Systems III - Information systems

Seminar Project

Second Hand Online Store -

IS for purchasing, selling and renting goods

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Definition of the problem

Looking around the house you can notice a number of items that are sitting around gathering dust. Most of these things are items that were involved in a hobby in which you have lost interest, gifts that are of no use to you and some equipment you have bought an upgrade for. Specific examples may include: sports and gym equipment, Dj equipment, camera equipment , music instruments, books and other miscellaneous items. Many people who are in possession of such items and do not use them often, find themselves in a position where they are not sure what exactly to do with these items, while decluttering by listing them for sale is a good idea, also one can consider renting out its belongings for profit.

Besides the above mentioned reasons for selling and renting personal belongings, integrating such a system would be used by disadvantaged consumers out of economic necessity. Also it would open opportunities to people that have a need for something at the moment and they can not afford to buy it, or the need for that item is only temporary, by connecting them with others who are in possession of what they require. Something a person owns and does not use, that other people might be willing to pay for benefits both parties. In this way one party earns money and frees up storage, and the other saves money by not paying the original full price for the item.

Nowadays, life has become easier with the use of technology. Various online systems make the life of humans very comfortable. We already know about online shopping, e-banking, etc. Online resale has been a growing sector within the market in recent years, with extreme access, today, to the online world, almost everyone could contribute to this marketplace. This has revolutionised the retail sector, people can easily resale and purchase items as the market uniquely meets consumers. My challenge is to allow the users to rent things and to include functionality as an exchange of items between two parties, rather than just allowing resale and purchase of goods. This system allows customers to directly buy and rent goods from the seller by contacting the seller using the information provided, it is secured against fraud and ensures easy and effective transactions. The main objective of this application is to make searching, viewing and selecting a product easier, also for people who cannot afford to buy something, this system becomes very helpful.

Functional and nonfunctional requirements

Users can access the system with any internet browser running on a machine with the following configuration:

- HDD: Minimum 20GB Disk Space;
- RAM : Minimum 1GB.
- The system will use the standard hardware and data communication resources.

There are no limitations in the operating system in which the information system will work. However, the system and the database will work on a server that needs to be always online.

Functional requirements

1. The system shall allow the user to browse through categories and view a detailed description of a particular item and view their costs, ratings and comments..
2. The system shall allow the user to select items in the list.
3. The system must allow the user to register.
4. The system shall request the customer to accept/decline regulation terms for purchasing or renting.
5. The system should allow the user to login to the system using their username and password.
6. The system should allow the user to add new items to the list and sort them in categories.
7. The system shall allow the user to update information for an item in need of modification and should allow the user to change the price of the item at any time.
8. The system shall allow the user to delete an item from the list.
9. The system shall allow the user to add a particular item to a list called Favourites, so the item will be saved for a later view.
10. The system must allow the user to give a rating for a seller / item holder.
11. The system must allow the user to give a rating for an item.
12. The system shall allow the user to leave a comment for an item.
13. The system shall allow the user to logout.

Non-functional requirements

Anyone has the ability to enter the system (Admin or Customer) each one has their own password and username. The customer can browse, purchase and/or rent items, rate sellers/item holders and comment on items. The administrator can enter new products in a category. Each one has its own page.

Usability:

This system will be able to be used easily. It will ask for confirmation before entering into a timely process. The system provides a help and support menu in all interfaces for the user to interact with the system. The user can use the system by reading help and support. The user should be able to access the system from an arbitrary location using a machine connected to the internet.

Security:

The system provides username and password to prevent the system from unauthorized access. The customer information will be entered into the program and stored. This program will need to be kept on a PC that has adequate security. The program is not providing security.

Performance:

The system response time for every instruction conducted by the user must not exceed more than 5 seconds. The program will be able to handle a scale shop with up to 1500 users and customers. The program will have sufficient error handling abilities that it will not crash any other part of the system.

Availability:

The system should always be available for access at 24 hours, 7 days a week. Also in the occurrence of any major system malfunctioning, the system should be available in 1 to 2 working days.

Feasibility study

Since the Second Hand Online Store is a web-based application, internet connection must be established. In order to access the system, clients are required to use a modern web browser such as Mozilla Firefox, Internet Explorer, Opera, and Chrome.

Online connectivity with the database provides information about various products and prices, and stores relevant information about customers and products.

