

Java project ideas

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Student must choose only ONE project from the three available ideas to work on!

You can work in Groups.

For each project, there is a brief description listing the minimal content that must be implemented. However, **students are free to enhance their programs** with other attributes or functionalities not listed in the description.

Students are asked to:

- Prepare a report explaining the different steps of realizing your project. This report will contain use case diagrams, class diagram depicting the interactions between the different components of your solution. Finally, it contains snapshots of your final program interfaces to show it working, and the databases' tables.
- Implement a working solution in JAVA. For all the projects listed below, the program will need to interact with a database to get data from it or record results into it. The values to be inserted into these databases are left to the students to choose. What matter is not the size of the database but to have it interact correctly with their programs and take into consideration the special cases.

List of project ideas

All the applications provide two different graphical interfaces; one provided to the user and the other to the administrator. A login page is first loaded; the role of the user (simple user, admin) is automatically retrieved according to the user's credentials.

1. Restaurant Point of Sale (POS)

Develop a POS project using java and databases. This POS can take orders, choose the payment method, and print the customer invoice.

It should also be capable of tracking sales per day, per month or year. Total sales or per item (for example "coffee Latte". It also collects points for the loyal customers.

The dashboard of the administrator should include:

- Managing the list of cashiers (add, delete, modify and display) along with their personal information.
- Managing the list of food items and prices. The food will be created in categories and subcategories where applicable:
 - Beverages (hot, or cold): for example, hot coffee in the hot and cold coffee in the cold.
 - Main course : Pasta, Pizza, ... etc.
 - Appetizers
 - Sweets
- Manage the list of customers (where a customer will be identified by his/her mobile phone) add, delete, modify, and display a customer with their personal information.
- Some statistical results of invoices/purchased items/loyal customers (ideally using graphs) per day/month/year where applicable.

The dashboard of the cashier should include:

- Selecting the propre food item(s) according to the client request, choosing the payment method, dine in or out. The system will calculate the total invoice amount and print it with the details needed.
- The client should have the choice to register in the system, in this case, he/she will be identified by his/her mobile number. If not, the invoice will be under walk-in client.
- Manage the list of customers (where a customer will be identified by his/her mobile phone) add, modify, and display a customer (no delete here, only the admin can do that).
- The cashier should be able to see the points of the customers (loyal customer).

2. Library management system:

This software project should be implemented in Java and database. It is designed for managing and maintaining libraries in any educational institution through an integrated computerized system. The library management software will allow librarians to operate more productively while handling the typical day-to-day tasks of a library.

The dashboard of the administrator should include:

- Managing the list of librarians (add, delete, modify and display) along with their personal information.
- Managing the list of students (add, delete, modify and display).
- Manage the books (add, delete, modify), a book should have name, id, publication date, publisher, author, ...etc., plus category/subcategory and quantity.
- Manage the categories (for ex. Science, Math, Computer Sciences, ...) and subcategories where applicable.
- Showing the borrowing history of the books.

The dashboard of the librarian should include:

- Managing the list of students (add, modify and display), no delete here, only the admin can do that.
- Searching for a book by name, publication date, author, or publisher.
- Borrow a book: where the system shouldn't allow a student to borrow a book if quantity = 0.
- Return a book: where a book shouldn't be returned after 1 month. If this is the case the student will be penalized 20 TND for each week delay.
- The system should send reminders by email to the students for returning the book before 1 week and another reminder before 2 days.
- Some statistics should be calculated and displayed (ideally using graphs). For ex. The most issued books, number of times a book was needed and wasn't available (quantity = 0), the peak days for issuing books, penalty details.

3. Cinema Booking system:

The Cinema Booking System is a Java/Database-based seat and ticket reservation system allowing bookings in a few easy steps. The cinema attendants can manage reservations, process payment, and print receipts.

The dashboard of the administrator should include:

- Managing the list of cinema attendants (add, delete, modify and display) along with their personal information.
- Manage the cinema Auditoriums along with their capacities.
- Manage movies details, and timings (plus a picture to define each movie). The price will be fixed for all movies.

The dashboard of the cinema attendants should include:

- The list of available movies in the show should be displayed, along their description, category, duration,
- After selecting a given movie, the available time slots should be displayed (you need to keep track of the current date and time, so a morning time slot should be greyed out in the evening).
- Cinema hall map layouts should be displayed, where the cinema attendants can ask the customer to pick one or more seats to reserve. A reserved seat should be colored in different color to be easily distinguished.
- After choosing the payment method and calculating the total price, a receipt should be printed. The tickets will be as well printed out with the propre information, movie name, auditorium number, seat number, date, and time. One ticket per person.