CANARA ENGINEERING COLLEGE

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

V SEMESTER B.E. - CSE

Course: APPLICATION DEVELOPMENT USING PYTHON Code: 18CS55

ASSIGNMENT (5 Marks)

Note: Answer the ASSIGNED questions and submit on or before 17-01-2022.

Sl. No	Group Name	Questions
1	G1	Write a program to check whether a number is prime, Armstrong or perfect number using functions.
		Given a data set of airfoil self noise, find the average scaled sound pressure for a given range of angle of attack. (Big data analytics problem).
		Define a operator overloading member function which takes TWO objects representing complex numbers and returns new complex number which is the addition of two complex numbers. Define a suitable class 'Complex' to represent the complex number with appropriate member functions and data members. Develop a program to read N (N >=2) complex numbers and to compute the addition of N complex numbers with operator overloading.
2	G2	Write a program to print all natural numbers between 1 to n using recursion.
		Write a program that reads a file and prints the letters in decreasing order of frequency. Your program should convert all the input to lower case and only count the letters a-z. Your program should not count spaces, digits, punctuation, or anything other than the letters a-z.
		Write a program to display the distinct words in a file with length of word and frequency.
3	G3	Write a recursive function to find factorial of a number. Write a Python program to compute binomial coefficient.
		This program counts the distribution of the hour of the day for each of the messages. You can pull the hour from the "From" line by finding the time string and then splitting that string into parts using the colon character. Once you have accumulated the counts for each hour, print out the counts, one per line, sorted by hour as shown below. Sample Execution: python timeofday.py Enter a file name: mbox-short.txt 04 3 06 1 07 1 09 2 10 3 11 6 14 1 15 2 16 4 17 2 18 1 19 1

		Create a class ‘length’ with three attributes: mtrs, cms, mms representing meter, centimeter and millimeter respectively. Write member functions to initialize and to print the objects of ‘length’. Develop a python program to create TWO objects representing heights of TWO persons. Calculate and print the difference in their heights with suitable message.
4	G4	Write a function which returns sum, difference and product of TWO numbers. Call the appropriate operation by supplying two numbers and an operator.
		Write a program to read and parse the “From” lines and pull out the addresses from the line. Count the number of messages from each person using a dictionary. After all the data has been read, print the person with the most commits by creating a list of (count, email) tuples from the dictionary. Then sort the list in reverse order and print out the person who has the most commits. Sample Line: From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008 Enter a file name: mbox-short.txt cwen@iupui.edu 5 Enter a file name: mbox.txt zqian@umich.edu 195
		Write a swap function which swaps two array elements. Write selection sort algorithm.
5	G5	Take the following Python code that stores a string:‘ **str = ’X-DSPAM-Confidence:0.8475’** Use find and string slicing to extract the portion of the string after the colon character and then use the float function to convert the extracted string into a floating point number.
		Write a program to find reverse of any number using recursion.
		Write a program to read the number of cities (N) and number capital cities from console and print the single list of cities and capitals in an alphabetical order.
6	G6	Write a Python program to read a text file with First name, last name, age and Balance. Sort the details of persons based on first_name, last_name and display the same.
		Write a Python program that records the domain name (instead of the address) where the message was sent from instead of who the mail came from (i.e., the whole email address). At the end of the program, print out the contents of your dictionary. python schoolcount.py Enter a file name: mbox-short.txt {'media.berkeley.edu': 4, 'uct.ac.za': 6, 'umich.edu': 7, 'gmail.com': 1, 'caret.cam.ac.uk': 1, 'iupui.edu': 8}
		Write a Python program to count the same values associated with key in a dictionary.
7	G7	Write a Python program to read file containing USN, marks in SIX subject and total Marks. Print the student USN and Total Marks in the descending order of Total Marks.
		Write a program to generate nth Fibonacci term using recursion.
		Create function which takes an array of numbers and returns average. Write a program to read N numbers to find average.
8	G8	Write a Python program to read the contents of a file in reverse order.
		Write a program to read through a mail log, build a histogram using a dictionary to count how many messages have come from each email address and print who has the most messages in the file. After all the data has been read and the dictionary has been created, look through the

