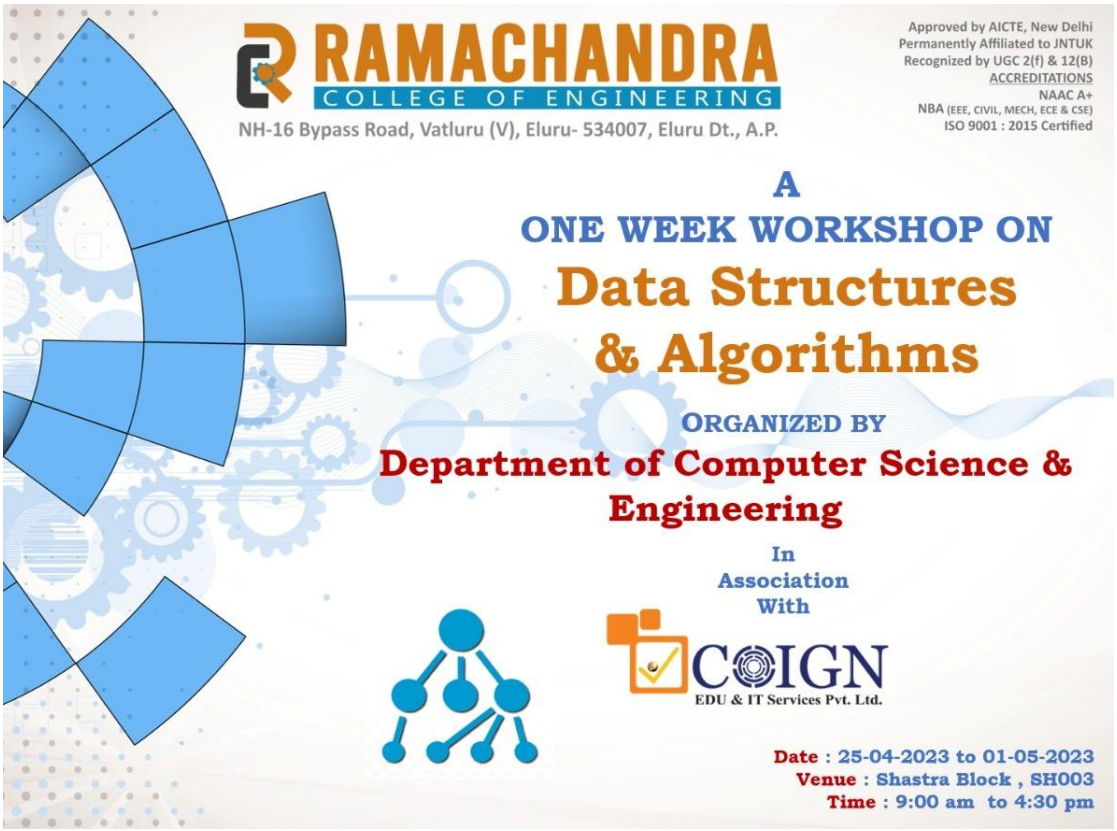
Report on 'Workshop on DATA STRUCTURE & ALGORITHMS"

Organized by : Department of CSE
Event : Workshop on Data Structures & Algorithm
Date of Event : 25-04-2023 to 01-05-2023, SHASTRA Block
No. of Students : 190 Students and 02 Faculty Members
Mode of Activity : Offline

The Main Aim behind implementation of this workshop to make a clear understandability of various algorithms of data structures. Using the data structure operations such as searching, sorting, insertion, deletion etc. In array, stack, queue, and linked list as well. it provides effective and efficient knowledge of data structures. This also provide some theoretical knowledge regarding the data structure.

- About Theory Knowledge & Hands on Experience
- Concepts on Data Structures & Algorithms
- Live Examples

POSTER OF THE EVENT



Objectives

- To get the knowledge of basic data structures and their implementations.
- To understand importance of data structures in context of writing efficient programs.
- To develop skills to apply appropriate data structures in problem solving.
- To understand the abstract data types stack, queue, deque, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.
- To use stacks to evaluate postfix expressions.
- To use stacks to convert expressions from infix to postfix.
- To use queues for basic timing simulations.
- To be able to recognize problem properties where stacks, queues, and deques are appropriate data structures.

Introduction: The Data Structures & Algorithms Workshop was organized with the aim of providing Students with a comprehensive understanding of fundamental data structures and algorithms commonly used in computer science and software development. The workshop aimed to enhance Students' problem-solving skills, algorithmic thinking, and ability to design efficient solutions. The workshop incorporated theoretical concepts, practical exercises, and hands-on coding sessions to reinforce the learning process.

Workshop Objectives:

- Introduce students to the fundamental concepts of data structures and algorithms.
- Provide Students with practical knowledge to implement various data structures and algorithms.
- Enhance Students problem-solving abilities through algorithmic thinking.
- Familiarize Students with analyzing the time and space complexity of algorithms.
- Enable Students to make informed decisions regarding the selection and usage of appropriate data structures and algorithms.

Workshop Content: The workshop consisted of a well-structured curriculum that covered a wide range of topics related to data structures and algorithms. Each day of the workshop focused on specific themes, building upon the concepts introduced in the previous sessions. The content included:

This workshop is inaugurated by Dr. V. Srinivas Rao, Principal, and Dr. P. M. Prasanna, Head, Department of CSE, addressed to all the faculty members and participant students. Our principal, sir, advised and gave wishes to all the students to gain knowledge and practical sessions from this workshop.

