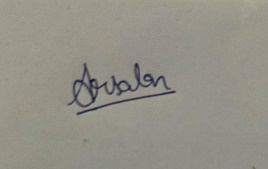
**Student Portfolio**

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| **ARSALAN** | |
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| **Subject Title: 21CSC201J Data Structures and Algorithms**  **Handled By: Dr. K.Rajkumar** | |
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| **ELab Completion Status** | |
| **Lab Experiment Completion status**    **All 12 Experiments completed and successfully executed** | |
| **SOLVED REAL WORLD PROBLEM / CONCEPTUAL TASK**  **SMART CITY TRAFFIC MANAGEMENT –**  **With the increasing number of vehicles in urban areas, traffic congestion has become a significant problem. This project aims to develop a Smart City Traffic Management System that can efficiently manage traffic signals to reduce congestion. The system will use real-time data to dynamically adjust traffic signal timings, predict traffic patterns, and provide alternative route suggestions.**  **Key Features**   1. **Dynamic Traffic Signal Control:**    * **Adjust traffic signal timings based on real-time traffic flow using data structures like Queues and Priority Queues.** 2. **Shortest Route Suggestions:**    * **Use Graphs and algorithms like Dijkstra's or *A (A-star)*\* to find the shortest path between two locations.** 3. **Traffic Data Analysis:**    * **Analyze historical traffic data using Hash Maps and Trees to predict peak hours and optimize traffic flow.** 4. **Real-time Vehicle Tracking:**    * **Maintain a record of vehicles passing through intersections using Hash Sets to detect traffic rule violations or track stolen vehicles.** | |
| **CERTIFICATIONS** | |
| **GATE QUESTIONS SOLUTION**  **THIS DRIVE LINK CONTAINS THE SOLUTION FOR GATE QUESTIONS**  **https://drive.google.com/file/d/1Oq9KBcb\_odj2aNH5igAeLnKDQw8BUaPI/view?usp=drivesdk** | |

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**Signature of the Student**