**Efficient Task Management: A C++ To-Do List Application**

**Abstract** Task management is an essential component of productivity in both personal and professional settings. This project presents a C++-based to-do list application designed to help users efficiently organize their tasks. The application allows users to create, categorize, prioritize, and update tasks dynamically. By implementing object-oriented programming (OOP) principles and data structures the system ensures modularity and scalability. This paper discusses the system's architecture, key features, and benefits, highlighting its role in enhancing task management.

**Introduction** In today's fast-paced world, effective task management plays a crucial role in maintaining productivity and organization. People often juggle multiple responsibilities, making it necessary to have a reliable system for tracking tasks and deadlines. This project introduces a to-do list application developed using C++, designed to provide users with an intuitive and efficient method to manage their daily tasks.

The application features a structured approach to task organization, allowing users to add, remove, and modify tasks based on priority and category. Utilizing object-oriented programming concepts as well as data structures the system ensures flexibility and maintainability by incorporating encapsulation, inheritance, and polymorphism. Furthermore, the project emphasizes user-friendly interactions through a command-line interface, enabling seamless navigation and operation.

By leveraging efficient data structures and algorithms, the application ensures quick access to tasks and optimized memory usage. The implementation of file handling techniques allows users to save and retrieve their tasks, ensuring data persistence across multiple sessions. Through this project, we aim to develop a practical tool that enhances productivity by simplifying task management in various contexts.