Name of Student:_____ **Roll No:** _____

Kamala Education Society's
PRATIBHA INSTITUTE OF BUSINESS MANAGEMENT

Knowledge is Power

MCA I Semester I (2024 Pattern) Batch -2025-27
IT11L – Python Programming Lab
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Sr. No.	Assignment topic	Date	Signature	Remark
Assignment-1				
1.	Write a Python program to compute the GCD of two numbers without built in function.			
2.	Python Program to Print all Prime Numbers in an Interval from 3 to 1000			
3.	Python program to find the factorial of a number			
4.	Write a python program to print the following Patterns: A A B A B C A B C D A B C D E			
5.	Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).			
6.	Find the number of digits in the given number(should also works for negative numbers)			
7.	Reverse the Digits in the given number (should also work for negative numbers)			
Assignment-2				
8.	Write a code to accept the string of length 10 from the user and print True if string has any character occurring 5 times consecutively in it, otherwise print False			
9.	Write any 5 functions to perform operations on string.			
10.	Write any 5 functions to perform operations on list			
11.	Write any 5 functions to perform operations on Tuple			
12.	Write any 5 functions to perform operations on Dictionary			
13.	Python Program to Multiply and sum all items in list			
14.	Python Program to Find the common members in two lists			
15.	Write a python code to create two sets. Find out the Union, intersection, difference and symmetric difference between these two sets.			
16.	Write a Python program to sort (ascending and descending) a dictionary by key and then by value.			

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17.	Write a program to count the numbers of characters in the given string and store them in a dictionary data structure			
18.	Python program to Test if List contains elements in Range			
19.	Python Program to print all Possible Combinations of elements in list from the two and three Digits and store both lists in dictionary			
20.	With a given integral number n, write a program to generate a dictionary that contains (i, i*i) such that is an integral number between 1 and n (both included) and then the program should print the dictionary. Suppose the following input is supplied to the program: 8 Then, the output should be: {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}			
21.	You are required to write a program to sort the (name, age, height) tuples by ascending order where name is string, age and height are numbers. The tuples are input by console. The sort criteria is: 1: Sort based on name; 2: Then sort based on age; 3: Then sort by score. The priority is that name > age > score.			
22.	Write a program to compute the frequency of the words from the input. The output should be stored in dictionary after sorting the key alphanumerically.			
23.	Write a Python program to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number. Input: numbers= [10,20,10,40,50,60,70], target=50 Output: 3, 4			
24.	A Government wants to provide student loans to students in their country. But in order for a student to be eligible to get a loan, he/She must be in the age range 17 to 21, and must have a minimum of 80% score in academics. Write a program to accept a name, age, and marks of student and display if he/she is eligible for the loan or not.			
25.	Write a function dups to find all duplicates in the list.			
26.	Write a python program to add matrices using list, accept elements for the matrices from the user.			
27.	Write a program to create separate list of digits from the original list which contains digits & alphabets using list comprehension. (Input_list=['a','b',2,43,'Hi',900,'xyz'], Output_list=[2,43,900]			
28.	Write a function unique to find all the unique elements of a list.			
29.	Write a function reverse to reverse a list. Without using the reverse function.			
30.	Define a function that can accept two strings as input and print the string with maximum length in console. If two strings have			

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	the same length, then the function should print all strings line by line.			
31.	Write a program that accepts string from a user. The program should print two dictionaries as shown in example. Example: ``` Enter a string :Python Programming Output 1: {'P': 2, 'y': 1, 't': 1, 'h': 1, 'o': 2, 'n': 2, ' ': 1, 'r': 2, 'g': 2, 'a': 1, 'm': 2, 'i': 1} Output 2: {2: ['P', 'o', 'n', 'r', 'g', 'm'], 1: ['y', 't', 'h', ' ', 'a', 'i']} ```			
32.	Write two functions how_many and biggest which returns the sum of the number of values associated with a dictionary and the key corresponding to the entry with the largest number of values associated with it. Sample O/P ``` Given dictionary : L : ['Lion'] D : ['Donkey', 'Deer'] E : ['Elephant'] Number of animals : 4 Largest : D ```			
33.	Write a function to generate Fibonacci sequence of upto first n term recursion.			
34.	Write a program to check if an element of a list is a prime number. If it is prime, return True or else return False.			
Assignment-3				
35.	Create class called 'library' with data attributes like Acc-Number, publisher, title and Author, The methods of class should include i) Read()-Acc-Number, title, Author, publisher ii)Compute()-to accept the number of day late, calculate and display the fine charged at the rate of Rupees 5/- per day iii)Display the data			
36.	Write a class called "Investment" with fields called 'principal' and 'interest'. The constructor should set the values of those fields. There should be a method called value_after that returns the value of the investment after n years. The formula for this is $p(1 + i)^n$, where p is the principal, and i is the interest rate.			
37.	Write a class called Product. The class should have fields called name, amount, and price, holding the product's name, the number of items of that product in stock, and the regular price of the product. There should be a method get_price that receives the number of items to be bought and returns a the cost of buying that many items, where the regular price is charged for orders of less than 10 items, a 10% discount is applied for orders of between 10 and 99 items, and a 20% discount is applied for orders of 100 or more items. There should also be a method called make_purchase that receives the number of items to be bought and decreases amount by that much			

