Personal Contact Management with Relationship Visualization: An Adjacency List Approach

M Saravana Karthikeyan
Assistant Professor - Senior Grade. Department of Computer Science and Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, Tamil Nadu, India

Alamuru Navadeep Reddys
Department of Computer Science and Engineering (AIML), Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, Tamil Nadu, India

Abstract

Efficient management of personal and professional contacts is now essential in our globally connected world. Conventional contact management solutions generally have no easy method to visualize the relationship between people and things and thus have inefficiencies in comprehending complicated networks. Our Personal Contact Management with Relationship Visualization project presents a graph-based contact management system that allows users to store, organize, and analyze the relationships between contacts dynamically. This system utilizes PostgreSQL for the storage of structured data and utilizes a graph-based system with adjacency lists to compactly represent and query relationships. The UI utility is used to create, delete, and edit nodes (contacts) and form relationships (one-to-one, one-to-many, many-to-many) among them. The system also supports attribute customization where users can associate metadata, such as images, notes, and user-defined tags, with nodes and relationships. For complete data analysis and portability, the system incorporates export facilities with PDF, , XML, XLS, support. This makes sharing of data possible without any impediments and enhances interoperability between applications. The system also sees to it that when the relations are changed visually, database changes are reflected automatically, and the data remains consistent. Scalability is a central aspect of our method, which supports users in managing vast amounts of data effectively. The combination of network visualization software permits users to examine relationships intuitively, and it facilitates the identification of patterns and associations in contact networks. Through the utilization of a graph-based model of visualization, our system improves decision-making, cooperation, and data-driven information. This project offers a breakthrough in contact management by doing away with inefficiencies of manual data tracking, improved relationship mapping, and interactive, real-time data visualization. Further developments will involve AI-driven relationship insights, real-time information updates, and connection to external APIs for additional optimization.

Keywords

Graph based Contact Management, Adjacency List Representation, Relationship Visualization, PostgreSQL Database, Node and Relationship Management, One-to-One, One-to-Many, Many-to-Many Relationships, Personal and Professional Contact Organization.