQ13.

**Test Cases**

Given an  $n \times n$  matrix where each of the rows and columns is sorted in descending order, return the  $k$ th largest element in the matrix.

Input: matrix = [[1,5,9],[10,11,13],[12,13,15]]

Output: 15

Python 2.7

Run

Save

```
1. a=[[1,5,9],[10,11,13],[12,13,15]]
2. print(a)
3. list=[]
4. for i in range(len(a[0])):
5.     for j in range(len(a[0])):
6.         list.append(a[i][j])
7.
8. print(max(list))
```

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Questions  
PMQ18.

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Test Cases

Given an  $m \times n$  matrix, Find the row sum, column sum and diagonal sum of elements.  
MAT= [3 4 5; 7 8 9;10 11 12]  
Row sum : 12,24,33  
Columnsum : 21,23,27  
Diagonal sum :23

Python 2.7

Run

Save

```
1. a=[[3,4,5],[7,8,9],[10,11,12]]  
2. print(a)  
3. row_sum=[0]*len(a)  
4. col_sum=[0]*len(a[0])  
5. diag_sum=0  
6. for i in range(len(a)):  
7.     for j in range(len(a[0])):  
8.         row_sum[i]+=a[i][j]  
9.         col_sum[j]+=a[i][j]  
10.    if i==j:  
11.        diag_sum+=a[i][j]  
12. print(row_sum)  
13. print(col_sum)  
14. print(diag_sum)  
15.
```

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## Questions

PMQ20.

Given a string  $s$ , sort it in ascending order and find the repeated character.

Input:  $s = \text{"tree"}$

Output: "eert", starting index 0

Example 2:

Input:  $s = \text{"kkj"}$

Output: "jkk" starting index : 1

Python 2.7

Run

Save

```
1. s = input("Enter a string : ")
2. print()
3. sorted_s = ''.join(sorted(s))
4. print(sorted_s)
```



## Questions

PMQ26.

Given an array of integers `nums` containing  $n + 1$  integers where each integer in the range  $[1, n]$  inclusive.

There is only one repeated number in `nums`, return this repeated number.

Example 1:

Input: `nums = [1,3,4,2,2]`

Output: 2

Example 2:

Input: `nums = [3,1,3,4,2]`

Output: 3

Python 2.7

Run

Save

```
1. def count(arr, n):
2.     visited = [False for i in range(n)]
3.     for i in range(n):
4.         if (visited[i] == True):
5.             continue
6.         count = 1
7.         for j in range(i+1,n,1):
8.             if(arr[i] == arr[j]):
9.                 visited[j] = True
10.                count += 1
11.        if count != 1:
12.            print(arr[i]);
13.
14. arr = [1,3,4,2,2]
15. n = len(arr)
16. count(arr, n)
```



SIMATS Python IDE

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← → C

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PMQ10.

Given an integer  $n$ , return the least number of perfect square A perfect square is an integer that is the square of an integer words, it is the product of some integer with itself. For example are perfect squares while 3 and 11 are not.

Python 2.7

Run

Save

```
1. import math
2. s=int(input("enter the number"))
3. n=math.sqrt(s)
4. print(n)
5. t=n*10
6. if t%10==0:
7.     print("its is a perfect number")
8. else:
9.     print("not a perfect square")
```

Write a python function called matches that takes two strings as returns how many matches there are between the strings. A match is if the two strings have the same character at the same index.

Input: s1= "what" s2= "watch"

Output: 1

The screenshot shows a Python code editor interface. At the top, there's a toolbar with a dropdown menu set to 'Python 2.7', a 'Run' button, and a 'Save' button. The main area contains the following Python code:

```
1. a=input("enter the s1: ")
b=input("enter the s2: ")
count=0
for i in range(min(len(a),len(b))):
    if(a[i]==b[i]):
        count+=1
print(count)
```

Write a program which checks whether the given number is luck or not.  
is said to be lucky if sum of its digits is equal to the product of it

Use the following recursive functions,  
rSum(n) to find product of digits on n.  
rProd(n) to find the product of digits on n.

Sample Input:

1412

Sample output:

Yes

```
a=int(input("enter the number: "))

sum=0
pro=1
while(a>0):
    digit=a%10
    sum+=digit
    pro*=digit
    a=a//10
if(sum==pro):
    print("yes")
else:
    print("no")
```

Python IDE

/5/python/home.php

Disaster Management...

