# Enhanced To-Do List Application

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## Introduction

This document provides detailed information about the 'Enhanced To-Do List Application' developed in Python. The application is a console-based program that allows users to manage their tasks effectively. It provides various features such as adding, viewing, editing, and deleting tasks, along with functionalities for searching, filtering, and sorting tasks. The tasks are stored in a JSON file to ensure data persistence.

## Features

### 1. Add Task

Allows users to add a task with a unique ID and a description. Each task is stored as a dictionary in a list.

### 2. View Tasks

Displays all tasks with their ID, description, and status (pending or completed).

### 3. Remove Task

Allows users to remove a specific task by providing its unique ID.

### 4. Mark as Completed

Enables users to mark a specific task as completed, changing its status from 'pending' to 'completed'.

### 5. Edit Task

Allows users to modify the description of an existing task by specifying its ID.

### 6. Search Task

Provides a search functionality to find tasks by keywords present in their descriptions.

### 7. Filter Tasks

Allows users to filter tasks based on their status (pending or completed) and display the results.

### 8. Clear All Tasks

Enables users to clear all tasks after confirming the action. This will delete all stored tasks.

### 9. Sort Tasks

Provides an option to sort tasks by their ID or status. Sorted results are displayed to the user.

## Program Structure

The program is structured to have modular functions, each responsible for specific functionalities. Tasks are stored in a list of dictionaries, and data is persisted to a JSON file ('tasks.json') for saving and loading tasks between sessions. The use of functions like 'add\_task', 'view\_tasks', and 'remove\_task' ensures code reusability and readability.

## File Operations

File operations are used to ensure that tasks are saved to 'tasks.json' and can be retrieved when the program is run again. The JSON format makes it easy to handle the task data as it provides a simple way to serialize and deserialize the task information.

## Expected User Interaction

The user interacts with a menu-driven interface, selecting options to perform actions such as adding or deleting tasks. Each option corresponds to a specific function that processes the user input and updates the task list accordingly.

## Conclusion

The Enhanced To-Do List Application is a simple yet effective tool for task management. It covers all the essential features needed to manage tasks efficiently and ensures data is not lost across sessions. With a modular code structure and intuitive user interface, it serves as a practical example of Python programming for file handling, data management, and user interaction.