Grade 12 Java Project Assignment

Title: Choose-Your-Theme Management System
Due Date: Friday, December 12, 2025 (before Winter Break)
Submission: Upload your zipped NetBeans project to Edsby **AND** upload your README.md file to GitHub (share repo link).

Instructions

You will build a small **console-based management app** in **Java (NetBeans)**. This project will show your understanding of **objects, classes, methods, file handling, and basic problem-solving in Java**.

The app must allow users to:

- **Create, Read, Update, and Delete (CRUD)** records

- **Search or filter** data

- **Save and load data** from a file so information is not lost

Step 1: Choose Your Theme

Pick **one** system to build:

- **Library Manager** (books, members, loans)

- **Club Inventory** (items, suppliers, quantities)

- **Student Fitness Tracker** (students, sessions, progress)

- **Appointment Scheduler** (clients, services, bookings)

- Or suggest your own theme (must be approved).

Minimum Requirements

Your system must include:

1. **At least 2 entities** (e.g., Book + Member, Item + Supplier).

2. **CRUD features** (add, list, update, delete).

3. **Search/filter** (e.g., by name, ID, or status).

4. **Persistence** (save/load data using CSV or serialization).

5. **Validation** (handle bad input—no crashes).

6. **Menu-driven UI** (loop until user chooses Exit).

7. **Simple reporting** (e.g., number of items below stock, most-booked service, overdue loans).

Nice-to-Have (Bonus Features)

- Sorting (e.g., list items by name or quantity).

- Undo last action.

- Simple login (admin/user).

- Swing/JavaFX user interface (optional).

- Export reports to CSV.

Timeline & Milestones

- **Week 1–2 (Sept):** Pick theme, proposal with entities + sample data.

- **Week 3–4 (Oct):** Draw class diagram (UML).

- **Week 5–6 (Oct):** CRUD for first entity (in memory).

- **Week 7–8 (Nov):** Add file save/load + search/filter.

- **Week 9–10 (Nov):** Add second entity + simple report.

- **Week 11 (Dec):** Polish, comments, README, demo prep.

- **Week 12 (Dec):** Submit + demo.

Deliverables

1. **NetBeans project** (all source files).
2. **README.md file** uploaded to GitHub with:

   o Project name & description

   o Your name(s)

   o Features included

   o Instructions to run program

   o Sample input/output

   o Known issues/future improvements

   o Reflection (what you learned, hardest bug, next improvement)

   o Testing log (table of test cases)

3. **UML class diagram** (image or PDF).

4. **Sample data files** (CSV or .dat).

5. **3–5 min demo video** (screen recording showing features).

Marking Rubric (100%)

❖ **Functionality (CRUD, search, report):** 40

❖ **OOP Design (classes, encapsulation):** 15

❖ **Code Quality (naming, methods, comments):** 20

❖ **Persistence & Error Handling:** 10

❖ **User Experience (clear menu/flows):** 5

❖ **Documentation (README + UML):** 5

❖ **Presentation/Demo:** 5

⚠️ **Tip:** Work step by step. Don't try to build everything at once. Start with one class, then add CRUD, then persistence.