19, and also you have born on the leap year, then  
and adult means responsibility; otherwise print "I am  
responsible adult"

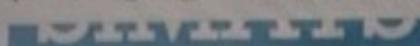
of birth: 2003 11 18  
of joining: 2021 10 08

Run Save

```
1. dob=input('enter your dob: ')
2. doj=input('enter your doj: ')
3. dobjli=list(dob.split())
4. dojli=list(doj.split())
5. y1=int(dobjli[0])
6. y2=int(dojli[0])
7. if y1%400==0 and y1%100==0:
8.     elif y1%4==0 and y1%10!=0:
9.         elif y1%4==0 and y1%100!=0:
10.            elif y1%400==0 and y1%100==0:
11.                elif y1%4==0 and y1%10!=0:
12.                    elif y1%400==0 and y1%100!=0:
13.                        elif y1%4==0 and y1%10!=0:
14.                            elif y1%400==0 and y1%100==0:
15.                                elif y1%4==0 and y1%10!=0:
16.                                    elif y1%400==0 and y1%100==0:
17.                                        elif y1%4==0 and ((y2-y1)>19):
18.                                            if (y1==12) and (y2==1):
19.                                                print('i am lucky adult and adult means responsibility')
20.                                            else:
21.                                                print('i am inspiring to become an responsible adult')
22.                                            else:
```

Search

30°C  
Mostly sunny

**Questions**

PMQ16.

Given an array of integers nums sorted in non-decreasing order, find the starting and ending position of a given target value.

If target is not found in the array, return [-1, -1].

**Example 1:**

Input: nums = [5,7,7,8,8,10], target = 8

Output: [3,4]

**Example 2:**

Input: nums = [5,7,7,8,8,10], target = 6

Output: [-1,-1]

Python 2.7

Run

Save

```
1. li=[]
2. s=int(input("enter the size"))
3. for i in range(s):
4.     li.append(int(input("enter the number")))
5. print(li)
6. tar=int(input("enter the target"))
7. for i in range(s):
8.     if li[i]==tar:
9.         print(i)
10.    else:
11.        print("the element is not found")
```

dl, Feb 7 2023, 16:24:28)

s" or "license()" for more Reg.no:192210380

ocal/Programs/Python/Pytho

```
print("Leap years from 1900 to 2101:")
for year in range(1900,2102):
    if (year % 4==0 and year % 100!=0)or(year % 400==0):
        print(year)
```

## Questions

### PMQ15

Write functions to perform the following string operations and identify the vowels count in String S3.

Sample Input :

Index 1: S1 = "Welcome" S2 = "Honey"

Sample Output:

S3 : W H e o l m c e o l n y e

Sample Input:

Index 2: S1 = "Welcome" S2 = "Honey"

S3 : M e H o l c m e o o l y e

Python 3.7

Run

Save

```
1. def strmerge(s1,s2):
2.     result=""
3.     for i in range(max(len(s1),len(s2))): 
4.         if i<len(s1):
5.             result+=s1[i]
6.         if i<len(s2):
7.             result+=s2[i]
8.     return result
9. s1=input( )
10. s2=input( )
11. mrg=strmerge(s1,s2)
12. print(mrg)
```

\*day.5.py - C:/Users/sse/AppData/Local/Programs/Python/Python311-32/day.5.py (3.11.2)\*

File Edit Format Run Options Window Help

b 7 2023, 16:

Name:Chaitanya sai raghu

"license()" for Reg.no:192210380

```
l/Programs/Pyth n=int(input("Enter the number of terms: "))
a,b=0,1
if n<=0:
    print("Invalid input! please enter a positive integer.")
elif n==1:
    print("Fibonacci sequence upto",n,"terms:")
    print(a)
else:
    print("Fibonacci sequence: ")
    for i in range(n):
        print(a)
        c=a+b
        a,b=b,c
```

