Project report — Student Management system

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I. Project Overview

This Java-based system uses object-oriented design to manage student records. It provides a console-driven application with two access modes: full and limited, using serialization, interfaces, and inheritance. The system offers basic security features with password authentication and functions for adding, deleting, displaying, and searching student records.

II. Key Components

Student Logic and Abstract Hierarchy: The program begins with a layered abstract hierarchy that standardizes common properties (such as age and name) and behavior. This hierarchy is composed of Person, LivingCreature, and Creature. This structure is extended by the Student class, which manages course information, calculates average grades, and assigns grades.

Course management and the grading system: A tiered grading logic is defined by a specialized grading interface. A map is used to record course data. It stores corse names and the lists of grades as a key-value pairs. This module calculates the overall GPA as well as the averages for each subject.

Security & Data Persistence: File serialization preserves student data by storing entries in a file across sessions. While read-only activities have limited access, complete access to data modification functions is secured by a straightforward password scheme.

User Interface: Clear choices for user activities, such as the ability to create, delete, and search students, are provided by a console-based interface. Both access modalities can be easily navigated thanks to the design.

III. Team Member Contributions

Almaz Umbetov: Created the student class logic and the abstract hierarchy.

Kim Viktoriya: Oversaw the course management implementation and introduced the grading scheme.

Data persistence layer engineering and security feature implementation were done by Boburjon Komilov (login).

Alihon Isroiljonov: Designed the user interface with an emphasis on the overall user interaction and the student creation process.