KTSP MANDALS

HUTATAMA RAJGURU MAHAVIDYALAYA ,RAJGURUNAGAR

DEPARTMENT OF COMPUTER SCIENCE

SR NO	PARTICULARS	DETAILE
1	DATE	2/01/2024
2	NAME OF THE EVENT	ALGORITHM CHALLENGE COMPITION
3	DURATION OF EVENT	1 DAYS
4	VENUE	SYBCS CLASS ROOM NO 34 HRM COLLEGE RAJGURURNAGAR
5	NAME OF CO-ORDINATOR	A.P.KULAKARNI
6	NO.OF.PARTICIPENTS	40
7	CURRICULAM/CO-CURRICULAM/EXTRA-CURRICULAM	CO-CURRICULAM

1.INTRODUCTION:-

Department of computer science of hutatama rajguru mahavidyalay was organized The Algorithm Challenge Activity for the second-year BSc Computer Science students with the objective of enhancing their problem-solving abilities and providing hands-on experience in applying algorithmic techniques to solve real-world problems. This activity was structured around a series of problems that spanned various algorithmic paradigms, including sorting, searching, dynamic programming, greedy algorithms, graph algorithms, and problem-solving with different algorithmic techniques.

The primary goals of this activity were:

- To deepen students' understanding of algorithm design.
- To improve problem-solving skills.
- To provide an opportunity for practical coding experience.
- To develop the ability to analyse the time and space complexity of different algorithms.

This report summarizes the structure, outcomes, challenges, and reflections from the Algorithm Challenge Activity.

2.Objective of the Activity

The main objectives of the activity were as follows:

- **Understanding Algorithmic Techniques**: Students were required to implement and compare multiple algorithms to understand the practical implications of algorithmic choices.
- **Practical Coding Skills**: The activity allowed students to apply theoretical knowledge to real coding challenges, improving their coding proficiency.
- **Time Complexity Analysis**: A key part of the activity was analysing the time and space complexity of each algorithm, fostering an understanding of performance considerations.
- **Critical Thinking and Optimization**: Students were encouraged to not just solve problems but also optimize their solutions, understanding trade-offs between different algorithmic approaches.

3. Activity Structure

The Algorithm Challenge Activity was structured in seven rounds, each focusing on different aspects of algorithm design:

Round 1: Sorting Algorithms Students were tasked with implementing and comparing various sorting algorithms:

- **Bubble Sort**
- **Merge Sort**
- **Quick Sort**

- **Insertion Sort**

They were required to:

- Implement the algorithms and analyze their time complexities.
- Test the algorithms on arrays of different sizes to compare their performance.

Round 2: Searching Algorithms

In this round, students implemented:

- **Linear Search**
- **Binary Search**

They were expected to:

- Compare the performance of both algorithms on both sorted and unsorted arrays.
- Analyze the time complexities of each.

Round 3: Dynamic Programming

This round focused on dynamic programming problems:

- **Fibonacci Sequence**
- **0/1 Knapsack Problem**
- **Longest Common Subsequence (LCS)**

Students had to:

- Develop dynamic programming solutions for each problem.
- Discuss how dynamic programming helped optimize the solution.

Round 4: Greedy Algorithms

Problems solved in this round involved greedy approaches:

- **Activity Selection Problem**
- **Fractional Knapsack Problem**

Students needed to:

- Solve these problems using greedy algorithms.
- Discuss why the greedy approach was suitable and optimal.

Round 5: Graph Algorithms

This round involved graph algorithms:

- **Depth First Search (DFS)**

- **Breadth First Search (BFS)**
- **Dijkstra's Algorithm** (for shortest path)

Students were tasked with:

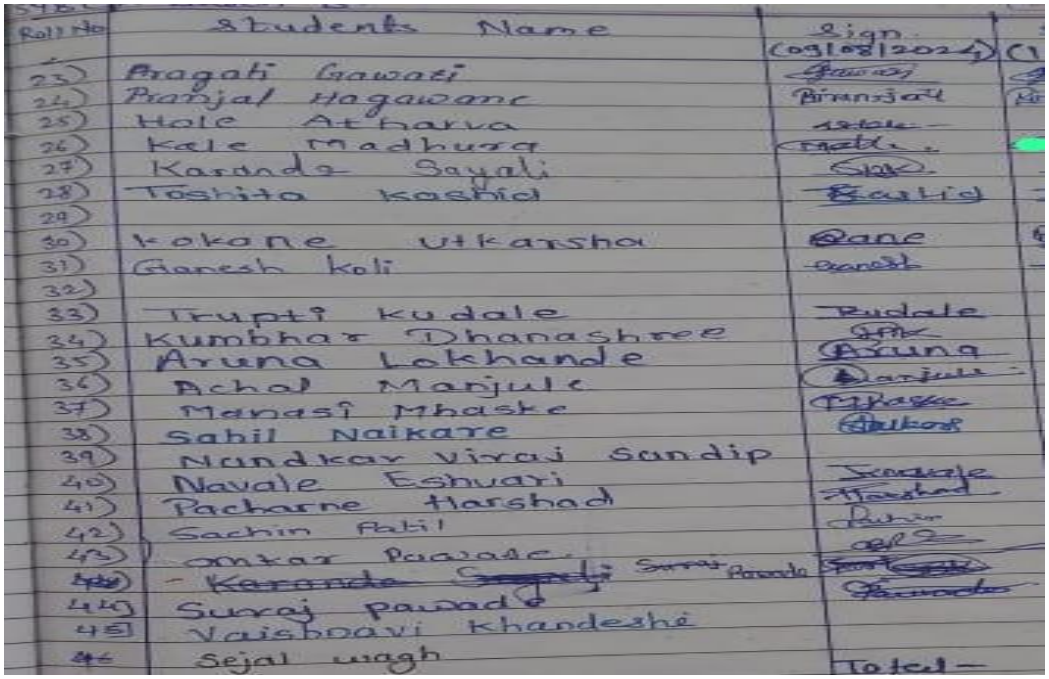
- Implementing graph traversal algorithms and shortest path algorithms.
- Testing these algorithms on sample graphs.

