Student Enrollment Management Tool

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# Introduction

The Student Enrollment Management Tool is a console-based application designed to streamline student records management.

It handles student information such as name, ID, and age using advanced programming concepts like recursion, sorting algorithms, and object-oriented programming (OOP).

Tool Overview

- Description: A command-line tool that helps administrators manage student records.

- Features include adding students, searching via recursion, sorting with Quick Sort, and displaying student records.
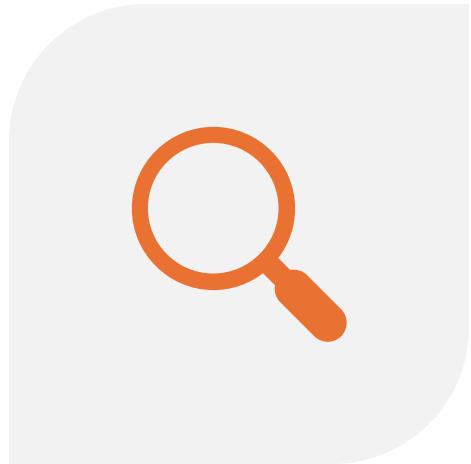
Topics Covered
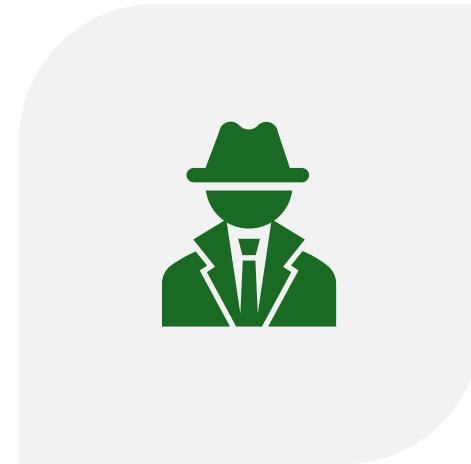
- Topic 1: Recursion (Search Functionality)
- Topic 2: Sorting (Quick Sort)
- Topic 3: Visual Sorting

Topic 1: Recursion (Search Functionality)
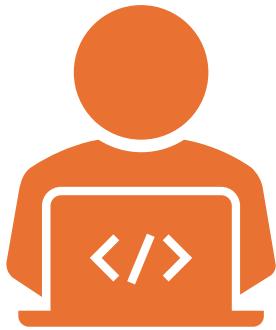
RECURSION IS USED FOR SEARCHING STUDENT RECORDS BY RECURSIVELY NAVIGATING THROUGH THE LIST OF STUDENTS.
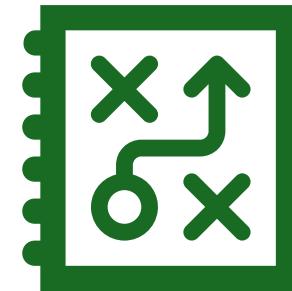
EXAMPLE: SEARCHING FOR A STUDENT BY NAME OR ID.

Topic 2: Sorting (Quick Sort)

Quick Sort is an efficient algorithm that sorts student records by either name or ID.

It uses the divide-and-conquer approach to achieve O(n log n) time complexity.

Topic 3: Visual Sorting
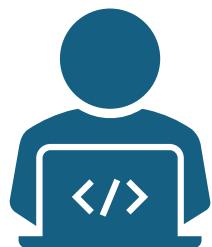
The tool uses classes like 'Student' and 'EnrollmentSystem' to manage student data and system functionalities.
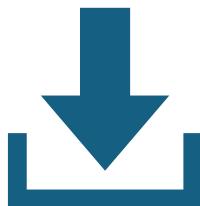
OOP principles help make the system modular and maintainable.

Instructions for Using the Tool

1. Install C++ compiler (e.g., g++, Xcode).

2. Download and compile the source code.

3. Run the tool to manage student records.

Conclusion

The Student Enrollment Management Tool is a simple yet efficient way to manage student data using advanced programming techniques.

Potential improvements include database integration, GUI development, and data export/import features.

References

- 1. C++ Programming Concepts: Official C++ Documentation.
- 2. Recursion and Sorting Techniques: Data Structures and Algorithms by Mark Allen Weiss.
- 3. Object-Oriented Programming Principles: Programming in C++ by Bjarne Stroustrup.