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

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 !@#$%^&* 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

```
def validate_password(password):
    special_chars = "!@#$%&*"
    has_digit = any(char.isdigit() for char in password)
    has_special = any(char in special_chars for char in password)

    # Length check: 10 to 20 characters
    if not (9 <= len(password) <= 20):
        print("Should be a minimum of 10 characters and a maximum of 20
characters")
        return

    # Digit check
    if not has_digit:
        print("Should contain at least one digit")
        return

    # Special character check
    if not has_special:
        print("It should contain at least one special character")
```

```
    return

    print("Valid Password")

# Getting input from the user
name = input()
num = input()
name1 = input()
password = input()

validate_password(password)
```

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() and register_number[2:5].isalpha() and 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 only contain 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.")

def validate_student_details(register_number, mobile_number):
```

```
    try:
        validate_register_number(register_number)
        validate_mobile_number(mobile_number)
        print("Valid")
    except Exception as e:
        print(f"Invalid with exception message: {str(e)}")

# Taking user input
register_number = input().strip()
mobile_number = input().strip()

# Validate and print result
validate_student_details(register_number, mobile_number)
```

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

3. 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

```
# You are using Python
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:
        for name in names:
            file.write(name + "\n")

    for name in names:
        print(name)

# Call the function with the specified file name
name_sorter("sorted_names.txt")
```

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

```
# Read input string
text = input()

# Track frequencies and order
freq = {}
order = []

for char in text:
    if char not in freq:
        order.append(char)
        freq[char] = 0
    freq[char] += 1

# Write frequencies to file
with open("char_frequency.txt", "w") as file:
    for char in order:
```

```
        file.write(f"{char}: {freq[char]}\n")

# Print output
print("Character Frequencies:", end=" ")
for char in order:
    print(f"{char}: {freq[char]}", end=" ")
print()
```

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