

Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 6_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. 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

n=0

s=input()

while s!="done":

 s=input()

 if s.isdigit():

 n+=int(s)

avg=n/2

print(f"{avg:.2f}")

Status : Correct

Marks : 10/10

2. Problem Statement

Write a program to read the Register Number and Mobile Number of a

student. Create user-defined exception and handle the following:

If the Register Number does not contain exactly 9 characters in the specified format(2 numbers followed by 3 characters followed by 4 numbers) or if the Mobile Number does not contain exactly 10 characters, throw an `IllegalArgumentException`. If the Mobile Number contains any character other than a digit, raise a `NumberFormatException`. If the Register Number contains any character other than digits and alphabets, throw a `NoSuchElementException`. If they are valid, print the message 'valid' or else print an Invalid message.

Input Format

The first line of the input consists of a string representing the Register number.

The second line of the input consists of a string representing the Mobile number.

Output Format

The output should display any one of the following messages:

If both numbers are valid, print "Valid".

If an exception is raised, print "Invalid with exception message: ", followed by the specific exception message.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 19ABC1001

9949596920

Output: Valid

Answer

You are using Python

```
class IllegalArgumentException(Exception):  
    pass
```

```
class NumberFormatException(Exception):  
    pass
```

```

class NoSuchElementException(Exception):
    pass

def validate_register_number(register_number):
    if len(register_number) != 9:
        raise IllegalArgumentException("Register Number should have exactly 9
characters.")
    if not register_number[:2].isdigit() or not register_number[2:5].isalpha() or not
register_number[5:].isdigit():
        raise IllegalArgumentException("Register Number should have the format: 2
numbers, 3 characters, and 4 numbers.")
    if not register_number.isalnum():
        raise NoSuchElementException("Register Number should contain only digits
and alphabets.")

def validate_mobile_number(mobile_number):
    if len(mobile_number) != 10:
        raise IllegalArgumentException("Mobile Number should have exactly 10
characters.")
    if not mobile_number.isdigit():
        raise NumberFormatException("Mobile Number should only contain digits.")

register_number = input().strip()
mobile_number = input().strip()

try:
    validate_register_number(register_number)
    validate_mobile_number(mobile_number)
    print("Valid")
except (IllegalArgumentException, NumberFormatException,
NoSuchElementException) as e:
    print(f"Invalid with exception message: {str(e)}")

```

Status : Correct

Marks : 10/10

3. Problem Statement

Write a program to obtain the start time and end time for the stage event show. If the user enters a different format other than specified, an exception occurs and the program is interrupted. To avoid that, handle the

exception and prompt the user to enter the right format as specified.

Start time and end time should be in the format 'YYYY-MM-DD HH:MM:SS'. If the input is in the above format, print the start time and end time. If the input does not follow the above format, print "Event time is not in the format "

Input Format

The first line of input consists of the start time of the event.

The second line of the input consists of the end time of the event.

Output Format

If the input is in the given format, print the start time and end time.

If the input does not follow the given format, print "Event time is not in the format".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 2022-01-12 06:10:00

2022-02-12 10:10:12

Output: 2022-01-12 06:10:00

2022-02-12 10:10:12

Answer

```
# You are using Python
from datetime import datetime
```

```
def validate_datetime_format(date_str):
    try:
        datetime.strptime(date_str, '%Y-%m-%d %H:%M:%S')
        return True
    except ValueError:
        return False
```

```
start_time = input().strip()
```

```
end_time = input().strip()
if validate_datetime_format(start_time) and
validate_datetime_format(end_time):
    print(start_time)
    print(end_time)
else:
    print("Event time is not in the format")
```

Status : Correct

Marks : 10/10

4. Problem Statement

Bob, a data analyst, requires a program to automate the process of analyzing character frequency in a given text. This program should allow the user to input a string, calculate the frequency of each character within the text, save these character frequencies to a file named "char_frequency.txt," and display the results.

Input Format

The input consists of the string.

Output Format

The first line prints "Character Frequencies:".

The following lines print the character frequency in the format: "X: Y" where X is the character and Y is the count.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: aaabbbccc

Output: Character Frequencies:

a: 3

b: 3

c: 3

Answer

```
# You are using Python
def calculate_character_frequency(text):
    frequency = {}
    for char in text:
        frequency[char] = frequency.get(char, 0) + 1

    return frequency

def save_frequencies_to_file(frequency, text):
    with open("char_frequency.txt", "w") as file:
        file.write("Character Frequencies:\n")
        for char in text:
            if char in frequency:
                file.write(f"{char}: {frequency[char]}\n")
            del frequency[char]

def main():
    text = input()
    frequency = calculate_character_frequency(text)

    print("Character Frequencies:")
    for char in text:
        if char in frequency:
            print(f"{char}: {frequency[char]}")
        del frequency[char]

    save_frequencies_to_file(frequency, text)

if __name__ == "__main__":
    main()
```

Status : Correct

Marks : 10/10