Later, the session was handed over to the resource person, Mr. B. Krishna Chaitanya, a software professional at COIGN, Hyderabad, who expressed interest in this workshop, and the session was started.

Day 1: Introduction to Data Structures and Algorithms

- Overview of data structures and algorithms
- Importance of data structures and algorithms in software development
- Basic terminologies and notations

Day 2: Array-Based Structures

- Arrays and their properties
- Multidimensional arrays
- Dynamic arrays
- Array operations and algorithms (sorting, searching)

Day 3: Linked List and its Variants

- Singly linked list
- Doubly linked list
- Circular linked list
- Operations and algorithms on linked lists

Day 4: Stacks and Queues

- Stack data structure and its properties
- Stack operations and applications
- Queue data structure and its properties
- Queue operations and applications

Day 5: Trees and Binary Trees

- Tree data structure and its terminologies
- Binary trees and their properties
- Tree traversal algorithms (pre-order, in-order, post-order)
- Binary search trees and their operations

Day 6: Graphs and Graph Algorithms

- Graph data structure and its representations
- Graph traversals (BFS and DFS)
- Shortest path algorithms (Dijkstra's algorithm)
- Minimum spanning tree (Prim's and Kruskal's algorithms)
- Hashing and hash tables
- Sorting algorithms (quicksort, mergesort, heapsort)
- Dynamic programming
- Conclusion and recap of key concepts

Workshop Methodology: The workshop utilized a combination of teaching methods to ensure effective learning and engagement.

The sessions included:

Lectures: Experienced instructors delivered interactive lectures to introduce new concepts and explain their applications.

Hands-on Coding: Students engaged in practical coding exercises to implement data structures and algorithms discussed during the lectures.

Case Studies: Real-world case studies were presented to demonstrate the practical implications of data structures and algorithms.

Q&A Sessions: Regular question and answer sessions were held to address participant queries and provide clarification on complex topics.

Students Feedback: A feedback was collected at the end of the workshop to gauge the effectiveness of the program. The feedback indicated the following key points:

- Students found the workshop to be highly informative and well-structured.
- The practical coding exercises were particularly helpful in reinforcing the concepts learned during the lectures.
- The instructors were knowledgeable and approachable, providing valuable insights

Pictures :





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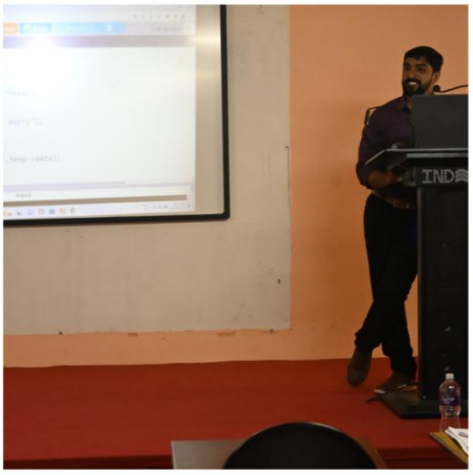


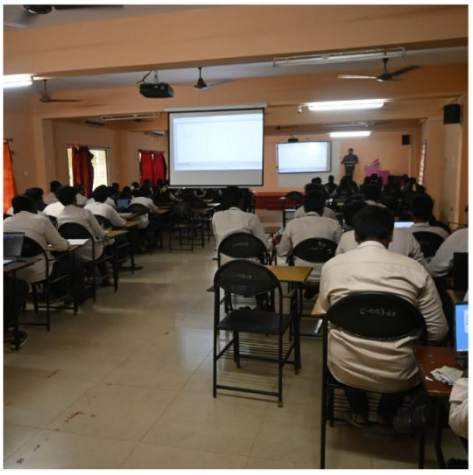
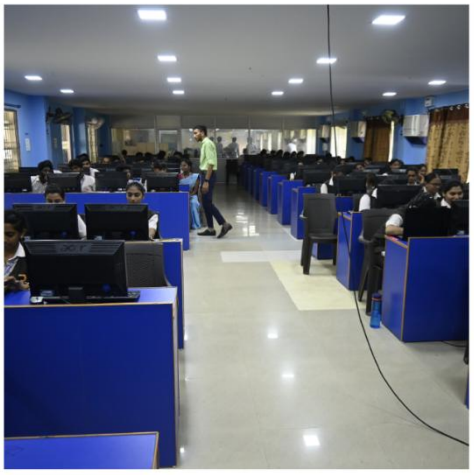
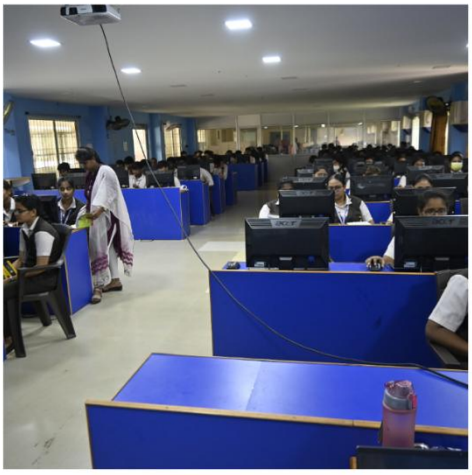

Sample Certificate

COIGN

WORKSHOP COMPLETION CERTIFICATE

This is to certify that Mr./~~Ms.~~ A. Manikanta Manoj Kumar

Registration number 22ME1A05D2 a student of Department of CSE,

Ramachandra College of Engineering, Eluru has successfully completed

one week workshop on **"Data Structures"** from 25-04-2023 to 01-05-2023.

COIGN CONSULTANTS PVT LTD

Authorized Signatory

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Program Co-Ordinator's HOD Principal