

Title: Smart Task Scheduler Using Priority Queue

Abstract

The Smart Task Scheduler is a simple Java-based desktop application designed to help users manage their daily tasks efficiently. The application prioritizes tasks based on urgency using a priority queue data structure. It allows users to add, delete, and filter tasks easily while also providing reminder alerts. This project demonstrates the practical use of data structures, file handling, and graphical user interface concepts in Java.

Introduction

Task management is an important part of daily life, especially for students and professionals. Managing multiple tasks without proper prioritization can lead to missed deadlines and reduced productivity. The Smart Task Scheduler solves this problem by organizing tasks according to priority and deadlines. This project is developed as a beginner-friendly Java application using simple logic and a single Java file.

Tools Used

- Java (JDK)
- Java Swing for GUI
- PriorityQueue from Java Collections Framework
- File Handling (ObjectInputStream and ObjectOutputStream)
- IntelliJ IDEA / Eclipse / Command Prompt

Steps Involved in Building the Project

1. Created a Task class containing task title, priority, and deadline.
2. Used a PriorityQueue to automatically arrange tasks based on priority.
3. Designed a simple user interface using Java Swing components.
4. Implemented add and delete task functionality.
5. Added filtering options such as high priority and today's tasks.
6. Implemented reminders using Java Timer.
7. Used file handling to save and load tasks permanently.

Conclusion

The Smart Task Scheduler project successfully demonstrates how Java can be used to build a simple yet effective task management system. The application is easy to use, beginner-friendly, and efficient. Through this project, important concepts such as data structures, GUI development, and file handling were learned and implemented. This project can be further enhanced by adding features like task editing, notifications, and database integration.