



BENNETT
UNIVERSITY
THE TIMES GROUP

MANAGEMENT SYSTEMS USING DATA STRUCTURES

VOL. I



BENNETT UNIVERSITY

Plot Nos 8, 11, TechZone 2, Greater Noida, Uttar Pradesh 201310

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or any information storage or retrieval system, without the prior permission in writing from the publishers.

The book is solely the responsibility of the editors/authors, and the publisher has no role in creation of the content and does not have responsibility for anything defamatory or libellous or objectionable.

Bennett University does not have any control over, or responsibility for, any third-party websites referred to or in this book. All internet addresses given in this book were correct at the time of going to press. The author and publisher regret any inconvenience caused if addresses have changed or sites have ceased to exist but can accept no responsibility for any such changes.

ISBN: 978-81-969026-3-6

Preface

Greetings and welcome to "Management Systems using Data Structures," an extensive manual created to close the knowledge gap between efficient management techniques and the potent tools that data structures provide. The collaboration of management systems and data structures has become essential for process, decision-making, and resource optimization in the dynamic world of business and technology. Organizations must handle enormous volumes of data in the fast-paced world of today while maintaining the effectiveness, scalability, and agility of their management systems.

The goal of this book is to provide readers a comprehensive grasp of the different ways that data structures—from basic ideas to sophisticated methods—can be strategically used to improve the functionality and efficiency of management systems in a variety of contexts. By presenting real-world examples where data structures are essential to streamlining management procedures, we want to close the knowledge gap between theory and practice. From simple arrays and linked lists to more complex structures like trees, graphs, and hash tables, this book covers a broad range of data structures and shows how they may be used in various management system contexts.

Readers will learn how to use data structures using a problem-solving approach to typical management difficulties, including data organization, search and retrieval, and system optimization. The book is filled with real-world case studies and examples that provide helpful insights into how successful businesses have improved their management systems using data structures. Examine the ways in which data structures may be used to aid in strategic decision-making, providing a competitive edge in a company environment that is changing quickly. Explore how data structures can be employed to support strategic decision-making processes, offering a competitive advantage in a rapidly changing business environment.

Index

S.No.	Title	Page No.
1.	Survey on Performance Analysis of AODV, OLSR and DSDV in VANET <i>Authors: Sheikh Moeen Ul Haque, OM Chauhan</i>	1
2.	NLP Chatbot <i>Authors: Sheikh Moeen Ul Haque, Suchit Sharma, Sandeep Deshmukh, Shrestha Srivastava</i>	15
3.	Bank Management System Using AVL Trees <i>Authors: Rajesh Kumar Shrivastava, Nitish Singh Sengar</i>	38
4.	Training Schedule Management System <i>Authors: Armaan Aslam Siddiqui, Subrat Katara</i>	52
5.	STUDEX: The University Address Book <i>Authors: Abhinav Srivastav, Aadarsh Singh Tomar, V Harshath</i>	77
6.	Rilli: A Distributed Timetable Management System <i>Authors: Vikas Kumar Jain, Anjali Ojha, Siddharth Vethody, Ayush Garg</i>	112
7.	Graph-Based College Timetable Generator <i>Authors: Debajyoti Ghosh, Yashasvi Kapil, Yashash Pugalia</i>	134
8.	A Collaborative Movie Recommendation System <i>Authors: Nimratpreet, Deepti, Bhuvesh</i>	154
9.	A Content-Collaborative based Hybrid Music Recommendation System <i>Authors: Ansh Mehta, Dayam Sri Vardhan, Sahil Khandekar</i>	172
10.	Metro City <i>Authors: Rajnish Kumar Chaturvedi, Khushi Gupta, Akshit Naagar, Abhinav Doot</i>	192
11.	Bank Management System <i>Authors: Prakhar Sharma, Jatin Singh Pundir, Ishan Trapathi, Priyanka</i>	221
12.	Criminal Detection System <i>Authors: Aayan Agrawal, Vikas kumar Jain</i>	254
13.	Playlist Management System <i>Authors: Arpita Mishra, Aayushi Agarwal, Prajwal Srivastava</i>	276
14.	Tetris Using C++ & Raylib <i>Authors: Abhayansh Deo Kumar, Divyanshu Singh</i>	304
15.	Book Store Management System <i>Authors: Keerthi Thorat, Mehak Goyal, Priyanka Gaba</i>	330
16.	WHEELDEAL <i>Authors: Khushi Agarwal, Khushi Bansal, Akshita Ghildiyal</i>	352