There will be no user manuals, online help or tutorials, as it is integrated with simple web GUI functionality and allows web beginners to also use it easily.

All the users will see the same page when they enter this website. Here the user can browse for items within categories, check descriptions and comments for items and check ratings of the seller/renter . When the user attempts to add an item to Favourites for further purchasing or renting the page asks the user to create an account or login as an existing user with a username and a password. After being authenticated by the correct username and password, users will be redirected to their corresponding profile where they can do various activities. With renting an item, rent agreements are filled. The rent agreement form is used in order to hold legal contracts between the customer and item holder.

Users will have to log in to the system using their usernames & passwords. Authentication of the user will limit the ability of unsecured entrance.

- The system can be updated easily online and the users will always experience an up to date system.
- No additional troubles to go through complex installation processes, it will work through a web browser.
- No platform dependency. Any user can access the web site using their existing web browsers.
- Availability of the system will depend on the availability of the internet facility.
- The speed of the internet facility will also be a very important factor when determining the speed of access of a particular user.
- The general users need not to have technical expertise to use the site.

1) Technical aspect:

- Web development :
    - Client side scripting: HTML
    - Server side scripting: PHP and other related technologies
- Web server: Apache
- Database management system: MySQL

*All the technologies that we proposed to use are free and open source, so they are easily obtainable and available for almost any software platform.

Functionalities that are likely to be required are not considered a problem, as one should be able to use server side scripting to do these, using scripting programming language (e.g. php, or JS). This will require a database and a web server both a common and not very expensive resource in particular if the amount of traffic is not too high.

2) Economic aspect:

The maintenance costs of the system will demand a certain level of income from the site. The proposed system can be released using open source software.
Once the system creates its audience, the system will be in a position to recover its expenses through publishing various advertisements on the page.

BENEFITS:

- High flexibility with a number of alternative solutions.
- Very high levels of readily available information.
- Providing information on solutions from both the ends.
- Interactive user experience.
- Providing a platform for renting items.
- A forum to share the individual experiences.

COSTS:

- **DEVELOPMENT COSTS:**

    Hardware Costs - No need to purchase new hardware. Existing resources in premises & the Personal hardware of the users will be used.

    Software costs - Free and open source software will be used in the development

    Initial implementation Costs - No initial installation cost. (Free hosting)

*an estimate cannot be prepared with a reasonable level of accuracy.

In regard to the law perspective, there most definitely will have to be a certain degree of rules followed on this Information System. The terms and conditions and privacy policy.

Logical Design

Matrix User role / functions

Functions	***Basic user (Viewer)***	***Customer***	***Admin***
Function 1	Yes	Yes	Yes
Function 2	Yes	Yes	Yes
Function 3	Yes	No	No
Function 4	No	Yes	Yes
Function 5	Yes	Yes	Yes
Function 6	No	No	Yes
Function 7	No	No	Yes
Function 8	No	No	Yes
Function 9	No	Yes	No
Function 10	No	Yes	No
Function 11	No	Yes	No
Function 12	No	Yes	No
Function 13	Yes	Yes	Yes

Table 1: Matrix user role/functions

Data dictionary

Entity	Description	Attribute	Type	Description of attribute
User	User of the system	userID	int	Identifier of the user
		username	varchar(50)	Username of the user
		password	varchar(50)	Password of the user
		email	varchar(50)	Email of the user
		name	varchar(50)	First name of the user
		lastName	varchar(50)	Last name of the user
		userContact	varchar(255)	Contact provided by the user
		form??	varchar(255)	Has the user filled the rent agreement form
Role	User's role using the system. The user could be a viewer if the user is not registered, when registered the user is either a Customer or an Admin.	roleID	int	Identifier of the role
		roleName	varchar(50)	Name of the role
User rating	All users which are renting or selling goods are rated by other users	userRatingID	int	Identifier of the rating
		value	int	The rating that was given to the user. The rating is a numerical digit, from 1 to 5.
Item	Item published by user for selling or for renting	itemID	int	Identifier of the item
		itemName	varchar(50)	Name of the item
		description	varchar(500)	Detailed description of the item

		price	int	Price for the item
Category	Category in which an item belongs	categoryID	int	Identifier of the category
		categoryName	varchar(50)	Name of the category
Item comment	The users can leave a comment / feedback to express satisfaction or dissatisfaction from the experience of purchasing or renting a certain item	commentID	int	Identifier of the comment
		commentText	varchar(500)	The comment that was left for the item from a user
Item rating	The users can rating of the purchased or rented item	itemRatingID	int	Identifier of the rating
		value	int	The rating that was given for the particular item.The rating is a numerical digit, from 1 to 5.
Favourites	Users can save items they like in a favourites list for further purchasing or renting	favID	int	Identifier of the favourites list
		dateAdded	varchar(50)	When the user added the item to the list
		itemsList	varchar(500)	List of the items the user added to favourites

