Student Management System

(Console-Based Java Application)

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Project Introduction

The Student Management System is a console-based Java application designed to manage student records efficiently.

It allows users to:
- **Add student details**
- **View all students**
- **Search students by ID**

This project is developed using Core Java and demonstrates the use of Object-Oriented Programming concepts through a menu-driven console interface.

Project Overview

- Developed a console-based Student Management System using Java
- The application allows basic management of student records
- Designed to apply Object-Oriented Programming (OOP) concepts in a real scenario
- Menu-driven system for easy interaction

Objectives

- To strengthen understanding of Core Java
- To implement Object-Oriented Programming concepts
- To perform basic operations like adding, viewing, and searching , student data
- To gain hands-on experience in building a complete Java application

Key Features

- Add new student details
- View all student records
- Search student details using Student ID
- Menu-driven console interface
- Simple and structured program flow

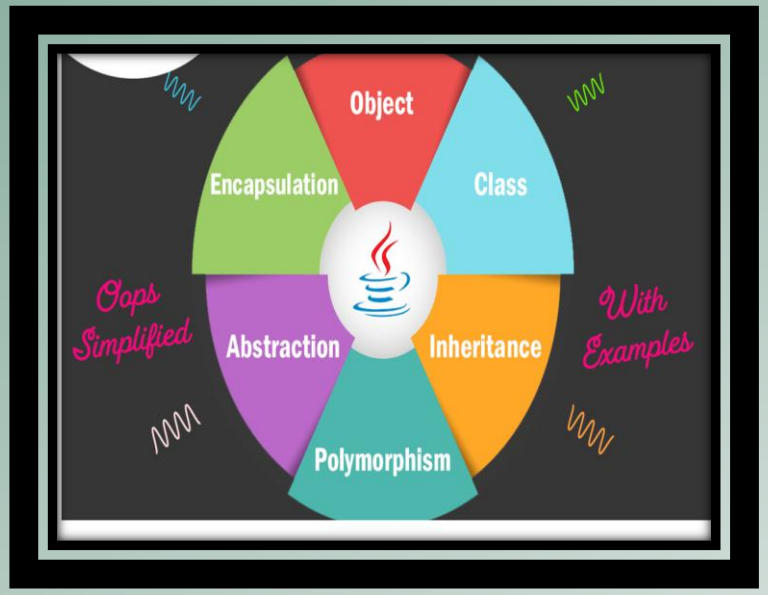
Technologies Used

- Java (Core Java)
- Eclipse IDE
- Other Tools
- GitHub (for source code management)

Object-Oriented Concepts Used

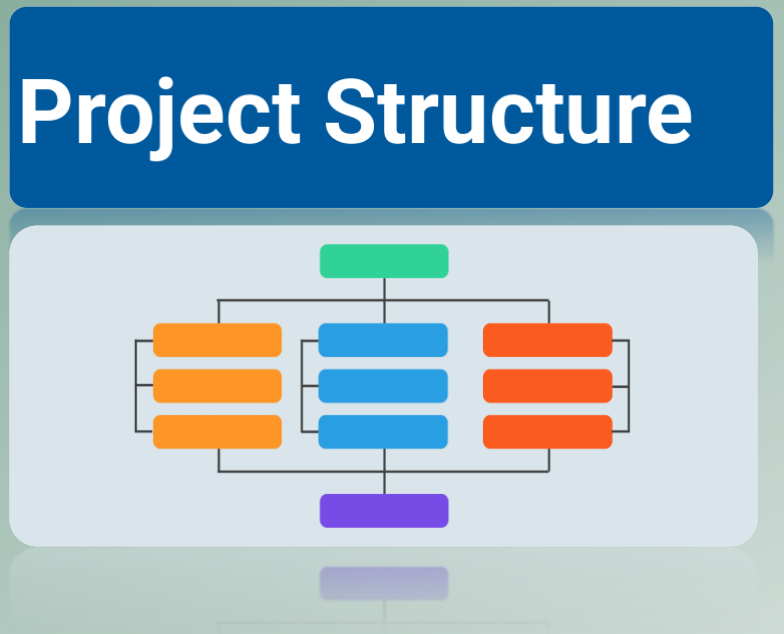
- Encapsulation
- Data members are protected using access modifiers
- Data is accessed through constructors and methods
- Inheritance
- Student class extends the Person class
- Basic Polymorphism
- Method usage through class hierarchy

(Concepts are implemented at a beginner-to-intermediate level)



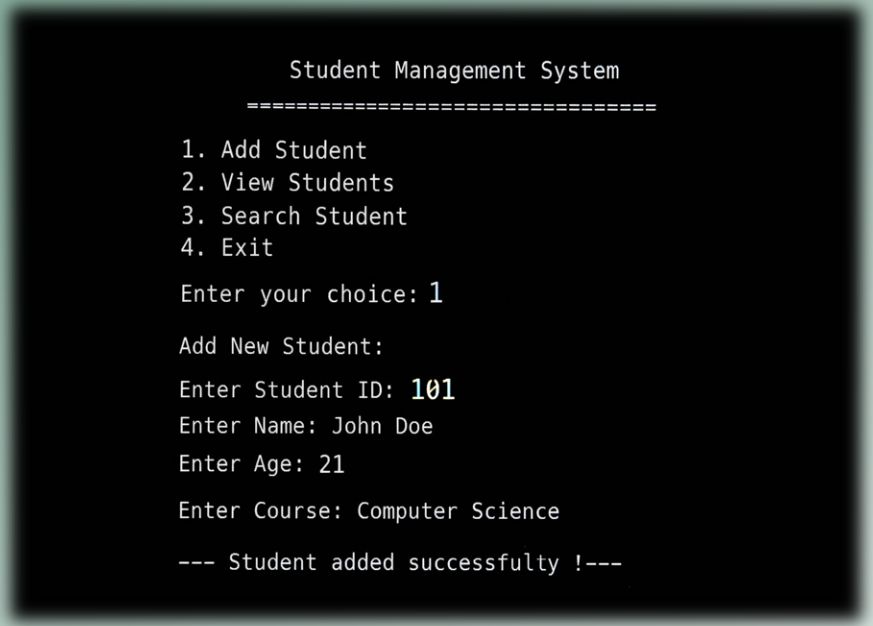
Project Structure

- Main.java
- Handles menu options and program execution
- Person.java
- Base class containing common attributes
- Student.java
- Derived class representing student details
- StudentService.java
- Contains logic for add, view, and search operations



