

## SEMESTER PROJECTS EXAMPLES

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### 1. Supermarket Manager

Design and implement a client-server application for the employees of a supermarket. The application should have two types of users (a regular user represented by the cashier, and an administrator user) which have to provide a username and a password in order to use the application.

The regular user can perform the following operations:

- Sell products: involves initiating a sell, adding products to the sell, computing the total price, decreasing the products' stocks, finalizing the sell and issuing an invoice.

The administrator user can perform the following operations:

- CRUD on user accounts.
- CRUD on products.
- Issue reports in different formats (*xml*, *txt*) with the best-selling products, the products out of stock, the employees' activity.
- Occasionally, it can activate a promotion in which each ten's client can benefit from a reduction of 50% of the price of the products it has bought. When each ten's client is identified, the system sends a message to the cashier processing the selling.

### 2. Hotel Manager

Design and implement a client-server application for the employees of a hotel. The application should have two types of users (a regular user represented by the receptionist, and an administrator user) which have to provide a username and a password in order to use the application.

The regular user can perform the following operations:

- Calculate room rates. If a client has reserved a room several times in the past automatically apply a reduction for loyalty.

- Book rooms for clients.
- Cancel room bookings.
- Issue invoices.

The administrator can perform the following operations:

- CRUD operations on user accounts.
- Issue reports in different formats (*xml*, *txt*) with the room bookings from a chosen date interval, the clients that have the largest number of reservations, etc.

### **3. Fines Payment Manager**

Design and implement a client-server application for managing the payment of traffic fines. The application consists of two components which can be accessed using a username and a password. One component is used by the post office employees to register the persons that have paid a traffic fine. The other component is used by the police employees to do the following operations: (1) add/update/delete the drivers' information (name, address, driving license details, identity card details), (2) add/update/delete fines, (3) create reports. When a post office employee registers a person that has paid a traffic fine, the application notifies the police employees from the corresponding police station. All the information about users, drivers and fines is stored in a database

### **4. Hardware/Software Manager**

Design and implement a client-server application for the employees of a company selling the following types of products: hardware components (e.g. hard disks, memories, processors, etc.), peripherals (e.g. monitors, printers, keyboards, etc.) and software products (e.g. operating systems, office applications, etc.). Each type of product has the following information associated: identification number, technical features, producer, stock, and price. A customer may desire to buy individual products or may ask for a system that requires the configuration of multiple products. A system configuration may be composed of hardware, peripherals and software products.

The application should have two types of users (a regular user represented by the front desk employee, and an administrator user) which have to provide a username and a password in order to use the application.

The regular user can perform the following operations:

- Sell products: involves initiating a sell, adding products to the sell, computing the total price, decreasing the products' stocks, finalizing the sell and issuing an invoice.
- Configure a system for a customer.

The administrator user can perform the following operations:

- CRUD operations on user accounts.
- CRUD operations on products.

In case a product becomes out of stock, the system should automatically alert the administrator user.

## **5. Restaurant Manager**

Design and implement a client-server application used to record orders, handle payments and manage the employees' activity in a restaurant. The system allows (i) waiters to record orders in the system and to handle payments by considering discounts depending on the loyalty of the client, (ii) kitchen employees to send notifications to waiters when the ordered food is ready, and (iii) a manager to perform CRUD operations on employees' information and to check their activity. An order has the following attributes: table number, client ID, waiter ID, the list of ordered products (drinks, food, desert, etc.) as well as their quantity. The loyalty of a client is evaluated according to the number of times the client ordered from the restaurant as well as the cost of each order.

## **6. Travel Agency Manager**

Design a client-server application for managing the activity in a tourism agency. The application is used by the agency's employees and allows them to add/modify/delete vacations, add/modify client information and reserve vacations for clients. Vacations can be reserved in the country and abroad. There are three types of vacations that can be reserved: cruises, tours and stays. Within a stay, a client can choose to go on one or more several sightseeing trips. The information about clients and vacations is stored in a database which is updated periodically according to the information (hotels/trips availability, etc.) provided by the operators that collaborate with the agency. This information is provided in XML files, each having a format specific to each operator.

## **7. Chat Application**

Design a client-server messaging application for intranet. The application is composed of the following two components:

- A server that will run on a specific port and IP address. The server will use a database for storing user data and also the history of the messages sent by every user.
- A client component which will allow:
  - o Registering new users
  - o Logging into the application
  - o Viewing the online users

- Choosing the user with which to speak (from the list of online users)
- Sending files
- Logging-off

When a user logs off, it will be automatically deleted from the list of online users.

## **8. School Master**

Design and implement a client-server application for school or high school administration which can be used by teachers, students, parents and by an administrator.

Teachers can perform the following operations:

- View their timetable.
- View the school situation of a student.
- Assign grades to students.
- Finalize the students' situation at the subject they teach.

Students can perform the following operations:

- View their timetable.
- View their school situation.

Parents can perform the following operations:

- View their children's timetable.
- View their children's school situation.

The administrator can perform the following operations:

- CRUD operation on students, teachers and classes.
- Assigning students to classes.
- Assigning teachers to classes.
- Closing the situation of a student at the end of a semester.

The system automatically sends an email to a parent when its child receives a grade, and when its situation is closed.

## **9. Car Renting Application**

Design and implement a client-server application for renting cars which can be used by customers and by the renting company's employees. The application will allow a customer to search and view the available cars (detailed car information and pictures) for the selected date interval and from the specified source city. To rent a car, the customer must fill its personal data. After the customer has rented a car, an email is sent to him with the renting details.

When a customer that has rented a car comes to the renting company to pick up the car, an employee creates a contract which is then printed so that the client can sign it. When a car is brought back by a customer, the employee marks the car as returned.

The application must have also an administrator component for CRUD operations over cars, customers and employees.