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38.	Define a class which has at least two methods: getString: to get a string from console input printString: to print the string in upper case.			
39.	Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.			
40.	Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as argument. Both classes have a area function which can print the area of the shape where Shape's area is 0 by default.			
41.	Write a Python program to check the validity of a password (input from users). Validation: At least 1 letter between [a-z] and 1 letter between [A-Z]. At least 1 number between [0-9]. At least 1 character from [$#@]. Minimum length 6 characters. Maximum length 16 characters.			
42.	Write a Python code to validate Email ID.			
43.	Write a Regular Expression to represent all 10 digit mobile numbers. Rules: 1. Every number should contains exactly 10 digits. 2. The first digit should be 7 or 8 or 9 Write a Python Program to check whether the given number is valid mobile number or not?			
44.	Write a Regular Expression to represent all PIBM language (Your own language) identifiers. Rules: 1. The allowed characters are a-z, A-Z,0-9, #. 2. The first character should be a lowercase alphabet symbol from a to k. 3. The second character should be a digit divisible by 3. 4. The length of identifier should be at least 2. Write a python program to check whether the given string is PIBM language identifier or not?			
45.	Write a program to raise an exception if the user enters name of an employee which is not in predefined list of Employee (note: create a list of employee)			
46.	Write a program to check the age of person for voting. raise an exception if he is not an eligible person for voting(check for negative values also)			
47.	Write program for checking length of password. raise an exception if it is not of correct length			
48.	Write a program for synchronization of Threads using RLOCK. Accept the two numbers from user and calculate factorial of both Numbers simultaneously			
49.	Write a multithreading program where one thread prints square of a number and another thread prints factorial of a number. Also display the total time taken for the execution			

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50.	Write a user defined exception program in python which will except age as input from the user and check whether the user is eligible for driving license or not. If age<18 it should raise the exception as 'NotEligibleForDrivingLicense"			
51.	Write a python program to check the given number is prime or not. Handle Suitable Exception			
52.	Write a function to compute 5/0 and use try/except to catch the exceptions.			
Assignment-4				
53.	Write a Python program to perform following operation on MongoDB database i) Create collection "Book" with fields Book-name, Book-code, Book-Author, Book-Price, Book-publication-year ii) Insert 5 documents iii)Find the books whose price between 500-800. iv) Update price of book "Python programming" as 1000 v) Display all books in the order of publication Year			
54.	Write a python program to connect with MongoDB Database. Create collection "restaurants" (Assume suitable structure). Query the "restaurants" collection to a. display all the documents in the collection restaurants b. display the fields restaurant_id, name, establishment_year and cuisine for all the documents in the collection restaurant c. find the restaurants who achieved a score more than 90. d. arrange the name of the restaurants in ascending order e. Update restaurant score for the establishment year 2019			
55.	Write a python program to connect with MongoDB Database. Create collection "movies" (title, writer, year, actors, director...consider this fields in movies collection). Query the "movies" collection to a. Get all documents b. Get all document with director set to "Raj Kapoor" c. get all documents where actors include "Amitabh Bachchan" d. get all movies released in the 90s e. get all movies released before the year 2000 or after 2010 f. Update some documents by adding some extra fields g. Delete movie "movie_name"			
Assignment-5				
56.	Write steps and code to create and render view in a Django.			
57.	What is the purpose of URL.py file in Django Project and explain the basic URL configuration			
58.	What is the purpose of Django template? Design Django template for student registration to course.			
59.	Write a Django view that filters student who are enrolled in the MCA course and have marks greater than 75. Display result on page.			