		dictionary using a maximum loop (see Section [maximumloop]) to find who has the most messages and print how many messages the person has. Enter a file name: mbox-short.txt cwen@iupui.edu 5 Enter a file name: mbox.txt zqian@umich.edu 195
		Write a function to add duration to a given time. Call the function appropriately.
9	G9	Write a program to prompt for a file name, and then read through the file and look for lines of the form: X-DSPAM-Confidence:0.8475 When you encounter a line that starts with "X-DSPAM-Confidence:" pull apart the line to extract the floating-point number on the line. Count these lines and then compute the total of the spam confidence values from these lines. When you reach the end of the file, print out the average spam confidence. Enter the file name: mbox.txt Average spam confidence: 0.894128046745 Enter the file name: mbox-short.txt Average spam confidence: 0.750718518519 Test your file on the mbox.txt and mbox-short.txt files.
		Write a program to print all strong numbers between given interval (2 to 3 digits) using functions.
		Write a program to read through a mail log, build a histogram using a dictionary to count how many messages have come from each email address, and print the dictionary. Enter file name: mbox-short.txt {'gopal.ramasammycook@gmail.com': 1, 'louis@media.berkeley.edu': 3, 'cwen@iupui.edu': 5, 'antranig@caret.cam.ac.uk': 1, 'rjlowe@iupui.edu': 2, 'gsilver@umich.edu': 3, 'david.horwitz@uct.ac.za': 4, 'wagnermr@iupui.edu': 1, 'zqian@umich.edu': 4, 'stephen.marquard@uct.ac.za': 2, 'ray@media.berkeley.edu': 1}
10	G10	Write a Python program to read a string from the user and append it into a file.
		Write a program to read through the mail box data and when you find line that starts with "From", you will split the line into words using the split function. We are interested in who sent the message, which is the second word on the From line. From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008 You will parse the From line and print out the second word for each From line, then you will also count the number of From (not From:) lines and print out a count at the end. This is a good sample output with a few lines removed: python fromcount.py Enter a file name: mbox-short.txt stephen.marquard@uct.ac.za louis@media.berkeley.edu zqian@umich.edu [...some output removed...] ray@media.berkeley.edu cwen@iupui.edu cwen@iupui.edu

		cwen@iupui.edu There were 27 lines in the file with From as the first word.
		Write a program that categorizes each mail message by which day of the week the commit was done. To do this look for lines that start with "From", then look for the third word and keep a running count of each of the days of the week. At the end of the program print out the contents of your dictionary (order does not matter). Sample Line: From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008 Sample Execution: python dow.py Enter a file name: mbox-short.txt {'Fri': 20, 'Thu': 6, 'Sat': 1}
11	G11	Write a Python program to remove the characters of odd index values in a string. Output 1: Enter string: hello Modified string is: hlo Output 2: Enter string: checking Modified string is: cekn
		Write the program that prompts the user for a list of numbers and prints out the maximum and minimum of the numbers at the end when the user enters "done". Write the program to store the numbers the user enters in a list and use the max() and min() functions to compute the maximum and minimum numbers after the loop completes. Enter a number: 6 Enter a number: 2 Enter a number: 9 Enter a number: 3 Enter a number: 5 Enter a number: done Maximum: 9.0 Minimum: 2.0
		Write a function called print_time that takes a Time object and prints it in the form hour: minute: second. (Hint: the format sequence '%.2d' prints an integer using at least two digits, including a leading zero if necessary.)
12	G12	Write a program to read through a file and print the contents of the file (line by line) all in upper case. Executing the program will look as follows: python shout.py Enter a file name: mbox-short.txt FROM STEPHEN.MARQUARD@UCT.AC.ZA SAT JAN 5 09:14:16 2008 RETURN-PATH: <POSTMASTER@COLLAB.SAKAIPROJECT.ORG> RECEIVED: FROM MURDER (MAIL.UMICH.EDU [141.211.14.90]) BY FRANKENSTEIN.MAIL.UMICH.EDU (CYRUS V2.3.8) WITH LMTPA; SAT, 05 JAN 2008 09:14:16 -0500 You can download the file from www.py4e.com/code3/mbox-short.txt

