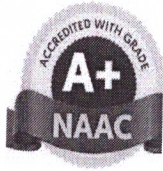


SHRI GNANAMBICA DEGREE COLLEGE: MADANAPALLE



(AUTONOMOUS)
COURSE 2: PROBLEM SOLVING USING C
SEMESTER I
(W.E.F.2025-26)
Program: BCA(All Groups)



Hours per week: 4

Credits: 4

Course Objectives:

6. Understand the fundamentals of computer programming, Apply structured problemsolving approaches using algorithms, flowcharts, and C programming constructs.
7. Develop efficient logic using decision-making, loop, and jump control statements.
8. Utilize derived data types like arrays and strings for modular program design.
9. Design and implement modular solutions using functions, recursive logic, and pointer, operations, and dynamic memory management.
10. Handle complex data structures including structures, unions, and text file operations.

Course Outcomes:

At the end of the course, students will be able to:

6. Understand basic computing concepts, programming paradigms and write structured C programs.
7. Apply control flow statements to solve logical and repetitive tasks in C.
8. Implement arrays and string operations to manage and manipulate data efficiently.
9. Design modular code using functions, recursion, and appropriate parameter passing.
10. Utilize pointers and memory operations for effective data handling. Demonstrate Competence in dynamic memory allocation and text file processing.

Unit I

Introduction to computer programming:

Introduction, Compiler and interpreter, Concepts of Machine level, Assembly level and high-level programming, Flowcharts and Algorithms, Fundamentals of C: History of C, Features of C, (Tokens-variables and keywords and identifiers, constants and Data types, Rules for constructing variable names, Operators, Structure of C program, Input /output statements in C, Formatted and Unformatted I/O functions

Unit II

Control statements:

Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto.



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Unit III

Derived data types in C:

Arrays: One Dimensional array - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation. Strings: Declaring & Initializing string variables; String handling functions, Character handling functions

Unit IV

Pointers and Functions:

Pointers: Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic, Pointers and arrays.

Functions: Function Prototype, definition and calling. Return statement. Nesting of functions. Categories of functions. Recursion (Basic Concept only). Parameter passing by address & by value, Local and Global variables.

Unit V

Structures, Unions and Files:

Structures: Introduction to Structures: structure definition, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers. **Unions** –introduction to unions, Union definition, accessing members, difference between Structures and Unions. **Working with text files** - modes: opening, reading, writing and closing text files, reading and writing data using fprintf(), fscanf(), fgetc(), fputc().

Reference :

ONLINE:

w3schools.com,
Tutorialspoint.com

Books :

1. Programming in ANSI C, E. Balagurusamy, Tata McGraw Hill, 6 thEdn,
2. Computer fundamentals and programming in C, Reema Theraja, Oxford University Press
3. Let us C, Y Kanetkar, BPB publications
4. Head First C: A Brain-Friendly Guide, David Griffiths, Dawn Griffiths

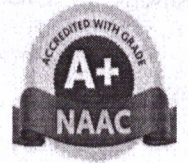


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SHRI GNANAMBICA DEGREE COLLEGE: MADANAPALLE



(AUTONOMOUS)
COURSE 2: PROBLEM SOLVING USING C -PRACTICALS
SEMESTER I
(W.E.F.2025-26)
Program: BCA(All Groups)



Hours per week: 2

Credits: 1

List of Experiments:

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate change in parameter values while swapping two integer variables using Call by Value & Call by Address
6. Write a program to perform various string operations.
7. Write a program to search an element in a given list of values.
8. Write a program that uses functions to add two matrices.
9. Write a program to calculate factorial of given integer value using recursive functions
10. Write a program for multiplication of two N X N matrices.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.
 - a. DA is 30 % of Basic Pay
 - b. HRA is 15% of Basic Pay
 - c. Deduction is 10% of (Basic Pay + DA)
 - d. Gross Salary = Basic Pay + DA+ HRA
 - e. Net Salary = Gross Salary - Deduction
13. Write a program to read / write the data from / to a file.
14. Write a program to reverse the contents of a file and store in another file.
15. Write a program to create Book (ISBN, Title, Author, Price, Pages, and Publisher) structure and store book details in a file and perform the following operations
 - a. Add book details
 - b. Search a book details for a given ISBN and display book details, if available
 - c. Update a book details using ISBN
 - d. Delete book details for a given ISBN and display list of remaining Books



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(AUTONOMOUS)

COURSE 2: PROBLEM SOLVING USING C

SEMESTER I

(W.E.F.2025-26)

Program: BCA(All Groups)

QUESTION PAPER BLUE PRINT

Time : 3 Hrs

Max. Marks : 70

PART - A

Answer any 4 of the 8. Each Question Carries 5 marks.

(4 x 5 =20)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8

PART-B

Answer one from each unit. Each Question Carries 10 marks.

(5X10=50)

UNIT 1

9. Question

OR

10. Question

UNIT 2

11. Question

OR

12. Question

UNIT 3

13. Question

OR

14. Question

UNIT 4

15. Question

OR

16. Question

UNIT 5

17. Question

OR

18. Question



Chandrasekhara Babu

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