

LECTURE NOTES
on
PROGRAMMING & DATA STRUCTURE

Course Code : BCS101

By

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SYLLABUS

Module 1: (10 Lectures)

C Language Fundamentals, Arrays and Strings

Character set, Identifiers, Keywords, Data Types, Constant and Variables, Statements, Expressions, Operators, Precedence of operators, Input – output Assignments, Control structures, Decision making and Branching, Decision making & looping. Declarations.

Module 2: (10 Lectures)

Monolithic vs Modular programs, User defined vs standard functions, formal vs Actual arguments, Functions category, function prototypes, parameter passing, Recursion, Storage Classes: Auto, Extern, Global, Static. Character handling in C. String handling functions. Pointers, Structures, Union & File handling

Module 3: (10 Lectures)

Pointer variable and its importance, Pointer Arithmetic passing parameters, Declaration of structures, pointer to pointer, pointer to structure, pointer to function, unions dynamic memory allocations, unions, file handling in C.

Module 4: (10 Lectures)

Development of Algorithms: Notations and Analysis, Storage structures for arrays-sparse matrices, Stacks and Queues: Applications of Stack: Prefix, Postfix and Infix expressions. Circular queue, Double ended queue.

CONTENTS

Module: 1

- Lecture 1: A Beginner's Guide
- Lecture 2: Introduction to Programming
- Lecture 3: Introduction to C, structure of C programming
- Lecture 4: Elements of C
- Lecture 5: Variables, Statements, Expressions
- Lecture 6: Input-Output in C
- Lecture 7: Formatted Input-Output
- Lecture 8: Operators
- Lecture 9: Operators continued...
- Lecture 10: Control Statements
- Lecture 11: Iterative statements
- Lecture 12: Jump statements

Module: 2

- Lecture 13: Function
- Lecture 14: Function categories
- Lecture 15: Actual arguments and Formal arguments
- Lecture 16: Recursion
- Lecture 17: Recursion verses Iteration
- Lecture 18: Storage classes
- Lecture 19: Arrays
- Lecture 20: Two Dimensional Arrays
- Lecture 21: Array using Function
- Lecture 22: Strings

Lecture 23: Common Functions in String

Module: 3

Lecture 24: Structure in C Union

Lecture 25: Nested Structure

Lecture 26: Union

Lecture 27: Pointers

Lecture 28: Pointers and Arrays

Lecture 29: Pointer Arithmetic

Lecture 30: Pointers and Function

Lecture 31: Dynamic Memory Allocation

Lecture 32: Pointer to Structure

Lecture 33: File

Module: 4

Lecture 34: Algorithm and Data Structure

Lecture 35: Analysis of Algorithms

Lecture 36: Storage structure of Arrays

Lecture 37: Sparse Matrices

Lecture 38: Stack

Lecture 39: Queue

References