Netaji Subhash Engineering College

Department of Computer Science & Engineering

INDEX

Course Name: IT Workshop (Python) **Student Name: Sourav Ghorai**

Course Code: PCC-CS-393 **University Roll No. :10900121177**

Sl. No.	Exp. No.	Problem Statement	D.O.E	D.O.S	Marks			Signature of the Faculty with Date	Remarks (if any)
					5	15	20		
	51.	Create a module to check if a passed string is a palindrome or not. Write a program to find whether a string is a palindrome or not using this module.	14.11.2022	20.01.2023					
	52.	Create a module to check whether a number is a prime or not. Write a program to find the prime number between two limits using this module.	14.112022	20.01.2023					
	53.	Create a module to find the factorial of a number and import the module from the main program to find the factorial of a given number.	14.11.2022	20.01.2023					
	54.	Write a program to find the mean, median, and standard deviation of a list of random numbers between 1 and 10.	14.11.2022	20.01.2023					
	55.	Write a program to shuffle elements of a list of random numbers between given ranges.	14.11.2022	20.01.2023					
	56.	Write a program to create a list of random numbers using list comprehension.	14.11.2022	20.01.2023					
	57.	Write a program to read a number from the user. If the number is positive or zero, print it, otherwise raise an exception.	16.01.2023	20.01.2023					
	58.	Write a program to read two numbers from the user and perform basic mathematical operations (addition, multiplication, subtraction, division) by handling all possible exceptions.	16.01.2023	20.01.2023					

	59.	Write a program to read a number from the user and print its square. Generate Keyboard Interrupt exception if Ctrl + C is pressed instead of a number.	16.01.2023	20.01.2023					
	63.	Write a program to accept a file name from the user and count the number of words present in the file.	16.01.2023	20.01.2023					
	64.	Write a program to print each line of a file in reverse order.	16.01.2023	20.01.2023					
	65.	Write a program to reverse the content of a file and store it in another file.	16.01.2023	20.01.2023					
Average Marks									

Module & Packages

❖ **Problem Statement 51:** Create a module to check if a passed string is a palindrome or not. Write a program to find whether a string is a palindrome or not using this module.

❖ **Python Code:**

Module Code:

```
def palin(s):

      return s==s[::-1]
```

Main Code:

```
import mymodule1

str=input("Enter any string: ")
ans=mymodule1.palin(str)
if ans:
      print("It is palindrome")
else:
      print("It is not palindrome")
```

❖ **Sample Output:**

```
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q51.py"
Enter any string: radar
It is palindrome
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q51.py"
Enter any string: adefg
It is not palindrome
PS D:\Python_Folder>
```

❖ **Problem Statement 52**: Create a module to check whether a number is a prime or not. Write a program to find the prime number between two limits using this module.

❖ **Python Code**:

Module Code:

```
def primecheck(a,b):
    for number in range (a, b + 1):
        if number > 1:
            for i in range (2, number):
                if (number % i) == 0:
                    break
            else:
                print (number,end=(' '));
```

Main Code:

```
import mymodule2
a=int(input("Enter the upper limit: "))
b=int(input("Enter the lower limit: "))
print ("The Prime Numbers in the range are: ")
mymodule2.primecheck(a,b)
```

❖ **Sample Output:**

```
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q52.py"
Enter the upper limit: 3
Enter the lower limit: 15
The Prime Numbers in the range are:
3 5 7 11 13
PS D:\Python_Folder>
```

❖ **Problem Statement 53:** Create a module to find the factorial of a number and import the module from the main program to find the factorial of a given number.

❖ **Python Code:**

Module Code:

```
def fact(n):
    output=1
    for i in range(1,n+1):
        output*=i
    return output
```

Main Code:

```
import mymodule3
a=int(input("Enter the number: "))
print("The factorial is: ", mymodule3.fact(a))
```

❖ **Sample Output:**

```
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q53.py"
Enter the number: 5
The factorial is:  120
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q53.py"
Enter the number: 4
The factorial is:  24
PS D:\Python_Folder>
```

❖ **Problem Statement 54:** Write a program to find the mean, median, and standard deviation of a list of random numbers between 1 and 10.

❖ **Python Code:**

Module Code:

```
import random
def mean(ls):
    return sum(ls)/len(ls)
def median(ls):
    ls.sort()
    n=len(ls)
    if n%2==0:
        return (ls[n//2]+ls[n//2-1])/2
    else:
        return ls[n//2]
def standev(ls):
    mea=mean(ls)
    var=sum((x-mea)**2 for x in ls)
    return var**0.5
```

Main Code:

```
import mymodule4
a=int(input("Enter the no.of random elements to be considered: "))
if(a>10):
    a=int(input("Enter the no.of random elements to be considered: "))
lst = mymodule4.random.sample(range(10), a)
print("The mean is: ", mymodule4.mean(lst))
print("The median is: ",
mymodule4.median(lst))
print("The standard deviation is: ",
mymodule4.standev(lst))
```

❖ **Sample Output:**

```
Enter the no.of random elements to be considered: 10
The mean is:  4.5
The median is:  4.5
The standard deviation is:  9.082951062292475
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q54.py"
Enter the no.of random elements to be considered: 15
Enter the no.of random elements to be considered: 6
The mean is:  4.666666666666667
The median is:  5.0
The standard deviation is:  6.582805886043833
```

❖ **Problem Statement 55:** Write a program to shuffle elements of a list of random numbers between given ranges.