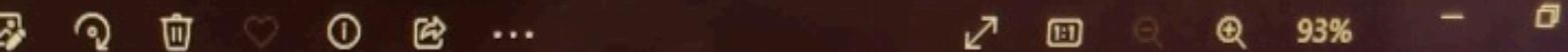
day.5.py - C:/Users/sse/AppData/Local/Programs/Python/Python311-32/day.5.py (3.11.2)  
File Edit Format Run Options Window Help  
023, 16:24

```
Name:Chaitanya sai raghu
Reg.no:192210380

def gcd(a,b):
    """
    Returns the greatest common divisor of two numbers a and b
    """
    if b==0:
        return a
    else:
        return gcd(b,a%b)
def lcm(a,b):
    """
    Returns the least common multiple of two numbers a and b
    """
    return (a*b)//gcd(a,b)
num1=int(input("Enter the first number: "))
num2=int(input("Enter the second number: "))
print("The lcm of",num1,"and",num2,"is",lcm(num1,num2))
print("The gcd of",num1,"and",num2,"is",gcd(num1,num2))
```

Feb 7 2023, 16:24:

```
Name:Chaitanya sai raghu  
Reg.no:192210380  
/Programs/Python/Py  
numbers is 0.1  
numbers is 0.3  
numbers is 0.6  
numbers is 1.0  
numbers is 1.5  
numbers is 2.1  
numbers is 2.8  
numbers is 3.6  
numbers is 4.5  
numbers is 5.5  
  
n=int(input("Enter a number: "))  
sum=0  
for i in range(1,n+1):  
    sum+=i  
    average=sum/n  
print("The average of the first",n,"natural numbers is",average)
```



\*ass2.chai.py - C:/Users/sse/AppData/Local/Programs/Python/Python311-32/ass2.chai.py (3.11.2)\*

File Edit Format Run Options Window Help

16:2

Name:Chaitanya sai raghu

for Reg.no:192210380

```
n=int(input("Enter a number: "))
sum_of_squares=0
for i in range(2,n+1,2):
    sum_of_squares+=i**2
print("The sum of squares of even numbers upto",n,"is",sum_of_squares)
```

eadl, Feb 7 2023,

Name:Chaitanya sai raghu

its" or "license()" Reg.no:192210380

ca/Local/Programs/F n=10

```
sum=0
for i in range(1,n+1):
    a=int(input("Enter a value: "))
    sum=sum+i
Avg=sum/n
print("Average= ",Avg)
```



...



\*unit.py - C:/Users/sse/AppData/Local/Programs/Python/Python311-32/unit.py (3.11.2)\*

File Edit Format Run Options Window Help

Feb 7 2023,

Name:Chaitanya sai raghu  
r "license()" Reg.no:192210380

```
al/Programs/P num=int(input("enter number: "))
num_str=str(num)
n=len(num_str)
sum=0
for digit in num_str:
    sum+=int(digit)**n
al/Programs/P if sum==num:
    print(num,"is an Armstrong number")
else:
    print(num,"is not an Armstrong number")
```

QUESTION  
11016.

Write a Python program to compute s the sum of the digits of the number 220.

Sample Input:

220

Sample Output:

220 and the sum of its digits is  $2+2+0 = 4$

The screenshot shows a Python code editor interface. At the top, there is a dropdown menu set to "Python 2.7" and two buttons: "Run" and "Save". The code area contains the following Python script:

```
1. n=220
2. sum_of_digits=0
3. while n>0:
4.     digit=n%10
5.     sum_of_digits+=digit
6.     n/=10
7. print("the sum of the digits of 220 is:",sum_of_digits)
8.
```

**Questions**

PHQ12.

**Test Cases**

Write a Python program to compute the sum of all the multiples of 3 or 5 below 500.

**Input & Output :** All the natural numbers below 12 that are multiples of 3 or 5, we get 3, 5, 6, 9 and 10. The sum of these multiples is 33.

Python 2.7

Run

Save

```
1. total=0
2. for num in range(1,12):
3.     if num%3==0 or num%5==0:
4.         total+=num
5. print("the sum of all multiples of 3 or 5 below 12 is:",total)
```

**Questions**

PHQ15.

**Test Cases**

Write a python program to find the difference between the sum of the squares of the first two hundred natural numbers and the square of the sum.

