



“MINI EXCEL”

CSC-200L DATA STRUCTURE AND ALGORITHM

Mini Excel is a simplified, efficient spreadsheet application that offers basic data entry, formula calculations, and a calendar template, optimized with advanced data structures for enhanced performance.

Problem Statement

Traditional spreadsheet software is often too complex and slow for users who need only basic functions like data entry and simple calculations. The unnecessary features and resource demands make it inefficient for everyday use.

SOLUTION

Mini Excel provides a lightweight, efficient alternative with core features like data entry, formula calculations, and a calendar template. It uses optimized data structures to enhance performance while keeping the interface simple and user-friendly.

Data Structures Used

- **Stack & Queue:**

The Stack and Queue are both used to improve the user experience and performance in Mini Excel. They are used for managing undo/redo operations, storing action, and enabling efficient retrieval of previous actions. Together, they streamline data manipulation and formula processing, making the application faster and more responsive.

- **Linked List :**

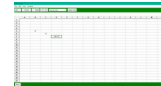
The Linked List is used in Mini Excel to manage rows and columns dynamically. It allows efficient insertion and deletion of rows/columns without needing to shift large data blocks, as would be required with arrays. This ensures that the spreadsheet layout can be adjusted quickly and flexibly. It enables a more responsive experience, especially when dealing with large datasets.

- **Graph & Trees:**

The Graph in Mini Excel models cell dependencies, where each cell is a node and edges represent dependencies, ensuring efficient recalculation of related cells. The Tree organizes and evaluates complex formulas by breaking them into nodes, allowing for efficient traversal and accurate calculation. Together, they optimize formula evaluation and dependency tracking for faster, more reliable calculations.

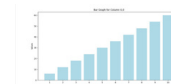
KEY FEATURES

- **Data grid for simple calculation:**



User can load and save csv files, also change style, font and alignment.

- **Bar Graph:**



- **Tree Visualization:**



- **Graph Visualization:**



- **Calendar Template for scheduling tasks:**



User can go back and next months by clicking buttons and save the csv files too.

CONCLUSION

Mini Excel simplifies spreadsheet tasks by focusing on essential features and optimizing performance with efficient data structures. It offers a fast, user-friendly experience, ideal for personal use and small businesses. With its lightweight design, Mini Excel provides an efficient alternative to traditional software, with potential for future enhancements.