VIT
Vellore Institute of Technology

Final Assessment Test (FAT) - November/December 2023

Programme	M.C.A.	Semester	FALL SEMESTER 2023 - 24
Course Title	PYTHON PROGRAMMING	Course Code	PMCA602L
Faculty Name	Prof. Saleena B	Slot	G1
		Class Nbr	CH2023240101727
Time	3 Hours	Max. Marks	100

Section -1 (10 X 10 Marks)
Answer all questions

01. a) Write a Python program that iterates the integers from 1 to 20. For multiples of three print   **[10]**
   "Fizz" instead of the number and for multiples of five print "Buzz". For numbers that are
   multiples of three and five, print "FizzBuzz". (5 marks)
   b) Write a Python program that checks the strength of a password entered by the user. The
   strength of the password is decided based on the following criteria. It should be of minimum 9
   characters and maximum of 15 characters, should consider factors like use of uppercase and
   lowercase letters, digits, and special characters. The password is said to be strong if it meets all
   the above criteria. If only 3 to 4 criteria's are used then the password strength is medium
   otherwise its rated as a weak password. Provide the strength rating based on these criteria and
   use a while loop to read the input until a strong enough password is entered. (5 marks)

02. Create a list containing 'N' numbers. The task is to read a number from the list and find two   **[10]**
   nearest prime numbers, one which is less than the original number and one which is greater than
   original number. Insert the prime numbers generated before and after the original number in the
   new list. If there is no nearest prime number, then insert a '0' after or before the original number.
   Write a Python Program using functions to implement the above scenario and display both the
   original list and the output list.
   Example: If the number is 10 the two nearest prime numbers are 7, 11
   Input: List = 10,20,30
   Output: Final List = 7,10,11,19,20,23,29,30,31

03. Create a Dictionary with a key value pair containing the student details like Name as key and   **[10]**
   height and weight as values. (4 Marks)
   Write a Python program to filter the students whose height is > 6ft and Weight is > 70kg and
   store it in a new dictionary. (6 marks)
   Example:
   Original Dictionary: {'Rohan': (6.2, 70), 'Rahul': (5.9, 65), 'Reena': (6.3, 73), 'Rashmi': (5.8, 66)}
   Output Dictionary: {'Rohan': (6.2, 70), 'Reena': (6.3, 73)}

04. Write a Python Program to read an Input string and check whether the given string is a valid   **[10]**
   GST (Goods and Services Tax) number or not using Regular Expression. The valid GST (Goods
   and Services Tax) number must satisfy the following conditions:
   - It should be 15 characters long.
   - The first 2 characters should be a number.
   - The next 10 characters should be the PAN number of the taxpayer.

- The 13th character (entity code) should be a number from 1-9 or an alphabet.
- The 14th character should be Z.
- The 15th character should be an alphabet or a number.

05. Write a Python program to create a list of integers with both positive and negative numbers. (2). **[10]**
Use functions to perform the following operations.
(i) Accept a list of numbers and returns a copy of the list with all negative numbers removed. (4)
(ii) It should return a tuple containing the minimum and maximum values from the list. (4)
Example: Consider the list [2, -2, 34, 5, -45, 9, -1]
Output (i): [2, 34, 5, 9]
Output (ii): (-45, 34)

06. Write a Python Program to create a text file which contains five lines about your favourite **[10]**
teacher. The file should always have the option of adding new lines to it.
Perform the following operations with the file (2 marks)
(i) Read the file, reverse the contents of the file and copy it to another file. (4 Marks)
(ii) Read the file and copy the odd lines from a file and copy it to another file (4 Marks)

07. In a bank, customers have a savings account. Some customers may have taken a loan from the **[10]**
bank. So, bank always maintains information about bank depositors and borrowers. Create a
Base class Customer (name, phone-number). Derive a class Depositor (account-no, balance)
from Customer. Again, derive a class Borrower (loan-no, loan-amount) from Customer class.
The base class customer has protected attributes/variables. (4 Marks)
Write a Python program with necessary member functions to read and display the details of all
the 'N' customers and also display the customers who have both an account and have borrowed
a loan. (6 marks)

08. Write a Python Program to perform the following functionalities using function overloading. **[10]**
(i) Check whether the given input number is Palindrome or not (5 Marks)
(ii) Check whether the given input string is Palindrome or not (5 Marks)

09. Write a Python program Using NumPy library to create an one dimensional array of your choice **[10]**
and perform the following operations. (2 marks each)
- Array Slicing
- Array Join
- Array Split
- Array Search
- Array Sort

10. Create a dictionary which will contain the following keys (Name, Activity Done, Age and the **[10]**
calories burnt) for five persons. (2 marks)
Write a Python Program using an appropriate library to(2 marks Each)
- Create and display a DataFrame from the dictionary created
- Summary of the basic information about this DataFrame and its data
- Select the 'name' and 'Age' columns from the following DataFrame.
- Select the rows where the number of calories burnt is > 200.

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