**Input & Output:**

The sum of the squares of the first twenty natural numbers is,  
 $1^2+2^2+3^2+\dots+20^2 = 2870$

The square of the sum of the first twenty natural numbers is,  
 $(1 + 2 + \dots + 10)^2 = 44100$

Hence the difference between the sum of the squares of the first twenty natural numbers and the square of the sum is  $44100 - 2870 = 41230$  Output: 401323300

Python 2.7

Run

Save

```
1. n=200
2. sumofsquares=sum(i*i for i in range(1,n+1))
3. squareofsum=sum(range(1,n+1))**2
4. difference=squareofsum-sumofsquares
5. print(difference)
```

Return a string of the words in reverse order concatenated by a single space.  
Note that s may contain leading or trailing spaces or multiple spaces between words. The returned string should only have a single space separating words. Do not include any extra spaces.

Python 2.7

Run

Save

```
1. def reverse_words(s:str)->str:  
2.     s=s.strip()  
3.     words=s.split()  
4.     words=words[::-1]  
5.     reversed_s=' '.join(words)  
6.     return reversed_s  
7. s=input()  
8. reversed_s=reverse_words(s)  
9. print(reversed_s)
```

where each term after the first is found by multiplying by a fixed, non-zero number called the common ratio.

example, the sequence 2, 6, 18, 54, ... is a geometric sequence ratio 3. Similarly, 10, 5, 2.5, 1.25, ... is a geometric sequence ratio 1/2.

python 2.7



Run

Save

```
1. def geo_pro(seq):
2.     if len(seq)<=1:
3.         return False
common_ratio = seq[1]/seq[0]
for i in range(1, len(seq)-1):
    if seq[i+1]/seq[i] != common_ratio:
        return False
return True
seq1=[2,6,18,54]
print(geo_pro(seq1))
```

**C**

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**Questions**  
PHQ17.

Write a Python program to find the maximum total from top to bottom of the triangle

```
3
4 6
2 7 6
8 5 9 3
```

By starting at the top of the triangle below and moving to adjacent numbers on the row below, the maximum total from top to bottom is 25.  
Explanation :  $3 + 6 + 7 + 9 = 25$

Input :

3

Python 2.7

Run

Save

```
1. triangle=[[3],
2.             [4, 6],
3.             [2, 7, 6],
4.             [8, 5, 9, 3]]
5. for i in range(len(triangle)-2, -1, -1):
6.     for j in range(i+1):
7.         triangle[i][j]+=max(triangle[i+1][j],triangle[i+1][j+1])
8.     max_total=triangle[0][0]
9. print(max_total)
```

Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.

Input :

```
{'1':['a','b'], '2':['c','d']}
```

Output:

```
ac  
ad  
bc  
bd
```

A screenshot of a Python code editor interface. At the top, there is a toolbar with a dropdown menu set to "Python 2.7", a "Run" button, and a "Save" button. Below the toolbar, the code is displayed in a dark-themed code editor. The code consists of four numbered lines of Python code:

```
1. dictionary={'1':['a','b'], '2':['c','d']}
2. for letter1 in dictionary['1']:
3.     for letter2 in dictionary['2']:
4.         print(letter1+letter2)
```

```
1. dictionary={'1':['a','b'], '2':['c','d']}
2. for letter1 in dictionary['1']:
3.     for letter2 in dictionary['2']:
4.         print(letter1+letter2)
```

## Questions

F1/Q3.

Write a python program to insert a character '\$' after a vowel if vowel is found otherwise insert '+' in the below text.

Input:

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.

Output:

The screenshot shows a Python code editor interface. At the top, there's a toolbar with a dropdown menu, a 'Run' button, and a 'Save' button. Below the toolbar, the Python version is set to 'Python 2.7'. The main area contains the following Python code:

```
1. text=input( )
2. vowels=['a','e','i','o','u']
3. new_text=""
4. for char in text:
5.     if char.lower()in vowels:
6.         new_text+=char+"$"
7.     else:
8.         new_text+=char if char.isalpha() else "+"
9. print(new_text)
```

The code defines a function to process the input text. It initializes an empty string `new\_text`. It then iterates over each character in the input `text`. If the character is a vowel (checked using `lower()`), it appends the character followed by a dollar sign (`"\$"`) to `new\_text`. Otherwise, it appends the character itself (checked using `isalpha()`) followed by a plus sign (`"+"`) to `new\_text`. Finally, it prints the resulting `new\_text`.