		Write a swap function which swaps two array elements. Write selection sort algorithm.
		Write a program that reads the words in words.txt and stores them as keys in a dictionary. It doesn't matter what the values are. Use the in operator as a fast way to check whether a string is in the dictionary.
13	G13	Take the following Python code that stores a string:' str = 'X-DSPAM-Confidence:0.8475' Use find and string slicing to extract the portion of the string after the colon character and then use the float function to convert the extracted string into a floating point number.
		Write a program to read through the mail box data and when you find line that starts with "From", you will split the line into words using the split function. We are interested in who sent the message, which is the second word on the From line. From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008 You will parse the From line and print out the second word for each From line, then you will also count the number of From (not From:) lines and print out a count at the end. This is a good sample output with a few lines removed: python fromcount.py Enter a file name: mbox-short.txt stephen.marquard@uct.ac.za louis@media.berkeley.edu zqian@umich.edu [...some output removed...] ray@media.berkeley.edu cwen@iupui.edu cwen@iupui.edu cwen@iupui.edu There were 27 lines in the file with From as the first word.
		Write a function with parameter 'N' to create a list of 'N' cities (read strings from console). Write another function with parameter 'M' to create a list of 'M' state capital (read strings from console). Write a function to merge TWO lists of strings by eliminating duplicate strings.
14	G14	Write a while loop that starts at the last character in the string and works its way backwards to the first character in the string, printing each letter on a separate line, except backwards.
		Display the day of a week (1- Sunday,….7 – Saturday) by reading valid input.
		Write a program to extract host name from email id.
15	G15	Write a program which repeatedly reads numbers until the user enters "done". Once "done" is entered, prints out both the maximum and minimum of the numbers.
		Write a program to compute the value of sin(x) with a help of series expansion.
		Write a Python program to read a tuple of numbers (both positive and negative). Create a new tuple that has only positive elements from the given tuple.
16	G16	Write a program which repeatedly reads numbers until the user enters "done". Once "done" is entered, print out the total, count, and average of the numbers. If the user enters anything other than a number, detect their mistake using try and except and print an error message and skip to the next number.

		Enter a number: 4 Enter a number: 5 Enter a number: bad data Invalid input Enter a number: 7 Enter a number: done 16 3 5.333333333333333
		Write a program to generate multiplication table from 1 – 20.
		Write a program to validate an email id.
17	G17	Find smallest and second smallest number in a set of Four numbers.
		Write a program to display Floyd's triangle for given no. of rows.
		Create a class Point and Rectangle. Write a function which reads rectangle object returns center of a rectangle as an object of Point. Write suitable main program.
18	G18	Read two integers (X & Y) from user and perform division (X/Y). Catch an exception of division by zero with try/except.
		Write a program to find frequency of each digit in a given integer.
		Write a Python program that has a student dictionary, with their name as key and list of their marks in 6 subjects as value. Create a new dictionary from the existing one with name (key) of the students and their total marks (value). Also find the topper and topper's score.
19	G19	Read two integers (X & Y) from user and perform division (X/Y). Avoid division by zero by placing guard expression.
		Write a program to print Pascal triangle upto n rows.
		Write a Python program that inverts a dictionary. i.e: makes key of the dictionary as value and vice-versa.
20	G20	Write a program to calculate roots of a quadratic equation by considering all possible cases.
		Write a program to compare two strings.
		Write a boolean function called is_after that takes two Time objects, t1 and t2, and returns True if t1 follows t2 chronologically and False otherwise. Challenge: don't use an if statement.
21	G21	Write a program using a function called compute_grade that takes a score between 0.0 and 1.0 as its parameter and returns a grade as a string. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print a grade using the following table. Score Grade > 0.9 A > 0.8 B > 0.7 C > 0.6 D <= 0.6 F Program Execution: Enter score: 0.95 A Enter score: perfect Bad score Enter score: 10.0 Bad score Enter score: 0.75 C Enter score: 0.5 F Run the program repeatedly to test the various different values for input.
		Write a program to remove extra blank spaces at the beginning and end of

