List of problems for practice

Write a Python program to prompt the user for hours and rate per hour to compute net pay for display purpose. The basic pay is calculated as basic pay = (hours)*(hour rate). For calculation of grass pay, consider DA and HRA as 14% and 10% of basic pay respectively. There is a deduction as PF which is 4% of basic pay. (Note: consider significant values like total number hours in 30 working days of a month).
Sample input:
Enter Hours: 210
Enter Hour Rate: 120
Sample output:
Gross Pay: 2998.08
Input format
35
120
Output format
4704.0

Write a Python code, use loop structure to find the factorial of given number in Python domain. Prompt the user to input the number. For example, input number is 6, then the output value is 720.
Input format
6
Output format
720

Write a Python program to separate and print the numbers and their position of a given string. input is text with numbers, output format: line by line for example: input text: "my account number 234567 at Indian bank branch code 111 in Vellore 632001" output: 234567 18 111 52 632001 67

Write a Python program to check the given number in between 100 to 999 is Armstrong number. If the given number is Armstrong number, then out put the display as 'Yes' and otherwise 'No'. For example, given number is 407, output the display as 'Yes'. If given number is 253, then output the display as 'No'. (NOTE- Definition of Armstrong Number: A positive number of "n" digits is called an Armstrong number of order n (order is the number of digits) if: abcde = pow(a, n) + pow(b, n) + pow(c, n) + pow(d, n) + pow(e, n)) Input format 407 Output format Yes

In Python program code, define a function that can accept two strings (string-1 and string-2) as keyword argument values when it is called in main code, to print the first word of strings with maximum length and return the concatenate result of the two strings (result is single string = "string-1 string-2") to caller in main code. In main code, compute the following for the resultant

string: Number of alphabets Number of occurrence of vowels characters in dictionary format Sum of the digits of numbers Input format: First line is string1 Second line is string2 Output format: Line by line For example, input: string-1 is ‘Full Name’, string-2 is ‘Address with pin code 501205’ Output: Address 26 {'a': 1, 'e': 3, 'i': 2, 'o': 1, 'u': 1} 13

Write an algorithm for the following problem statement. Government of India (GOI) has decided to give scholarship as INR 500000 for students who are first graduates in their family and have scored average > 95 in math, physics and chemistry subjects (score = average of (maths, physics, chemistry)). And also, graduate should be first child of family. Write an algorithm for computer program to check if a student is eligible for scholarship or not. Consider the boundary conditions: All marks should be greater than 0. GOI has relaxed the average condition to get scholarship, if the first graduate is girl in the family; then scored average > 90. In case of first graduate, enter 1 otherwise 0; and gender is girl, then enter G and enter B for boy; and prompt the user to provide the input line by line. First line 1 or 0, second line G or B, third line maths marks, fourth line physics marks and fifth line chemistry marks. Print the output display as 500000 for eligible scholarship and otherwise 0. Input format 1 G 98 92 97 Output format 500000

Draw a flow chart for the following given problem statement. Get an integer number from user, construct a flow chart for the computer program to check whether it is even or odd, also check for prime and Fibonacci number one by one. Print the output display Even or Odd in first line for even or odd check. If the number is prime, then True in second line and if the number is Fibonacci number, then True in third line. For example, input is 37 and output is Odd, True, False line by line. Input format 37 Output format Odd True False

WRITE A PYTHON CODE TO PRINT ALL PRIME NUMBERS AND SUM OF THOSE NUMBERS WITHIN A GIVEN RANGE (I.E. INTERVAL VALUES) FROM THE USER. FOR EXAMPLE, GIVEN RANGE IS START = 25 AND END = 50, THEN PRIME NUMBERS ARE 29 31 37 41 43 47 AND THEIR SUM IS 228. Input format: line by line 25 50 Output format: list of prime number in first line, next line is their sum 29 31 37 41 43 47 228

Write a Python code for finding the following from the given string from the user. Check whether the string is a pangram or not Number of words Number of upper-case characters Index position of occurrence of vowels as list Input format: one line and output format: line by line. For example: Input: The quick brown Fox jumps over the lazy Dog Output: Yes 9 3 [2, 5, 6, 12, 17, 21, 26, 28, 33, 36, 41]

Write a Python code to get output as number of duplicate elements and list of duplicate elements in descending order for given size (n) of data and its values from the user. Here, data characteristics: it must have duplicate elements out of n values. For example, a given input data is n=16, its values are
120,101,25,44,35,44,155,7,124,155,25,101,195,155,205,101
and output is first line is number of duplicate elements and second line is its list form

Note: don't use built-in sorting method

Input format:first line is n and second line is its values
16
120,101,25,44,35,44,155,7,124,155,25,101,195,155,205,101
Output format:
4
[25,44,101,155]