## Questions

### PHQ6

Test Cases

You are given with an array arr which contains integer elements. Sort these elements in ascending order if any negative number is found it has to be replaced with the average of an array.

Input : 9,0,4,5,6

Output 1)0,4,5,6,9 2) 4.8,4,5,6,9,2

Python 2.7

Run

Save

```
1. arr=[9,0,4,5,6]
n=len(arr)
average=sum(arr)/n
for i in range(n):
    if arr[i]<0:
        arr[i]=average
arr.sort()
print(arr)
print([round(i,1) for i in [average]+arr])
```

Test Case:

Input: s = "Hello World"

Output: 5

Input: s = " fly me to the moon "

Output: 4

Input: s = "luffy is still joyboy"

Python 2.7

Run

Save

```
1. def length_of_last_word(s:str)-> int:
2.     s=s.strip()
3.     i=len(s) - 1
4.     while i>= 0 and s[i] != ' ': I
5.         i -=1
6.     length=len(s)-1-i
7.     return length
8. s=input()
9. length=length_of_last_word(s)
10. print(length)
```

long mobno - To store the mobile number of the customer

double cost - To store the cost of the items purchased

double dis - To store the discount amount

double amount - To store the amount to be paid after discount

## Test Cases

Write a Python program To calculate discount on the cost of purchased items, based .

Cost Less than or equal to ₹ 10000

Discount 5%

Cost More than ₹ 10000 and less than or equal to ₹ 20000

Discount 10%

Cost More than ₹ 20000 and less than or equal to ₹ 35000

Discount 15%

Cost More than ₹ 35000

Discount 20%

Python 2.7

Run

Save

```
1. cost=float(input("enter the cost of purchased items:"))
2. if cost<=10000:
3.     discount=cost*0.05
4. elif cost>10000 and cost<=20000:
5.     discount=cost*0.1
6. elif cost>20000 and cost<=35000:
7.     discount=cost*0.15
8. else:
9.     discount=cost*0.2
10. final_cost=cost-discount
11. print(f"Cost:rs{cost}")
12. print(f"Discount:rs{discount}")
13. print(f"Final Cost:rs{final_cost}")
```

Write a program to generate and print all four digit tech numbers.

### Sample Input & Output

Consider the number 3025

Square of sum of the halves of 3025 =  $(30+25)^2$   
=  $(55)^2$   
= 3025 is a tech number.

The screenshot shows a Python code editor interface with the following details:

- Python Version: Python 2.7
- Run Button: The Run button is highlighted with a yellow border.
- Save Button: The Save button is also highlighted with a yellow border.
- Code Area:

```
1. for i in range(1000, 5000):
2.     num_str=str(i)
3.     half=len(num_str)//2
4.     first_half=int(num_str[:half])
5.     second_half=int(num_str[half:])
6.     if(first_half+second_half)**2 == i:
7.         print(i, "is a tech number")
```

```
1. def is_composite(n):
2.     if n<4:
3.         return False
4.     for i in range(2, int(n**0.5)+1):
5.         if n%i==0:
6.             return True
7.     return False
8. def print_composites(a,b):
9.     for n in range(a,b+1):
10.         if is_composite(n):
11.             print(n)
12. a=int(input( ))
13. b=int(input( ))
14. print("composite numbers between {} and")
15. print_composites(a,b)
```

Save

```
1. month = 1, year = 2019
2. month = 1, year = 1999
3. month = 1, year = 1999
4. month = 1, year = 1999
5. month = 1, year = 1999
6. month = 1, year = 1999
Import datetime
datetime enter the day="")month{1-12}=""))
day=int(input("enter the month,day").strftime("%A"))
month=int(input("enter the year="))
year=datetime(year,month,day).is {day_of_week}
years=int(input("enter datetime.datetime(year,month,day).is {day_of_week}"))
month=month+1
if month>12:
    month=1
    year+=1
else:
    print(f"the day of the week for{day}|{year} is {day_of_week}")
print(f"the day of the week for{day}|{year} is {day_of_week}")
```

stions

Q3.

are given with an array arr which contains integer elements. Sort these elements in non increasing order and print the middle element of the array.

```
ut arr=[90,-90,80,66,78,10]
ut ={-90,10,66,78,80,90}
```

iddle element : 66

Python 2.7

Run

Save

```
1. arr = [90, -90, 80, 66, 78, 10]
2.
3. arr.sort(reverse=True)
4. print(arr)
5.
6. mid = len(arr) // 2
7. print("Middle element:", arr[mid])
```

## Questions

PEQ37.

