| **STUDENT PORTFOLIO** | |
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|  | **Name: N S Balaji**  **Register Number: RA2311056010012**  **Mail ID: bn4318@srmist.edu.in**  **Department: DATA SCIENCE AND BUSINESS SYSTEMS**  **Semester: 3** |
| **Subject Title: 21CSC201J Data Structures and Algorithm**  **Handled By: Dr. Rajkumar K.** | |
| **ELAB Completion Status Completed 4-5 questions from all the topics** | |
| **Lab Experiment Completion Status  All the 15 experiments were solved, run and executed successfully and took the completed sign from Faculty.** | |
| **REAL WORLD APPLICATION IN DAA PPT VR/SIMULATION DEMO**  **Email Management System**  **This Email Management System uses three main data structures—Queue, Graph, and Hash Map—to efficiently manage, process, and analyze email data. Here’s a simplified overview of the code structure:**  **1. Queue The Queue is used to manage incoming emails in a First-In-First-Out (FIFO) order, ensuring emails are processed in the sequence they arrive. Each email is added (enqueued) to the back of the queue and removed (dequeued) from the front, allowing sequential processing without disrupting the order.**  **2. Graph The Graph is used to track relationships between users based on their email interactions. Each user is represented as a node, and an edge (connection) is created between nodes when an email is sent from one user to another. This enables easy visualization of user connections and helps identify frequently interacting users.**  **3. Hash Map The Hash Map stores emails using unique IDs for fast retrieval. By hashing the email ID, each email can be quickly inserted, searched, or deleted with minimal time complexity. This is especially useful when handling large datasets, as it prevents the need for sequential searches.**  **Summary of Key Operations**   * **Add Email: Emails are enqueued upon arrival, processed in FIFO order, and stored in the hash map for future retrieval.** * **User Connections: As each email is processed, the graph is updated to show connections between users, providing insights into communication patterns.** * **Retrieve Email by ID: The hash map allows instant email retrieval using unique IDs, saving time in accessing specific emails.**   **Report:** https://docs.google.com/document/d/1ZRVPxUi6ngkElQT9sp8zw4r6VEoSG-TZmoaqvFCRFck/edit?usp=sharing  **OUTPUT:** | |
| **GATE Questions Solution.** | |
| [**https://drive.google.com/file/d/1Oq9KBcb\_odj2aNH5igAeLnKDQw8BUaPI/view?usp=drivesdk**](https://drive.google.com/file/d/1Oq9KBcb_odj2aNH5igAeLnKDQw8BUaPI/view?usp=drivesdk)  **Any other**  **(Write if you registered or practise apart from Hackerrank, Leetcode, Github.etc**  **Eg: Certification Programs related to DSA )  Hackerrank and CodeChef** | |

N S Balaji

Signature

