



C. U. SHAH UNIVERSITY

FACULTY OF: Computer Science
DEPARTMENT OF: M.Sc(CA & IT)
SEMESTER : IV
CODE: 4CS04DSC1
NAME: Data Structure Using C

Sr · No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester					Total Marks
			T H	T U	P R	TOTA L		Theory		Practical			
1	4CS04DSC1	Data Structure Using C					6	Sessional Exam	Univer sity Exam	Sessional Exam	University Exam		
			Ma rks	Hrs	Marks	Mar ks		Hr s	Total Marks				
			5	0	2	7		30	1.5	70	0	1.5	50

Objectives:

The aim of this subject is to make student how to use these concepts in database applications. The students would be able to decide where and how to store and retrieve the information effectively using advanced concept of database, recognize the elements of Database for real life applications and familiar with the advanced database concepts such as distributed database, business intelligence and data warehouse.

Prerequisites:

Elementary knowledge about computers, computer programming & utilization, knowledge about data structures and algorithms, corresponding to the basic course on data structures and algorithms.

Course outline:

Sr.No	Course Contents	No of Hours
1	Arrays & UDF Handling arrays (declaring & initialization, passing arrays to functions) Declaration, definition and calling of UDF, Passing parameters in UDF and returning values	7
2	Pointers & Structure Declaring and initializing pointers, Advantages and disadvantages of pointers , Passing pointers to functions, Relation between pointers and arrays, Structure declaration, Member accessing using pointer	7
3	Advance C Dynamic allocation and de-allocation of memory function malloc(size), function calloc(n,size), function free(block)	5
4	Algorithms & its Complexity A Typical example, Algorithm description Sub-algorithms, Space complexity and Time complexity Big-O Notation, Big-Omega notation	5
5	Searching Linear search, Binary search	4
6	Sorting Bubble sort, Insertion sort, Selection sort	4



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7	Elementary Data Structure Primitive and Non Primitive data structures Linear and nonlinear structures	6
8	Stack Operations on stack, Implementation of stacks using arrays	5
9	Queue Operations on queue Array implementation of queues Circular queue, Circular queue with array implementation	5
10	Singly Link List Introduction to Singly linked lists, Implementation of linked list Insertion of a node at the beginning, Insertion of a node at the end Insertion of a node after a specified node, Traversing the entire linked list Deletion of a node from linked list	7
11	Doubly linked list Implementation of doubly linked list Circular linked list Implementation of circular linked list Applications of the linked lists	7
12	Tree Basic terminology, Properties of a tree, Binary trees Properties of binary trees, Traversals of a binary tree: In order traversal, Post order traversal, Preorder traversal	7

Books Recommended:

1. Object-Oriented Programming with C++ (Second Edition) Poornachandra Sarang PHI
2. Object Oriented Programming using C++ Joyce Farrell Cengage Learning
3. Object Oriented Programming In C++ Rajesh K. Shukla Wiley India Edition

Learning Outcomes:

- At the end of the course the students will be endowed with Advance level of C language using DMA,
creating a linked list, stack, queue and graph.

Books Recommended:

- 1, "Data Structure through C/C++", R.B. Patel, Khanna Publication
- 2, "Data and File Structure", Trembley & Sorenson, TMH Publication
- 3, "Data Structure & algorithms Using C", R.S. Salaria, Khanna Publication
- 4, "Data structure through C/C++", Tennaunbuam
- 5, "Let us C", YKanetkar, BPB Publication (3rd Edition).