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A Report on Guest Lecture On Insights Of Mongo DB

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| Date of the event | 21.01.2023 |
| Title of the Event | Guest Lecture On "Analysis & Design of Algorithm" |
| Organized by | Dept of Computer Science and Engineering MVJCE, Bangalore |

The Department of Computer Science and Engineering organized a event entitled Guest Lecture On " Analysis & Design of Algorithm", on 21th January 2023. The event was conducted in “Smt Dr. MV Jayaraman Auditorium”. The event started at 01:30pm and concluded at 4.00 pm. Total 225 students from all the 3rd semesters of Dept. of Computer Science and Engineering participated in this event.

Chief guest Mr. Ranjan sathish, Founder Director Waylink Piststop slolutions Pvt Limited, Banaglore arrived andshared his Industry knowledge to the students about learning DatabBase Management System and Analysis & Design of Algorithm.

A learning Database management system is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, materials or learning and development programs. Different software development strategies and testing methodologies in corporate.

An Algorithm is a sequence of steps to solve a problem. Design and Analysis of Algorithm is very important for designing algorithm to solve different types of problems in the branch of computer science and information technology.

- In theoretical analysis of algorithms, it is common to estimate their complexity in the asymptotic sense, i.e., to estimate the complexity function for arbitrarily large input. The term "**analysis of algorithms**"
- Algorithm analysis is an important part of computational complexity theory, which provides theoretical estimation for the required resources of an algorithm to solve a specific computational problem.

The following steps for Analysis for Design of Algorithm:-

- **Worst-case** – The maximum number of steps taken on any instance of size **a**.
- **Best-case** – The minimum number of steps taken on any instance of size **a**.
- **Average case** – An average number of steps taken on any instance of size **a**.
- **Amortized** – A sequence of operations applied to the input of size **a** averaged over time.



Asymptotic Analysis

The asymptotic behavior of a function $f(n)$ refers to the growth of $f(n)$ as n gets large.

We typically ignore small values of n , since we are usually interested in estimating how slow the program will be on large inputs.

A good rule of thumb is that the slower the asymptotic growth rate, the better the algorithm. Though it's not always true.

For example, a linear algorithm $f(n)=d*n+k$ is always asymptotically better than a quadratic one, $f(n)=c.n^2+q$.

Solving Recurrence Equations

A recurrence is an equation or inequality that describes a function in terms of its value on smaller inputs. Recurrences are generally used in divide-and-conquer paradigm.

Let us consider $T(n)$ to be the running time on a problem of size n .

If the problem size is small enough, say $n < c$ where c is a constant, the straightforward solution takes constant time, which is written as $\theta(1)$. If the division of the problem yields a number of sub- problems with size.



Design Strategies

- DAA - Divide & Conquer
- DAA – Max-Min Problem
- DAA – Merge Sort
- DAA – Binary Search
- DAA – Greedy method
- DAA – Fractional Knapsack
- DAA – job Sequencing with Deadline
- DAA – optimal Merge Pattern
- DAA – Dynamic Programming
- DAA – 0-1 Knapsack
- Longest Common Subsequence



Criminal alert application

It is a Smart Phone app that alerts you when crimes emergencies and other potentially dangerous events happen in your area.



Faculty Coordinator of the event:

Prof. S Krishnanarayanan (AP, Dept of CSE)

Outcome of the Event:

Through the brainstorm sessions of this event, the participants learnt about Basics of Analysis & Design of Algorithm. It will surely help as it is a part of both frontend and backend.