

Foundations of Databases A.Y. 2022-2023

Homework 1 Requirements Analysis

Master Degree in Computer Engineering
Master Degree in Cybersecurity
Master Degree in ICT for Internet and Multimedia

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Team acronym	prime	
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Objectives of the System

Owner of bookstore needs a system where he can see the profit and control the bookstore system management process. There are several departments in an online bookstore, where everyone is responsible for their work, and books must arrive at the warehouse on time. The goal is to create a database and a set of programs (applications) for solving the tasks of a bookstore. As well as determining the composition of the information necessary to automate user functions and develop a database structure for efficient storage and use of data. Purpose of the system: management between employees and timely tracking of stocks of books in the warehouse. The director manages the entire system of the bookstore, oversees the employees and profits of the bookstore. It is important for a system administrator to be able to set up software for all company employees and help correct errors that occur. He ensures the operation of the enterprise information infrastructure: gives access to the system, configures it. The system should provide a database with records of various types of books, a list of workers, discounts, regular customers to determine discounts.

Interviews

An interview was conducted for the concept of system requirements: Bookstore employees: to understand the status of the entire book sales system, Bookstore employees provide progress reports, requests for the delivery of books from the warehouse of the store, requests for the replenishment of books, request for information about the available books.

Bookstore Owner: to Understand how the bookstore is doing. Monitor all profits and reports from employees.

The Customer: to understand how registers on the website of the online store, sets his first and last name, e-mail and city of residence. He can form one or several orders, write some wishes for each order. Each order includes one or more books, each book can be ordered in multiple copies

Users and Stakeholders of the System

The users of the system are:

- Customers: They sign in to the system and check the books, then they order each book they want.
- Owner: The owner/s of the system can monitor the sales process entirely, check the sales reports of books which are sold so they can choose the best strategy to make most profit.
- Employees: There are several parts of department in this bookstore, they keep everything updated and take care of orders.

Natural Language Sentences

Since nowadays everyone is using internet, every business is trying to take the opportunities that internet offers. Even bookstores that have been selling books in traditional ways for decades are now attempting to sell them "online". This transition is not very easy to happen, because in the background they should have the best database and the best application in order to help them to track everything they need and manage their operations as smoothly as possible. This goal pushed us to create an application which will help each of its users to reach their demands. The main objectives of this application will be:

- To help the owner (The director) of the bookstore to run his business as easier as possible. He will be able to read the profits and the reports that he needs, which will be created by his employees.
- Helping the employees of the bookstore (sales, warehouse department) to create their reports and give them all the necessary permissions to properly perform their job.
- To give the customers the opportunity to check the books that the bookstore offers and order them online.

Regarding the most important part of the bookstore which are books the application will store the necessary information for each book in the database. Some of the data stored for books will include:

- BookID
- Title
- Author
- Publisher
- Price
- Quantity (of the books)
- Number of pages
- Language
- Category of the book
- Etc

Since books will have information about author, publisher and language, it will be easier for the customers to find the books of their favorite author or publisher and the language they need. All the information about the books will be inserted by Warehouse Department, they will be responsible for the information regarding the books and also on updating the inventories of the warehouse. Sales on the other hand will manage the orders that each customer makes. Their responsibility is to properly create the right "orderline" based on customers' requirements and create the reports required by the owner. Sales also can do discounts for different orders. All the employees will be identified by their names, surname, id, emails and the departments where they work.

Customers can use this application only by registering first. It will be required for them to set some information for example:

- Name
- Surname
- Telephone number
- e-mail
- Etc

These requirements will assist the sales team in properly creating their reports. To ensure that orders will be delivered to the correct address the client should also set the address where he needs his order to be delivered. All the customers will be able to see all the information about books.

Filtered Sentences

The owner of a bookstore needs an online platform to sell and check his books. he wants to easily track profits, sales graph and daily to annual sales.