Table 2: Data dictionary

Entity relational diagram (ERD)

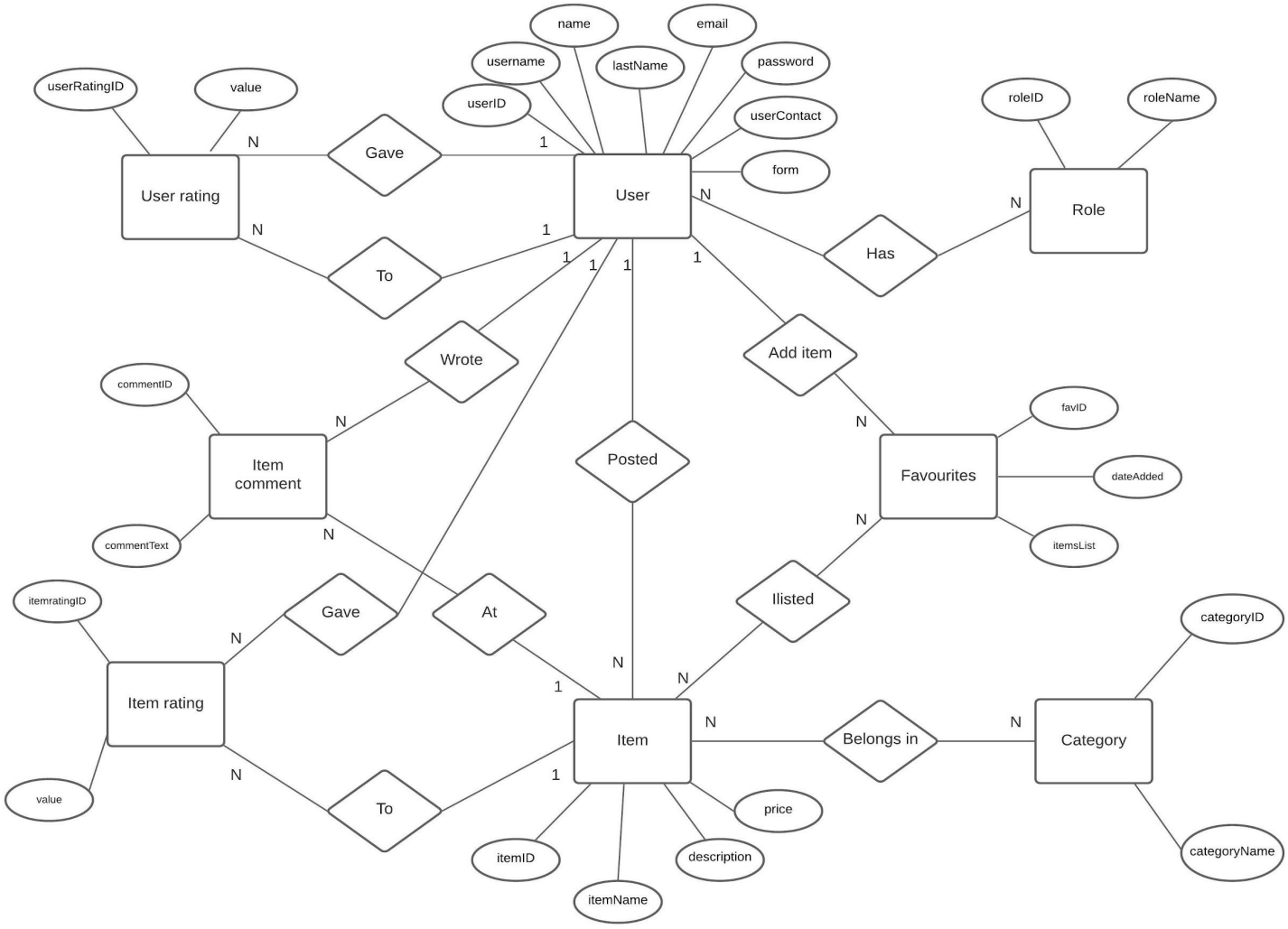

Figure 1: Entity relationship diagram