		a line.
		Write a Python program to create a list of prime numbers between a given range.
22	G22	Write a program to prompt for a score between 0.0 and 1.0. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print a grade using the following table: Score Grade >= 0.9 A >= 0.8 B >= 0.7 C >= 0.6 D < 0.6 F Enter score: 0.95 A Enter score: perfect Bad score Enter score: 10.0 Bad score Enter score: 0.75 C Enter score: 0.5 F Run the program repeatedly as shown above to test the various different values for input.
		Program to read a text file and count vowels & consonants.
		Write a Python program to search for email addresses (with dot and digits in user names) present in the text file.
23	G23	Write a program to prompt the user for hours and rate per hour to compute gross pay. Gross pay to be given to the employees for hours worked above 40 hours is 1.5 times the hourly rate. Use try and except so that your program handles non-numeric input gracefully by printing a message and exiting the program. The following shows two executions of the program: Enter Hours: 20 Enter Rate: nine Error, please enter numeric input Enter Hours: forty Error, please enter numeric input
		Write a Python program to read a list of numbers, and create two new separate lists EvenList and OddList with even and odd elements from the given List.
		Write a Python program to search for the amount of the form: Rs. XXXX.YY (e.g. Rs. 300.00) in a finance related text file. Extract only the amount (e.g. 300.00) from the files and display.
24	G24	Write a program to prompt the user for hours and rate per hour to compute gross pay. Gross pay to be given to the employees for hours worked above 40 hours is 1.5 times the hourly rate. Enter Hours: 45 Enter Rate: 10 Pay: 475.0 Enter Hours: 40 Enter Rate: 10 Pay: 400.0
		Program to display the names present in an addresses present in a file containing request letters.

		Write a Python program to read a log file having number of lines of the form: URL:http://sakaiproject.org/view=rev&rev=39772. Extract the number (5 digits) for the lines.
25	G25	Program to create a text file by writing characters on to it.
		Write a program to open the file romeo.txt and read it line by line. For each line, split the line into a list of words using the split function. For each word, check to see if the word is already in a list. If the word is not in the list, add it to the list. When the program completes, sort and print the resulting words in alphabetical order. Enter file: romeo.txt ['Arise', 'But', 'It', 'Juliet', 'Who', 'already', 'and', 'breaks', 'east', 'envious', 'fair', 'grief', 'is', 'kill', 'light', 'moon', 'pale', 'sick', 'soft', 'sun', 'the', 'through', 'what', 'window', 'with', 'yonder'] Download a copy of the file from www.py4e.com/code3/romeo.txt .
		Write a Python program to extract simple email addresses present in the text file.
26	G26	Write a program to check whether a number is prime, Armstrong or Harshad number using function.
		Write a Python program to copy the contents of a file to another file.
		Write a Python program to create a list of tuples with the first element as the number and the second element as the square of the number.
27	G27	Program to count the occurrences of letters in a given word.
		Write a Python program to count the frequency of words in a file.
		Write a Python program to sort a list of words from longest to shortest.
28	G28	Write a Python program to read last n lines of a file.
		Write a simple program to simulate the operation of the grep command on Unix. Ask the user to enter a regular expression and count the number of lines that matched the regular expression: $ python grep.py Enter a regular expression: ^Author mbox.txt had 1798 lines that matched ^Author $ python grep.py Enter a regular expression: ^Xmbox. txt had 14368 lines that matched ^X- $ python grep.py Enter a regular expression: java$ mbox.txt had 4218 lines that matched java$
		Write a Python program to print 10 most frequently used words in a text file.
29	G29	Program to count the frequency of words in a given text file.
		Write a python program to find the longest words.
		Write a program to look for lines of the form `New Revision: 39772` and extract the number from each of the lines using a regular expression and the findall() method. Compute the average of the numbers and print out the average. Enter file:mbox.txt 38549.7949721 Enter file:mbox-short.txt 39756.9259259
30	G30	Write a Python program to write a list to a file.
		Write a function called chop that takes a list and modifies it, removing the first and last elements, and returns None. Then write a function called middle that takes a list and returns a new list that contains all but the first and last elements.
		Write a simple program to simulate the operation of the grep command

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Students Groups:

4CB19CS001 – 4CB19CS002 => G1
4CB19CS003 – 4CB19CS004 => G2
4CB19CS005 – 4CB19CS006 => G3
: : :
4CB19CS059– 4CB19CS060 => G30
4CB19CS061– 4CB19CS062 => G31
4CB19CS063=> G32

Write the assignment on the Assignment Book by filling the book cover page entries and submit on or before 17/01/2022 by 4.00 PM.