The system will manage **four** different **user** roles:

- **Owner:** is the legal owner of the company and the site. -Identified by e-mail and password. can access all the information about the books. can access the database updates. can access to sales tables like monthly sales,annual sales etc.
- **Warehouse:** Employees of the company. They can add new books to the system, update the data of the existing book, and keep track of stock. -Identified by name, surname, id, email,password and department can access all data about books can add new data can edit data
- **Customer:** can access book's information and buy books. -Idefined by name, surname, e-mail, password, telephone number, address and card information. can access to book stocks can access all the data of books can search for authors, publisher etc. can create an order
- **Sales :** Other employees of the bookstore -Identified by name, surname, id,password, email, department Receive the order from customersCreate the reports of purrchases Can access all the information about books Can access inventory Can receive the order from customers Can access data of the customers
- **Inventory:** -Report which is written by Warehouse department team regarding the books which are still in the warehouse. Can be accessed by Owner and Sales
- **Reports:** -It is prepared by employees using sales data. Visualization of monthly, annual sales figures, which category sells more, etc. Can be accessed by Owner.

The customer can buy one or more **books**. A **book**;

- - identified by bookID, title, author, language, publisher, number of pages, price,quantity of books, categories of book.

Owner ,employees and customer have access to all book information.

Term Glossary

Term	Description	Synonyms	Connection
Books	A list of all the available books in the warehouse and ready to be purchased		Warehouse, Customer, Sales, Owner
Customer	Customers can sign in to the system and pick any books and create their orders		Order,Book,Address

Order	The details of the purchase made by each customer,including the id of the books and address		Customer,Sales, Book, Address
Owner	The owner of the database reads the report and	Director	Reports, Inven- tory,Boooks
Warehouse	Insert the information about the books	Warehouse Depart- ment	Inventory, Books
Sales	Receive the order from customers and send them with cooperation with the warehouse,finally they create reports of purchases		Books, Order, Re- ports, Inventory
Inventory	Report which is written by Ware- house department team regarding the books which are still in the warehouse		Warehouse, Owner, Sales

Table 2: Describe in this table the terms of your system

Functional Requirements

The system must allow:

- Admin, customers and employees to log in or sign up
- To manage different user roles for owner, sales and warehouse department
- To manage different user permissions for different roles, Warehouse department can insert information about books, sales can read information about books. Sales create reports, owner can read them
- To manage multiple orders by each customer for the same book
- Registration of orders
- To store customer information
- To store books information
- Ability to add new books on the system of the bookshop and modifies data related to existing books

Non Functional Requirements

- The Bookstore should load in less than 1 min
- Customers can easily find their favorite book

- The store shall expand and support with a single server without a negative impact on the website load speed
- Privacy and security functionalities to protect sensible data of customers
- Ability to add new books all the time without slowing down the application
- Ability to give extra discounts to the customers

Constraints

Our application will satisfy the following constraints:

- Be implemented with PostgreSQL.
- The client side will be created using mostly html, css, javascript and most popular library on the web today jQuery. This library is a Javascript library.
- The server side will be implemented by using Apache Tomcat servlet container, JSP, MVC and REST web services.

Group Members Contribution

- Ainur Beisenova worked on **Objectives** and **Interviews** sections;
- Ali Aghababaei and Sandeep Kumar worked together on **Users and Stakeholders** section;
- Erjol Sulku worked on **Natural Language Sentences** section;
- Aysima Merve Akkurt worked on **Filtered Sentences** section;
- Erjol Sulku and Ali Aghababaei worked together on **Term glossary** section;
- Ainur Beisenova and Elham Norouzimehmandoustolia worked together on **Functional and Non functional requirements** sections;
- Mohammad Mohammadi and Shima Shokrpour worked together on **Constraints** section;

Ainur Beisenova, Ali Aghababaei, Aysima Merve Akkurt, Elham Norouzimehmandoustolia and Erjol Sulku gave most of the ideas about the homework. The others contributed fewer suggestions because they are having various transitional issues. Elham Norouzimehmandoustolia has difficulties to make the commits in bitbucket since she is living in Iran, so her part is uploaded by other members of the group. Also Shima Shokrpour is facing the same issue. They have both limited access to the internet.