Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 6_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 32.5

Section 1 : Coding

1. Problem Statement

Alex is creating an account and needs to set up a password. The program prompts Alex to enter their name, mobile number, chosen username, and desired password. Password validation criteria include:

Length between 10 and 20 characters.At least one digit.At least one special character from !@#$%^&amp;* set. Display "Valid Password" if criteria are met; otherwise, raise an exception with an appropriate error message.

Input Format

The first line of the input consists of the name as a string.

The second line of the input consists of the mobile number as a string.

The third line of the input consists of the username as a string.

The fourth line of the input consists of the password as a string.

Output Format

If the password is valid (meets all the criteria), it will print "Valid Password"

If the password is weak (fails any one or more criteria), it will print an error message accordingly.

Refer to the sample outputs for the formatting specifications.

Sample Test Case

Input: John
9874563210
john
john1#nhoj

Output: Valid Password

Answer

```
name = input().strip()
mobile = input().strip()
username = input().strip()
password = input().strip()

if len(password) < 10 or len(password) > 20:

   print("Should contain at least one digit")
elif not any(c in '!@#$%^&*' for c in password):
   print("It should contain at least one special character")
else:
   print("Valid Password")
```

Status : Partially correct *Marks : 2.5/10*

2. Problem Statement

Alice is developing a program called "Name Sorter" that helps users organize and sort names alphabetically.

The program takes names as input from the user, saves them in a file, and then displays the names in sorted order.

File Name: sorted_names.txt.

Input Format

The input consists of multiple lines, each containing a name represented as a string.

To end the input and proceed with sorting, the user can enter 'q'.

Output Format

The output displays the names in alphabetical order, each name on a new line.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: Alice Smith
John Doe
Emma Johnson
q
Output: Alice Smith
Emma Johnson
John Doe

Answer

```
def name_sorter(filename):
   names = []
   while True:
      name = input().strip()
      if name.lower() == 'q':
         break
      names.append(name)

   names.sort()
```

```
    with open(filename, 'w') as file:
        file.write("\n".join(names))

    print("\n".join(names))

name_sorter("sorted_names.txt")
```

Status : Correct **_Marks : 10/10_**

3. Problem Statement

Implement a program that checks whether a set of three input values can form the sides of a valid triangle. The program defines a function is_valid_triangle that takes three side lengths as arguments and raises a ValueError if any side length is not a positive value. It then checks whether the sum of any two sides is greater than the third side to determine the validity of the triangle.

Input Format

The first line of input consists of an integer A, representing side1.

The second line of input consists of an integer B, representing side2.

The third line of input consists of an integer C, representing side3.

Output Format

The output prints either "It's a valid triangle" if the input side lengths form a valid triangle,

or "It's not a valid triangle" if they do not.

If there is a ValueError, it should print "ValueError: <error_message>".

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 3
4
5
Output: It's a valid triangle

Answer

```
# You are using Python
def is_valid_triangle(a, b, c):
    if a <= 0 or b <= 0 or c <= 0:
        raise ValueError("Side lengths must be positive")

    if a + b > c and a + c > b and b + c > a:
        return "It's a valid triangle"
    else:
        return "It's not a valid triangle"

# Taking input
try:
    side1 = int(input().strip())
    side2 = int(input().strip())
    side3 = int(input().strip())

    result = is_valid_triangle(side1, side2, side3)
    print(result)

except ValueError as e:
    print(f"ValueError: {e}")
```

Status : Correct ***Marks : 10/10***

4. Problem Statement

In the enchanted realm of Academia, you, the Academic Alchemist, are bestowed with a magical quill and a parchment to weave the grades of aspiring students into a tapestry of academic brilliance.

The mission is to craft a Python program that empowers faculty members to enter student grades for any two subjects, stores these magical grades in a mystical file, and then, with a wave of your virtual wand, calculates the GPA to unveil the true essence of academic achievement.

Input Format

The input format is a string representing the student's name, any two subjects, and corresponding grades.

After entering grades, they can type 'done' when prompted for the student's name.

Output Format

The output should display the (average of grades) calculated GPA with a precision of two decimal places.

The magical grades will be saved in a mystical file named "magical_grades.txt".

Refer to the sample output for format specifications.

Sample Test Case

Input: Alice
Math
95
English
88
done

Output: 91.50

Answer

```
# You are using Python
MAGICAL_FILE = "magical_grades.txt"

def calculate_gpa(grades):
    return round(sum(grades) / len(grades), 2)

def record_grades():
    with open(MAGICAL_FILE, "w") as file:
        while True:
            student_name = input().strip()
            if student_name.lower() == "done":
                break
            subject1 = input().strip()
            grade1 = int(input().strip())
            subject2 = input().strip()
            grade2 = int(input().strip())

            # Ensuring valid grade inputs
            if not (0 <= grade1 <= 100 and 0 <= grade2 <= 100):
                print("Grades must be between 0 and 100.")
                continue

            gpa = calculate_gpa([grade1, grade2])
            print(f"{gpa:.2f}")

            file.write(f"{student_name}, {subject1}: {grade1}, {subject2}: {grade2}, GPA: 
{gpa:.2f}\n")

record_grades()
```

Status : Correct ***Marks : 10/10***