

BACHELOR OF COMPUTER APPLICATIONS (BCA)

(Revised Syllabus)

BCA(Revised Syllabus)/ASSIGN/SEMESTER-II

ASSIGNMENTS

(July - 2025 & January – 2026 sessions)

ECO-02, MCS-011, MCS-012, MCS-015, MCS-013, BCSL-021, BCSL-022



**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 BCA 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 BCA Programme Guide.

Course Code	:	MCS-011
Course Title	:	Problem Solving and Programming
Assignment Number	:	BCA(II)/011/Assignment/2025-26
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2025 (For July Session) 30th April, 2026 (For January Session)

There are eight questions in this assignment. Each question carries 10 marks. Rest 20 marks are for viva-voce. Answer all the questions. 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.

Q1:

Explain the differences between call-by-value and call-by-reference in C. Write separate C programs to swap two numbers using both approaches and analyze the output. Which approach reflects the changes outside the function and why?

Q2:

Write a C program to calculate the average, highest, and lowest marks obtained by students in a class using an array. Accept n marks from the user and display the results.

Q3:

Write a C program to multiply two matrices A and B (of size N×N) and store the result in matrix C. Also, check whether the result is a diagonal matrix.

Q4:

Without using built-in string functions, write a menu-driven C program using *switch-case* to perform the following on two strings:

- (i) Count the number of vowels in each string
- (ii) Check whether both strings are palindromes
- (iii) Replace a character with another
- (iv) Find the frequency of each character

Q5:

Explain dynamic memory allocation in C. Write a C program to dynamically allocate memory to store a list of numbers and then compute their sum and standard deviation. Free the memory after use. Discuss memory management in your explanation.

Q6:

What is a structure in C? Define a structure for an Employee containing emp_id, name, department, and salary. Write functions to:

- Input employee data
- Display all records
- Find employees with the highest salary
- Calculate average salary department-wise

Q7:

Write a C program that reads student records (roll number, name, and marks) from a file, computes the result (pass/fail), and writes the result into another file with appropriate messages. Discuss the file I/O operations used.

Q8:

What are header files in C? Write a C program that uses a macro to convert Celsius to Fahrenheit and vice versa. Use conditional compilation to enable/disable each conversion. Discuss the significance of preprocessor directives.