BRIDGE COURSES FOR
MASTER OF
COMPUTER APPLICATIONS
(MCA_NEW)

ASSIGNMENTS

(July - 2024)

MCS-201 and MCS-208

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

CONTENTS

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 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 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_NEW(I)/201/Assignment/2024**
Maximum Marks	:	**100**
Weightage	:	**30%**
Last Date of Submission	:	**31st October 2024 (for July Session)**

There are eight questions in this assignment (four in each section i.e. Section A and Section B) which carries 80 marks. Each question carries 10 marks. Rest 20 marks are for viva-voce. Answer all the questions from both the sections. You can use illustrations and diagrams to enhance the explanation. 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)

Q1: Briefly discuss the concept of "Call by value" and "Call by reference". Give example code in C for each. Support your code with suitable comments.

Q2: Briefly discuss the relation between Pointers and Arrays, giving suitable example. Write a program in C, to print transpose of a 2D matrix entered by a user. Support your program with suitable comments.

Q3: Write an algorithm to find the slope of a line segment whose end point coordinates are $(x1, y1)$ and $(x2, y2)$. The algorithm gives output whether the slope is positive, negative or zero. Transform your algorithm to C program.

   Note : Slope of line segment $= (y2 - y1) / (x2 - x1)$

Q4: Write an algorithm to find the HCF (Highest Common Factor) of the two numbers entered by a user. Transform your algorithm to a C program, support your program with suitable comments.

SECTION-B (PYTHON-Programming)

Q1: Discuss the *connect( )* method of MySQL. Connector interface. List the arguments involved with *connect( )* method. Write Python code to create database student_DB and to connect to student_DB (make suitable assumptions wherever necessary).

Q2: What are Pandas ? Write steps to import, read and print a CSV file using Pandas. Also, transform your steps in to suitable code in Python.

Q3: Write steps to create a package. Apply these steps to create a package named volume and create 3 modules in it named cube, cuboid and sphere, having function to calculate volume of the cube, cuboid and sphere respectively. Import the modules defined in the package and use the defined functions for calculation of volume respectively.

Q4: What does *map( )* function do ? Write a program in Python to print the cube of the numbers present in the list, by using *map( )* function.

Course Code	:	**MCS-208**
Course Title	:	**Data Structures and Algorithms**
Assignment Number	:	**PGDCA_NEW(II)/208/Assignment/2024**
Maximum Marks	:	**100**
Weightage	:	**30%**
Last Dates for Submission	:	**30thApril 2024 (for January Session)**
		31st October 2024 (for July Session)

There are four questions in this assignment, which carry 80 marks. Each question carries 20 marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanation, if necessary. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1: What are B-trees? Explain with example. **(20 Marks)**

Q2: Explain the process of converting a Tree into a Binary Tree with an example. **(20 Marks)**

Q3: What is Heap Sort? What is Merge Sort? Write the factors on the basis of which Heap Sort or Merge Sort is selected. **(20 Marks)**

Q4: What is a Doubly Linked List? How does it differ from Circularly Doubly Linked List?**(20 Marks)**