17.	MediVault: Aadhaar-Based Healthcare System <i>Authors: Debajyoti Ghosh, Lakshit Kumawat, Amsal Uzair, Aditya Thakur</i>	385
18.	Banking using Data Structures <i>Authors: Sangeeta, Ratan, Lakshya Deewan, Leela Bapatla Shashank</i>	419
19.	Aarambh Bank System <i>Authors: Vikash Kumar Jain, Prashant Solanki, Sohit Joshi, Shwet Gupta</i>	431
20.	Trip Planning Application - TrekTactix <i>Authors: Gaurav Kumar, Pratham Kocher</i>	455
21.	Advanced Banking System <i>Authors: Vikas Kumar Jain, Preksha Taneja, Alisha Aggarwal</i>	472
22.	Fitpro <i>Authors: Arpit Bhardwaj, Madhushi Verma, Brisna Biswas, Ayush Goel, Devansh Agarwal,</i>	487
23.	Student Improvement Management <i>Authors: C.L.P. Balaji, Lovish Tayal, Arpit Kochar, Brijendra Pratap</i>	514
24.	FINX - Bank Management System <i>Authors: Dhruv Arora, Pushti Maheshwari, Rahul Dewangan</i>	542
25.	Passkey Pro <i>Authors: Vandit Barola, Diya Gupta, Vanshika Singh, Brijendra Pratap</i>	566
26.	DC Management System <i>Authors: Mukund Pratap Singh, Umesh Gupta, Diya Rastogi, Ankush Goyal</i>	584
27.	Hospital Management System <i>Authors: Ananya Vats, Eshnika, Vinayak Singh, Rajnish Chaturvedi</i>	603
28.	Trip Reservation <i>Authors: G. Akash Varma, V. Kausik Varma, N. Teja Kiran, Brijendra Pratap</i>	618
29.	Library Management System <i>Authors: Adnan Hasan, Ganesh Galbale, Yashasvi Singh, Divya Kumari</i>	641
30.	Book Wagon <i>Authors: Markandey Krishna Mishra, Rudraksh Chandel, Yash Aggrawal, Rajiv Kumar</i>	657
31.	D-Metro <i>Authors: Mayank Bansal, Gaurav Raj, Abhinav Shakya</i>	672
32.	Bankify <i>Authors: Anurag Munjal, Vikas K. Jain</i>	693
33.	Quiz Management System <i>Authors: Anurakta Dash, Avnee, T. Abhimanyu, Sangeeta Kumari</i>	712
34.	Bliss-Basket: Revolutionizing E-Commerce <i>Authors: Priyanshu Kumar Ojha, Anushka Sharma, Aashraya Garg, Rajnish Kumar Chaturvedi</i>	733
35.	Warehouse Management System <i>Authors: Umesh Gupta, Mukund Pratap Singh, Arjun Gupta, Ankush Goyal</i>	746
36.	Qrify <i>Authors: Arnim Saxena Rohan Dabas Rakshit Garg, Priyanka</i>	765
37.	Maid Mate Manager <i>Authors: Madhushi Verma, Arpit Bhardwaj, Aradhya Goel, Arpita Kashyap</i>	781
38.	Healthcare Management System	811

	<i>Authors: Ankush Goyal, Anshika Saxena, Priyanka</i>	
39.	Student Management System <i>Authors: Aryan, Ayush Dikshit, Rajesh Kumar Shrivastava</i>	825
40.	Music Tracks Management System <i>Authors: Ayush Kumar, Kritika Jain, Samarth Bansal, Rajnish Chaturvedi</i>	861

ABOUT THE BOOK

The book “*Management Systems Using Data Structures Vol. I*” gives a brief of the synergy between management systems and advanced data structures. The book tells us that how strategic integration exist between various type of data structures. The different type of data structures are arrays, graphs, and trees. It also provides glimpse how this enhances in resource allocation and enhance overall system efficiency. It equips its readers with the knowledge so that sophisticated data structures can be used in diverse management contexts. This essential guide facilitates both its user (students and professionals) a broad insight into leveraging technology. The book provides wide range of real word examples of management system like banking, e-commerce, healthcare, and criminal management system.

AUTHOR



Dr. Rajesh K. Shrivastava

Dr. Rajesh Kumar Shrivastava is an Associate Professor at Bennett University. He had more than 12 years of teaching experience. He had completed his Ph.D. from BITS-Pilani, Hyderabad Campus. He is actively involved in academic research. His primary research area is IoT and cyber security. He published several research articles in reputed journals and conferences. He is a senior member of the IEEE society. Recently he bagged two projects related to Ransomware and Malware from DSCI.

Dr. Kuldeep is currently working as Associate Professor in the School of Computer Science Engineering and Technology, Bennett University, India. Dr. Kuldeep's expertise lies in the application of Artificial Intelligence in geospatial domain, Database Management System and Computer Networks.



Dr. Kuldeep



Plot No. 8 - 11, TechZone 2, Greater Noida, Uttar Pradesh 201310