

BACHELOR OF COMPUTER APPLICATIONS (BCA)

(Revised Syllabus)

BCA(Revised Syllabus)/ASSIGN/SEMESTER-II

ASSIGNMENTS

(July - 2026 & January - 2027)

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	:	BCSL-022
Course Title	:	Assembly Language Programming Lab
Assignment Number	:	BCA(II)/L-022/Assignment/2026-27
Maximum Marks	:	50
Weightage	:	25%
Last Dates for Submission	:	31st October, 2026 (For July 2026 Session)
	:	30th April, 2027 (For January 2027 Session)

This assignment has four questions of total of 40 marks, each question carries equal marks. Rest 10 marks are for viva voce. Please go through the guidelines regarding assignments given in the programme guide for the format of presentation.

Q1: (10 Marks)

Design a 2-bit synchronous reverse (down) counter using J-K flip-flops. The counter should follow the sequence $11 \rightarrow 10 \rightarrow 01 \rightarrow 00 \rightarrow 11 \rightarrow \dots$. Draw the state transition diagram, prepare the present-state/next-state table, derive the J and K input equations using Karnaugh maps, and draw the complete logic circuit.

Q2: (10 Marks)

Write and execute an 8086-assembly language program that accepts two ASCII decimal digits (0–9) from the keyboard using DOS interrupt 21H, converts them into a packed BCD number, and stores the packed BCD value in a byte memory location. Display the packed BCD value in hexadecimal format. For example, if the user enters 3 and 5, the stored value should be 35H (00110101)₂.

Q3: (10 Marks)

Write and execute an 8086-assembly language program using a NEAR procedure. The main program shall initialize a 16-bit integer, pass it to the NEAR procedure using the stack, and call the procedure. The procedure shall compute the square of the number and return the result in the AX register. Demonstrate correct stack handling using PUSH, POP, CALL, and RET instructions. Include suitable comments, show the stack contents during parameter passing, and provide the sample input, output, and register contents before and after the procedure call.

Q4: (10 Marks)

Write and execute an 8086-assembly language program to determine the length of a string stored in consecutive memory locations using '\$' as the string terminator. Store the final length in CX, and show the memory layout, important register changes during execution, and the final output.