Write a python Program to find the frequency of each element present in the array a

Sample Input & Output:

[1, 2, 8, 3, 2, 2, 2, 5, 1]

Element | Frequency

Element		Frequency
1		2
2		4
8		1
3		1
4		1

Python 2.7

Run

Save

```
1. arr=[1,2,8,3,2,2,2,5,1]
2. freq={}
   for i in arr:
       if i in freq:
           freq[i]+=1
       else:
           freq[i]=1
   max_freq=max(freq.values())
   for key,value in freq.items():
       if value==max_freq:
           print(key,value)
```

## Test Cases

- 1.[9,10,8,3,4,5,9,8]
- 2.[1, 2, 4, 2, 5, 2, 5, 1]
- 3.[91,10,81,33,44,55,91,81,4]
- 4.[0,1,0,2,0,1,0,3,0,4,0,2,0,1]
- 5.[-1, -2, 4, -2, 5, 2, 5, -1]

$$\dots, 0 + 12 = 18, 12 + 18 = 30 \dots$$

Input : " 4,4,8,12,20

Output: Additive sequence  $4+4=8, 4+8=12, 8+12=20$

Python 2.7

Run

Save

```
1. a=[4,4,8,12,20]
   for i in range(len(a)-1):
       print(a[i], '+', a[i+1], '=', a[i]+a[i+1])
```



## Questions

PMQ31.

Given two integer arrays nums1 and nums2, return an array of their intersection. Each element in the result must appear as many times as it shows in both arrays and you may return the result in any order.

Example 1:

Input: nums1 = [1,2,2,1], nums2 = [2,2]

Output: [2,2]

Example 2:

Input: nums1 = [4,9,5], nums2 = [9,4,9,8,4]

Output: [4,9]

Explanation: [9,4] is also accepted.

Python 2.7

Run

Save

```
1. def intersection(list1, list2):
2.     list3=[value for value in list1 if value in list2]
3.     return list3
4. list1=[1,2,2,1]
5. list2=[2,2]
6. print(intersection(list1,list2))
```

y everyone has used the Multiplication Table. The multiplication table of  $n \times n$  is an integer matrix mat where  $\text{mat}[i][j] = i * j$  (1-indexed).

Given three integers m, n, and k, return the kth smallest element in the  $m * n$  multiplication table.

1	2	3
2	4	6

Python 2.7

Run

Save

```
1. def find_kth_element(m,n,k):
2.     left=1
3.     right=m*n
4.     while left<right:
5.         mid=(left+right)//2
6.         count=0
7.         for i in range (1,m+1):
8.             count+=min(mid//i,n)
9.         if count<k:
10.             left=mid+1
11.         else:
12.             right=mid
13.     return left
```

## SIMATIC Python IDE

X



← → C A Not secure | 172.18.60.6/php\_python/home.php  
Enter the number of elements to sort

Python 3.7

Run

Save

```
1. l1=[1,3,5]
2. l2=[2,4,6,8,10]
3. result=[]
4. minlen=min(len(l1),len(l2))
5. for i in range(minlen):
6.     result.append(l1[i])
7.     result.append(l2[i])
8. if(len(l1)>len(l2)):
9.     result.extend(l1[minlen:])
10. elif(len(l2)>len(l1)):
11.     result.extend(l2[minlen:])
12. print(result)
```

```
t : [[-2, -1, 1, 2], [-2, 0, 0, 2], [-1, 0, 0, 1]]
```

Python 2.7

Run

Save

```
1. l1=[[1,0,-1,0,-2,2]
2. t=0
3. found=False
4. for i in range(len(l1)):
5.     for j in range(i+1,len(l1)-1):
6.         for k in range(j+1,len(l1)):
7.             if l1[i]+l1[j]+l1[k]==t:
8.                 print("Elements are :({},{},{})".format(l1[i],l1[j],l1[k]))
9.                 found=True
10. if not found:
11.     print("No such element")
```

