BRIDGE COURSES OF MASTER OF COMPUTER APPLICATIONS
(Programme Code of ODL mode: MCA_NEW)

ASSIGNMENTS

(January – 2022)

MCS-201 and MCS-208

SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068

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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.

2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to PGDCA Programme Guide.

3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the PGDCA Programme Guide.

4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code   :   **MCS-201**
Course Title   :   **Programming in C and PYTHON**
Assignment Number   :   **PGDCA(I)/201/Assignment/2022**
Maximum Marks   :   **100**
Weightage   :   **30%**
Last Date of Submission   :   **31stMay, 2022 (for January session)**
                                      31stOctober, 2022(for July session)

There are sixteen questions in this assignment which carries 80 marks. Each question carries 5 marks. Rest 20 marks are for viva-voce. Answer all the questions from both the sections i.e. Section A and Section B. You may use illustrations and diagrams to enhance the explanations. Include the screen layouts also along with your assignment responses. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

SECTION-A (C-Programming)

Question1: Write an algorithm, draw a flow chart and write its corresponding C program to convert a Binary number to its equivalent Decimal number. **(5 Marks)**

Question 2: Write an algorithm and flowchart to calculate the roots of quadratic equation
$AX^2 + BX + C = 0$.Transform your algorithm in to an equivalent C program. **(5 Marks)**

Question 3: Write a C program to generate the following pattern: **(5 Marks)**

```
        *
        * *
        * * *
        * *
        *
```

Question 4: Write a C program to perform the following operation on matrices of dimension (3 X 3)
     a) Addition   b) Multiplication **(5 Marks)**

Question 5: Write a C program to take a list of N numbers, separate even and odd numbers and put them in two appropriate files (evenfile and oddfile). Use File Handling concept. **(5 Marks)**

Question 6: Write a program to enter a list of strings and rearrange them in alphabetical order, using a one-dimensional array of pointers, where each pointer indicates the beginning of a string. **(5 Marks)**

Question 7: Write a C program to sort a list of N numbers **(5 Marks)**

Question 8: Write a C program to print reverse of a string (without using strrev() function), and checks that the entered string is a palindrome or not **(5 Marks)**

SECTION-B (PYTHON-Programming)

Question 9: Write a program in Python Program to display the Fibonacci Sequences up to nth term where n is provided by the user **(5 Marks)**

Question 10: Write a Program in Python that Accepts a Sentence and Calculate the Number of Digits, Uppercase and Lowercase Letters **(5 Marks)**

Question 11: Create a module series.py containing functions to determine Fibonacci series and Exponential series. Import the module created to make it accessible, and Call the functions of that module with module name . Demonstrate the access of functions in the module created. **(5 Marks)**

Question 12: Differentiate Between Modules and Scripts, give suitable python code for each
(5 Marks)

Question 13: Differentiate Between Co-routines and Sub-routines, give suitable python code for each
(5 Marks)

Question 14: Write Short notes on Generators, Iterators and Decorators give suitable python code for each
(5 Marks)

Question 15: Write a Program in Python to check if a given year is a leap year **(5 Marks)**

Question 16: Briefly discuss the Lambda, map() and filter() function; with suitable code for each

(5 Marks)

Course Code	:	**MCS-208**
Course Title	:	**Data Structures and Algorithms**
Assignment Number	:	**PGDCA(2)/208/Assign/2021/22**
Maximum Marks	:	**100**
Weightage	:	**30%**
Last Dates for Submission	:	**31st May, 2022 (for January Session)**

There are four questions in this assignment, which carries 80 marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Answer to each part of the question should be confined to about 300 words. Make suitable assumption, if any.

Question 1: (20 Marks)

Write an algorithm for the addition of two matrices

Question 2: (20 Marks)

Explain the differences between a Tree and Binary Tree.

Question 3: (20 Marks)

Compare any two sorting algorithms.

Question 4: (20 Marks)

What are the advantages and disadvantages of a Singly Linked List over a Doubly Linked List.