CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY & RESEARCH

Department of Computer Science and Engineering

CE259 - Programming in Python

Internal Practical Examination

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Class : 4CSE2-B

1. Write a program that reads an integer from the user. If the value entered by the user is less than 2 then your program should display an appropriate error message. Otherwise your program should display the prime numbers that can be multiplied together to compute n, with one factor appearing on each line.

Source Code:

```
import math

def primeFactors(n):
    while n % 2 == 0:
        print(float(2)),
        n = n / 2

    for i in range(3, int(math.sqrt(n))+1, 2):
        while n % i == 0:
            print(i),
            n = n / i

    if n > 2:
        print(n)

# driver code
n = int(input("Enter a number : "))
if n < 2:
    print("Entered number is less than 2!")
    exit
else:
    primeFactors(n)
```

Output:

```
================== RESTART: D:\Python\Internal Practical\1.py ==================
Enter a number : 6
2.0
3.0
```

2. Write a function named reverseLookup that finds all of the keys in a dictionary that map to a specific value. The function will take the dictionary and the value to search for as its only parameters. It will return a (possibly empty) list of keys from the dictionary that map to the provided value. Include amain program that demonstrates the reverseLookup function as part of your solution to this exercise. Your program should create a dictionary and then show that the reverseLookup function works correctly when it returns multiple keys, a single key, and no keys. Ensure that your main program only runs when the file containing your solution to this exercise has not been imported into another program.

Source Code:

```
def reverseLookup(data, value):
    keys = []
    for key in data:
        if data[key] == value:
            keys.append(key)
    return keys

def main():
    fruits = {"Red": "Apple", "Green": "Water Melon",
              "Green": "Apple", "Yellow": "Banana", "Brown": "Kiwi"}

    print("Color of Apple : ", reverseLookup(fruits, "Apple"))
    print()

    print("Color of Kiwi : ", reverseLookup(fruits, "Kiwi"))
    print()

    print("Color of Grapes : ", reverseLookup(fruits, "Grapes"))
    print()

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

Output:

```
================== RESTART: D:\Python\Internal Practical\2.py ==================
Color of Apple :  ['Red', 'Green']

Color of Kiwi :  ['Brown']

Color of Grapes :  []
```

3. Write a function that generates a random password. The password should have a random length of between 7 and 10 characters. Each character should be randomly selected from positions 33 to 126 in the ASCII table. Your function will not take any parameters. It will return the randomly generated password as its only result. Display the randomly generated password in your file's main program. Your main program should only run when your solution has not been imported into another file.
   Hint: You will probably find the chr function helpful when completing this exercise. Detailed information about this function is available online.

Source Code:

```
from random import randint

def randomPassword():
    randomLength = randint(7, 10)

    result = ""
    for i in range(randomLength):
        randomChar = chr(randint(33, 126))
        result = result + randomChar
    return result

def main():
    print("Random password generated is : ", randomPassword())

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

Output:

```
================== RESTART: D:\Python\Internal Practical\3.py ==================
Random password generated is :  DloJ4+FZ
```

4. A video club wants to reward its best members with a discount based on the member's number of movie rentals and the number of new members referred by the member. The discount is in percent and is equal to the sum of the rentals and the referrals, but it cannot exceed 75 percent. Write a program to calculate the value of the discount.
   Here is a sample run:
   Enter the number of movie rentals: 56
   Enter the number of members referred to the video club: 3
   The discount is equal to: 59.00 percent.

Source Code:

```
def CalculatePercent():

    discount = 0
    max_discount = 75.0

    rentals = int(input("Enter number of movie rentals : "))
    referrals = int(input("Enter number of members referred to the
video club : "))

    discount = rentals + referrals

    # when discount exceed 75.00, then we offer max discount
    if discount > max_discount:
        print(f"The discount is equal to : {max_discount} percent.")
    else:
        print(f"The discount is equal to : {float(discount)}
percent.")


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

Output:

```
================== RESTART: D:\Python\Internal Practical\4.py ==================
Enter number of movie rentals : 60
Enter number of members referred to the video club : 10
The discount is equal to : 70.0 percent.
```

5. Write an application to pre-sell a limited number of cinema tickets. Each buyer can buy as many as 4 tickets. No more than 100 tickets can be sold. Implement a program called TicketSeller that prompts the user for the desired number of tickets and then displays the number of remaining tickets. Repeat until all tickets have been sold, and then display the total number of buyers.

Source Code:

```
def TicketSeller():
    total_tickets = 100
    total_buyers = 0

    while total_tickets > 0:
        print(f"\nTotal {total_tickets} tickets is remaining.")

        n = int(input("Enter no. of tickets you want to buy : "))
        if n > 4:
            print("\nYou can't buy more than 4 tickets!")
        elif n > total_tickets:
            print(f"\nOnly {total_tickets} tickets is remaining!")
        else:
            total_tickets = total_tickets - n
            total_buyers += 1
    print(f"\n\nTotal no. of buyers : {total_buyers}.")


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

Output:

```
================== RESTART: D:\Python\Internal Practical\5.py

Total 100 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 96 tickets is remaining.
Enter no. of tickets you want to buy : 5

You can't buy more than 4 tickets!

Total 96 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 92 tickets is remaining.
Enter no. of tickets you want to buy : 3

Total 89 tickets is remaining.
Enter no. of tickets you want to buy : 2

Total 87 tickets is remaining.
Enter no. of tickets you want to buy : 1

Total 86 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 82 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 78 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 74 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 70 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 66 tickets is remaining.
Enter no. of tickets you want to buy : 4
```

```
Total 62 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 58 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 54 tickets is remaining.
Enter no. of tickets you want to buy : 3

Total 51 tickets is remaining.
Enter no. of tickets you want to buy : 2

Total 49 tickets is remaining.
Enter no. of tickets you want to buy : 1

Total 48 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 44 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 40 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 36 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 32 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 28 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 24 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 20 tickets is remaining.
Enter no. of tickets you want to buy : 4
```

```
Total 16 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 12 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 8 tickets is remaining.
Enter no. of tickets you want to buy : 4

Total 4 tickets is remaining.
Enter no. of tickets you want to buy : 3

Total 1 tickets is remaining.
Enter no. of tickets you want to buy : 2

Only 1 tickets is remaining!

Total 1 tickets is remaining.
Enter no. of tickets you want to buy : 1


Total no. of buyers : 29.
```

Thank you !