Write a Python code to sort the tuples by ascending order of five records which is having three members as student name is string, reg.no. is integer (any number 1000-1099) and cgpa is floating consider x.x form. The input data is tuple as representation record of student name, reg.no. and cgpa given by user. The sort criteria is reg.no. For example, the following tuples are given as input data:
(Ravi,1045,9.2)
(Saib,1011,8.2)
(Robert,1090,8.8)
(Sruti,1016,9.1)
(Renu,1088,9.0)
then, the output of the code should be: [('Saib','1011','8.2'),('Sruti','1016','9.1'), ('Ravi','1045','9.2'), ('Renu','1088','9.0'),('Robert','1090','8.8')]
Input format
Each record line by line

Output format
In one line

Given a text, write python code to find count of alphabet words, count of alphanumeric and count numbers. Also, calculate the sum of the digits of numbers alone that appear in the text. For example, input format: text and output format: line by line, first line = count of alphabet words, second line = count of alphanumeric, third line = numbers, fourth line = sum
Input
In Indian Bank VIT branch 00V086 with IFSC IDIB000V086, Mr. Kumar bearing savings account number 845511 should maintain minimum balance 5000 rupees
Output
18
2
2
29

Write a Python program with regular expressions to check the validity of login credentials (username and password) given by User.
The Username should satisfy the following criteria:
- Contain the alphanumeric only
- First character must be alphabet
- Minimum length of username: 6

The Password should satisfy the following criteria:
Contain at least 1 letter between a and z

Contain at least 1 letter between A and Z
Contain at least 1 number between 0 and 9
Contain at least 1 character from $, #, @
Minimum length of password: 8
For example, Input format: first line is username and second line is password and output format: Valid or Invalid
Input
Var12345
Javv@5555
Ouput
Valid

Write a Python code for finding the following from the given string from the user.
Check whether the string is a pangram or not
Number of words
Number of upper-case characters
Index position of occurrence of vowels as list
Input format: one line and output format: line by line. For example:
Input:
The quick brown Fox jumps over the lazy Dog
Output:
Yes
9
3
[2, 5, 6, 12, 17, 21, 26, 28, 33, 36, 41]

Write a Python code to create a text file as pat3text (name of text file: pat3text) using python file concept.
Content of text file:
VIT has strong international presence across the world and partnerships with over 300 foreign universities. VIT provides options to study 2 years at VIT and 2 years at a partner foreign university.
Now, add the following additional information in existing text file.
One may also study a semester abroad or engage in international research collaboration.
Get the reading of the text file in output console. Also, print number of words in updated text file in output console.

Write a Python program to separate and print the numbers and their position of a given string.
input is text with numbers, output format: line by line
for example:
input text: "my account number 234567 at Indian bank branch code 111 in Vellore 632001"
output:
234567
18
111
52

632001
67

Write a Python code for the following problem.
As part of client project, team is required to create function with regular expressions to check the validity of a user credentials for log in the project. When the user given the user reg.no. and password, they should satisfy the following.
The reg.no. should satisfy the following criteria:

i. Length of register number = 9
ii. Registration with start with two digits but first digit should not be zero
iii. Followed by three letters i.e. alphabets with lower case or upper case
iv. Followed by 4 digits

The Password should satisfy the following criteria:

i. Contain at least 1 letter between a and z
ii. Contain at least 1 letter between A and Z
iii. Contain at least 1 number between 0 and 9
iv. Minimum length of password: 8
v. Maximum length of password: 16

The output display is 1 in case both Registration Number and Password are satisfied. 0 in case of any one is not satisfied or both are not satisfied.
Input format
First line is reg.no.
Second line is password

Output format
1 or 0

Write a Python code to get output as number of duplicate elements and list of duplicate elements in descending order for given size (n) of data and its values from the user. Here, data characteristics: it must have duplicate elements out of n values. For example, a given input data is n=16, its values are
120,101,25,44,35,44,155,7,124,155,25,101,195,155,205,101
and output is first line is number of duplicate elements and second line is its list form
Note: don't use built-in sorting method
Input format:first line is n and second line is its values
16
120,101,25,44,35,44,155,7,124,155,25,101,195,155,205,101
Output format:
4
[25,44,101,155]

Write a Python program to check the given number in between 100 to 999 is Armstrong number. If the given number is Armstrong number, then out put the display as 'Yes' and otherwise 'No'. For example, given number is 407, output the display as 'Yes'. If given number is 253, then output the display as 'No'.

**(Note-** Definition of Armstrong Number: A positive number of "n" digits is called an Armstrong number of order n (order is the number of digits) if: abcde = pow(a, n) + pow(b, n) + pow(c, n) + pow(d, n) + pow(e, n))

Input format

407

Output format

Yes

Write a Python code to swap the following two elements in the sorted elements of given tuple from the user.

5th index and 9th index

Here the tuple is created from the user with a length of n which is in between 10 to 20 and element values

For example, input

n = 12

14, 6, 12, 34, 10, 13, 5, 15, 11, 50, 44, 17

output

34

13