Add Student Functionality

- User selects option 1 – Add Student
- Enters:
- Student ID
- Name
- Age
- Course
- Student data is stored successfully



View Students Functionality

- Displays all added student records
- Shows:
- Student ID
- Name
- Age
- Course

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Student Management System
==================================
1. Add Student
2. View Students
3. Search Student
4. Exit

Enter your choice: 2

List of Students:
ID  | Name            |  Age  |  Course
-----------------------------------------
101 | Mustafa         |  21   |  BCA
102 | John Doe        |  20   |  Computer Science
103 | Alice           |  22   |  Mathematics
-----------------------------------------
--- Student added successfulty !---
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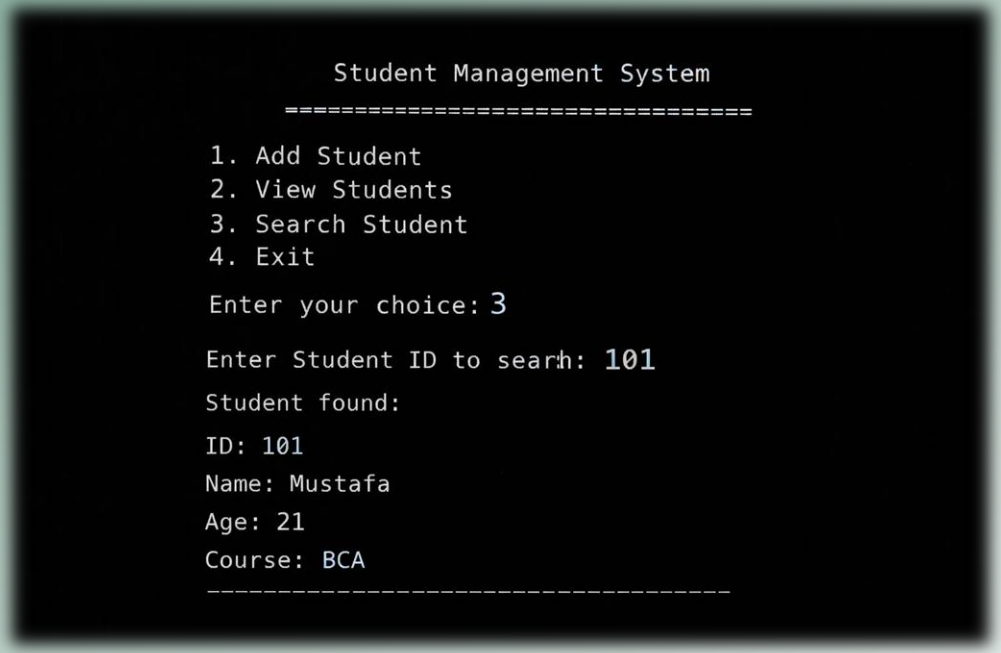
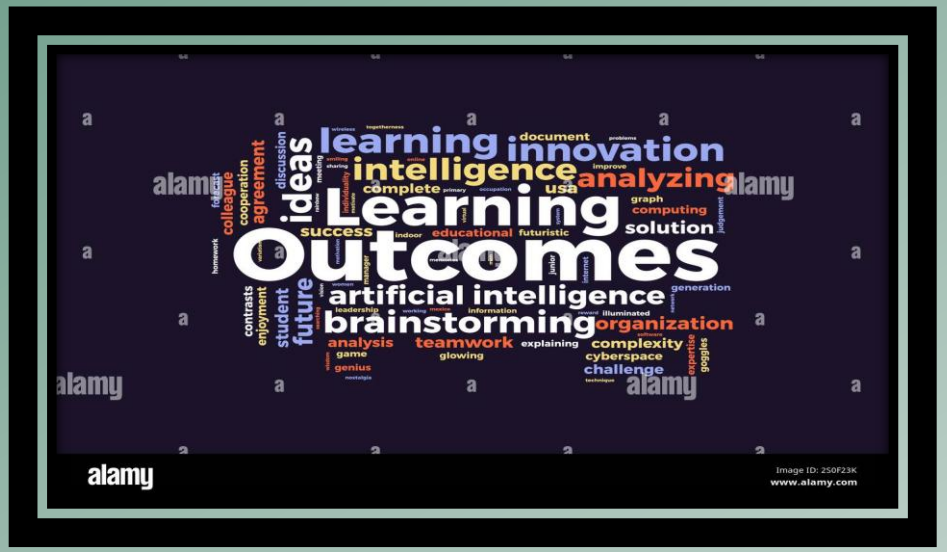
Search Student Functionality

- Search is performed using Student ID
- Displays matching student details
- Helps in quick retrieval of data



Learning Outcomes



- Improved understanding of Java fundamentals
- Practical implementation of OOP concepts
- Learned how to structure multi-class Java projects
- Gained experience in debugging and logic building

Conclusion

- **The Student Management System successfully meets the project objectives**
- **The project helped in strengthening Java and OOP fundamentals**
- **It serves as a foundation for future enhancements such as database or GUI integration**