

BACHELOR OF COMPUTER APPLICATIONS (BCA)

(Revised Syllabus)

BCA(Revised Syllabus)/ASSIGN/SEMESTER-III

ASSIGNMENTS

(July – 2026 & January - 2027)

MCS-021, MCS-023, MCS-014, BCS-031, BCSL-032, BCSL-033, BCSL-034,



**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	:	BCS-031
Course Title	:	Programming in C++
Assignment Number	:	BCA(III)031/Assignment/2026-27
Maximum Marks	:	100
Weightage	:	30%
Last Date of Submission	:	31st October, 2026 (for July 2026 Session)
	:	30th April, 2027 (for January 2027 Session)

Note: This assignment has ten questions carrying a total of 80 marks. Answer all the questions. Rest 20 marks are for viva-voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Wherever required, you may write C++ program and take its output as part of solution

Q1: (8 Marks)

A retail shop maintains details of products sold during a day. Write a C++ program that accepts the product price and quantity purchased from the user. Compute the total amount, applying a discount of 8% if the bill exceeds ₹5000, and display the final payable amount.

Q2: (8 Marks)

Develop a C++ program that accepts the marks obtained by a student in 5 distinct subjects. Calculate the percentage and assign a grade according to the following criteria:

- 90% and above – Grade A
- 75% to below 90% – Grade B
- 60% to below 75% – Grade C
- 40% to below 60% – Grade D
- Below 40% – Grade F

Display the percentage and grade for the student.

Q3: (8 Marks)

Write a C++ program to generate the first N terms of the Fibonacci sequence using a loop. Also compute and display the sum of all the generated terms.

Q4: (8 Marks)

Create a one-dimensional array to store the marks of 10 students in a class. Write a C++ program to determine:

- a. Highest marks
- b. Number of students scoring above the class average

Q5:

(8 Marks)

Write a C++ program that defines separate functions to:

- a. Calculate the area of a circle
- b. Calculate the circumference of a circle

The radius should be entered by the user from the main() function and passed to both functions.

Q6:

(8 Marks)

Design a class named Employee having data members for employee ID, employee name, and monthly salary. Implement member functions to:

- a. Read all employee details from user
- b. Calculate annual salary
- c. Display all employee information in an appropriate manner

Create objects for at least 10 employees.

Q7:

(8 Marks)

Write a C++ program that stores the names and marks of 5 students in a text file. After writing the data, reopen the file and display the complete contents on the screen.

Q8:

(8 Marks)

A banking application allows users to withdraw money from their account. Write a C++ program that throws and catches an exception if the withdrawal amount is greater than the available balance. Display an appropriate message for both successful and unsuccessful transactions. Make use of suitable C++ constructs.

Q9:

(8 Marks)

What is Polymorphism in C++? Explain the concepts of compile-time and run-time polymorphism. Highlight the role of function overloading, operator overloading, virtual functions, and function overriding with suitable programming examples.

Q10:

(8 Marks)

Answer following with appropriate examples:

- a. Explain the concept of inheritance in C++ and describe different types of inheritance with diagrams.
- b. What are templates in C++? Explain function templates and class templates with suitable examples. Discuss their advantages in generic programming.