Round 6: Problem Solving with Algorithmic Paradigms

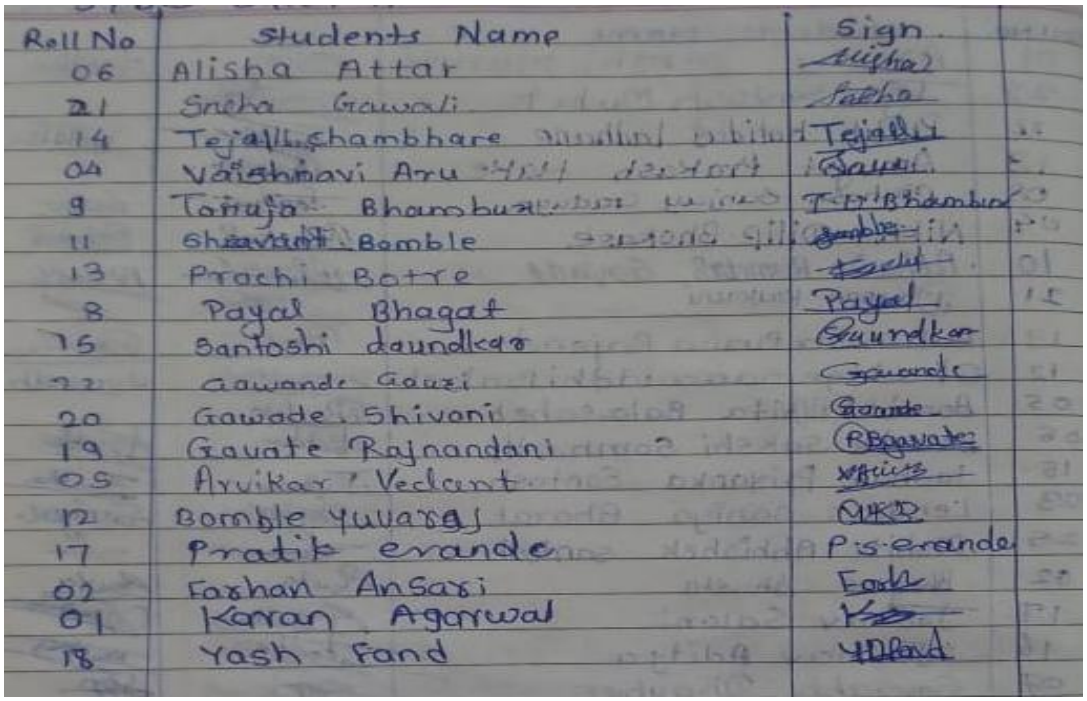
Students selected a problem (e.g., Maximum Subarray Sum or N-Queens) and solved it using a suitable algorithmic paradigm (e.g., Divide and Conquer, Backtracking).

Round 7: Algorithm Design Challenge

This final round involved solving a real-world problem (e.g., job scheduling, recommendation system) by designing an efficient algorithm. Students had to choose the appropriate algorithmic technique and justify their choices.



Roll No	Students Name	Sign (09/08/2024)
23)	Bragati Gawati	
24)	Pranjal Hagawane	
25)	Hole Atharva	
26)	Kale Madhura	
27)	Karande Sayali	
28)	Toshita Kashid	
29)		
30)	Kokane Utkarsha	
31)	Ganesh Koli	
32)		
33)	Trupti Kudale	
34)	Kumbhar Dhanashree	
35)	Aruna Lokhande	
36)	Achal Manjule	
37)	Manasi Mhaske	
38)	Sahil Naikare	
39)	Nandkar Viraj Sandip	
40)	Navale Eshvari	
41)	Pacharne Harshad	
42)	Sachin Patil	
43)	Omkar Pawase.	
44)	Suraj Pawade	
45)	Vaishnavi Khandeshe	
46	Sejal Wagh	Total —



Roll No	Students Name	Sign
06	Alisha Attar	
21	Sneha Gawali	
14	Tejalli Shambhare	
04	Vaishnavi Aru	
9	Tanuja Bhambure	
11	Shravani Bomble	
13	Prachi Botre	
8	Payal Bhagat	
15	Santoshi daundkar	
22	Gawande Gauri	
20	Gawade Shivani	
19	Gavate Rajnandani	
05	Arvikar Vedant	
12	Bomble Yuvaraj	
17	Pratik erande	
02	Farhan Ansari	
01	Karan Agarwal	
18	Yash Fand	

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