Project Ideas

1. **Library Management System**: Create a system to manage books in a library. Implement a data structure like an array and linked list to store book information and perform operations like adding, searching, and deleting books.

2. **Employee Management System**: Design a system to manage employee records for a company. Use data structures like a doubly linked list or tree to store employee information and perform operations like adding, searching, and deleting employees.

3. **File System Simulator**: Build a simplified file system simulator that supports operations like creating files, directories, and managing their relationships. Use data structures like trees or graphs to represent the file structure.

4. **Binary Search Tree Visualization**: Create a program that visualizes the operations of a binary search tree. Allow users to insert, delete, and search for elements in the tree, and display the resulting structure to enhance understanding.

5. **Sudoku Solver**: Design an application that can solve Sudoku puzzles. Implement a backtracking algorithm using an appropriate data structure like an array or matrix to represent the puzzle.

6. **Directory Structure Analyzer**: Build a tool that analyzes the directory structure of a system and provides insights such as the size of directories, file types, and the overall structure. Use data structures like trees or graphs to represent the directory hierarchy.

7. **Contact Management System**: Develop an application that manages contact information, including names, phone numbers, and addresses. Use data structures like arrays and linked lists to store and manipulate the contacts.

8. **Online Shopping Cart**: Create a shopping cart system for an e-commerce website. Use data structures like linked lists or arrays to track the items in the cart and perform operations like adding, removing, and updating quantities.

9. **Student Gradebook**: Build a gradebook application to manage student grades and calculate averages. Use data structures like arrays or linked lists to store and process

student information and grades.

10. **Flight Reservation System**: Design a system to manage flight reservations. Implement data structures like trees or graphs to represent flight routes, available seats, and passenger information.

11. **Music Playlist Manager**: Create a program that manages playlists and allows users to organize and manipulate music tracks. Use data structures like linked lists and arrays to store and traverse the playlist.