❖ **Python Code:**

Module Code:

```
import random
def shuffle(ls):
    random.shuffle(ls)
    return ls
```

Main Code:

```
import mymodule5
a=int(input("Enter the no.of random elements to be considered: "))
x=int(input("Enter the lower limit: "))
y=int(input("Enter the upper limit: "))
lst = mymodule5.random.sample(range(x,y), a)
print("The list is: ", lst)
print("The random list is: ", mymodule5.shuffle(lst))
```

❖ **Sample Output:**

```
Enter the no.of random elements to be considered: 5
Enter the lower limit: 3
Enter the upper limit: 12
The list is:  [5, 11, 8, 10, 4]
The random list is:  [8, 5, 11, 10, 4]
PS D:\Python_Folder>
```

❖ **Problem Statement 56:** Write a program to create a list of random numbers using list comprehension.

❖ **Python Code:**

Module Code:

```
import random
def randintcomp(a,low,high):
    res = [random.randrange(low, high) for i in range(a)]
    return res
```

Main Code:

```
import mymodule6
a=int(input("Enter the range of elements to be considered: "))
x=int(input("Enter the lower limit: "))
y=int(input("Enter the upper limit: "))
print("The list is: ", mymodule6.randintcomp(a,x,y))
```

❖ **Sample Output:**

```
PS D:\Python_Folder> python -u "d:\Python_Folder\Module\Q56.py"
Enter the range of elements to be considered: 5
Enter the lower limit: 5
Enter the upper limit: 15
The list is:  [12, 13, 11, 10, 10]
PS D:\Python_Folder>
```

Exception Handling

❖ **Problem Statement 57:** Write a program to read a number from the user. If the number is positive or zero, print it, otherwise raise an exception.

❖ **Python Code:**

```
try:
    num = int(input("Enter a number: "))
    if num < 0:
        raise ValueError("The number should be positive or zero")
    else:
        print(num)
except ValueError as e:
    print(e)
```

❖ **Sample Output:**

```
PS D:\Python_Folder> python -u "d:\Python_Folder\Exception_Handling.py\Q57.py"
Enter a number: 5
5
PS D:\Python_Folder> python -u "d:\Python_Folder\Exception_Handling.py\Q57.py"
Enter a number: 0
0
PS D:\Python_Folder> python -u "d:\Python_Folder\Exception_Handling.py\Q57.py"
Enter a number: -5
The number should be positive or zero
PS D:\Python_Folder>
```

❖ **Problem Statement 58**: Write a program to read two numbers from the user and perform basic mathematical operations (addition, multiplication, subtraction, division) by handling all possible exceptions.

❖ **Python Code**:

```
while True:
    try:
        num1 = float(input("Enter the first number: "))
        num2 = float(input("Enter the second number: "))
        add = num1 + num2
        mul = num1 * num2
```

```
            sub = num1 - num2
            div = num1 / num2
            print("Addition: ", add)
            print("Multiplication: ", mul)
            print("Subtraction: ", sub)
            print("Division: ", div)
            break
        except ValueError:
            print("Please enter a valid number.")
        except ZeroDivisionError:
            print("Cannot divide by zero. Please enter a non-zero number.")
```

❖ **Sample Output**:

```
Enter the first number: 6
Enter the second number: 3
Addition:  9.0
Multiplication:  18.0
Subtraction:  3.0
Division:  2.0
PS D:\Python_Folder>
```

❖ **Problem Statement 59:** Write a program to read a number from the user and print its square. Generate Keyboard Interrupt exception if Ctrl + C is pressed instead of a number.

❖ **Python Code:**

```
try:
    num = float(input("Enter a number: "))
    square = num**2
    print("Square: ", square)
except KeyboardInterrupt:
    print("Keyboard Interrupt exception caught.")
except ValueError:
    print("Please enter a valid number.")
```

❖ **Sample Output:**

```
Enter a number: 5
Square:  25.0
PS D:\Python_Folder> python -u "d:\Python_Folder\Excep
tion_Handling.py\Q59.py"
Enter a number: 6
Square:  36.0
PS D:\Python_Folder>
```

File Handling

❖ **Problem Statement 63:** Write a program to accept a file name from the user and count the number of words present in the file**.**

❖ **Python Code:**

```
try:
    filename = input("Enter the file name: ")
    file = open(filename, "r")
    data = file.read()
    words = data.split()
    word_count = len(words)
    print("Number of words in the file: ", word_count)
except FileNotFoundError:
    print("File not found. Please enter a valid file name.")
```

❖ **Sample Output:**

```
Enter the file name: File Handling/f1.txt
Number of words in the file:  3
PS D:\Python_Folder>
```

Text File :

File Handling > f1.txt

```
1   Hello india
2   Welcome
```

❖ **Problem Statement 64:** Write a program to print each line of a file in reverse order.

❖ **Python Code:**

```
try:
    file = open("File Handling/f1.txt","r")
    lines = file.readlines()
    for line in lines[::]:
        print(line[::-1])
except FileNotFoundError:
    print("File not found. Please enter a valid file name.")
```

❖ **Sample Output:**

```
aidni olleH
emocleW
PS D:\Python_Folder>
```

Text File:

File Handling > f1.txt

```
1   Hello india
2   Welcome
```

❖ **Problem Statement 65:** Write a program to reverse the content of a file and store it in another file.

❖ **Python Code:**

```
try:
    original = open("File Handling/f1.txt","r")
    reversed = open("File Handling/f2.txt","w")
    original_data = original.read()
    reversed_data = original_data[::-1]
    reversed.write(reversed_data)
    print("Data reversed and stored in", reversed)
except FileNotFoundError:
    print("File not found. Please enter a valid file name.")
```

❖ **Sample Output:**

File Handling > f2.txt

```
1   emocleW
2   aidni olleH
```

Text File:

File Handling > f1.txt

```
1   Hello india
2   Welcome
```