Relational model

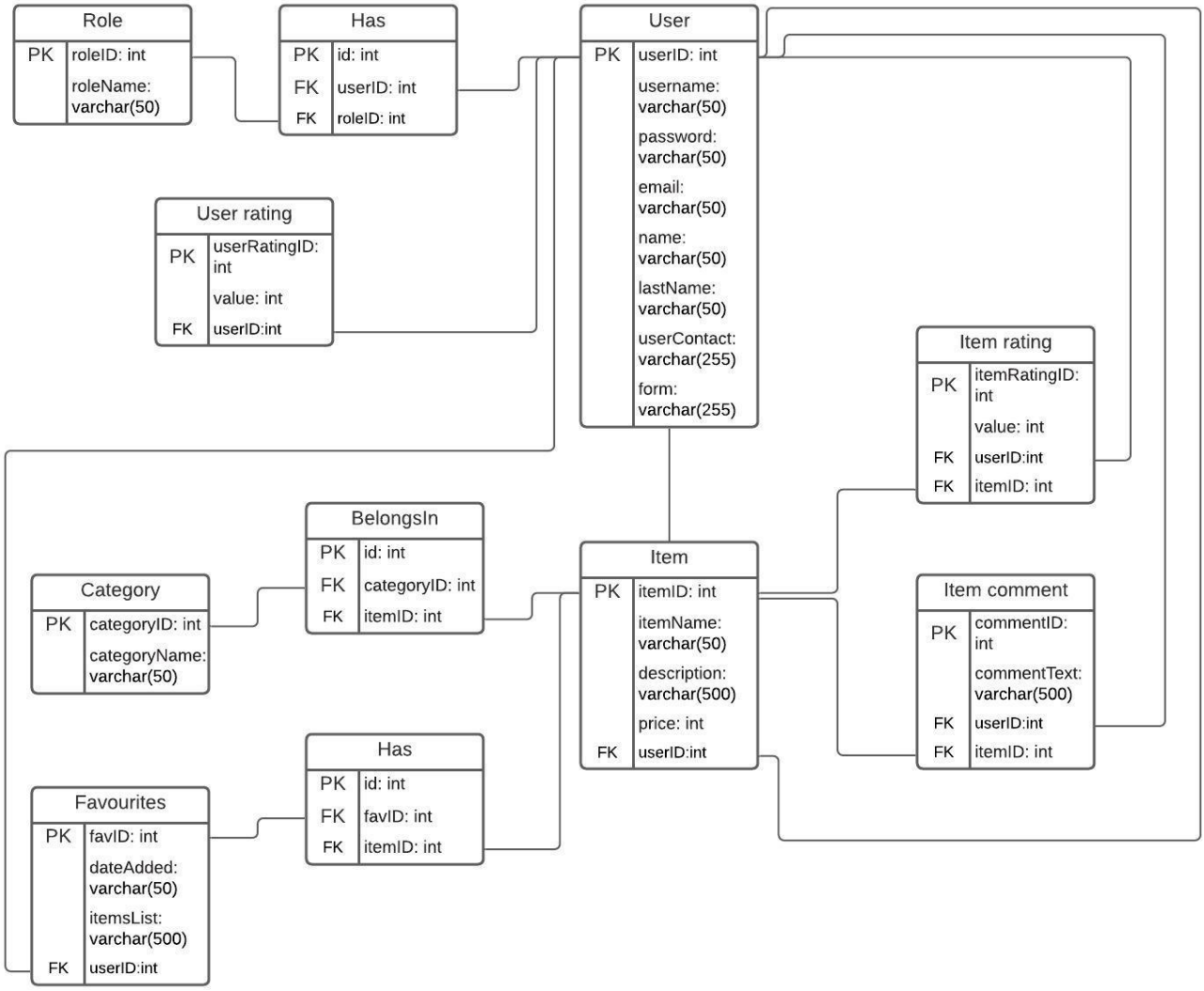

Figure 2: Relation model

UML Use Case diagram

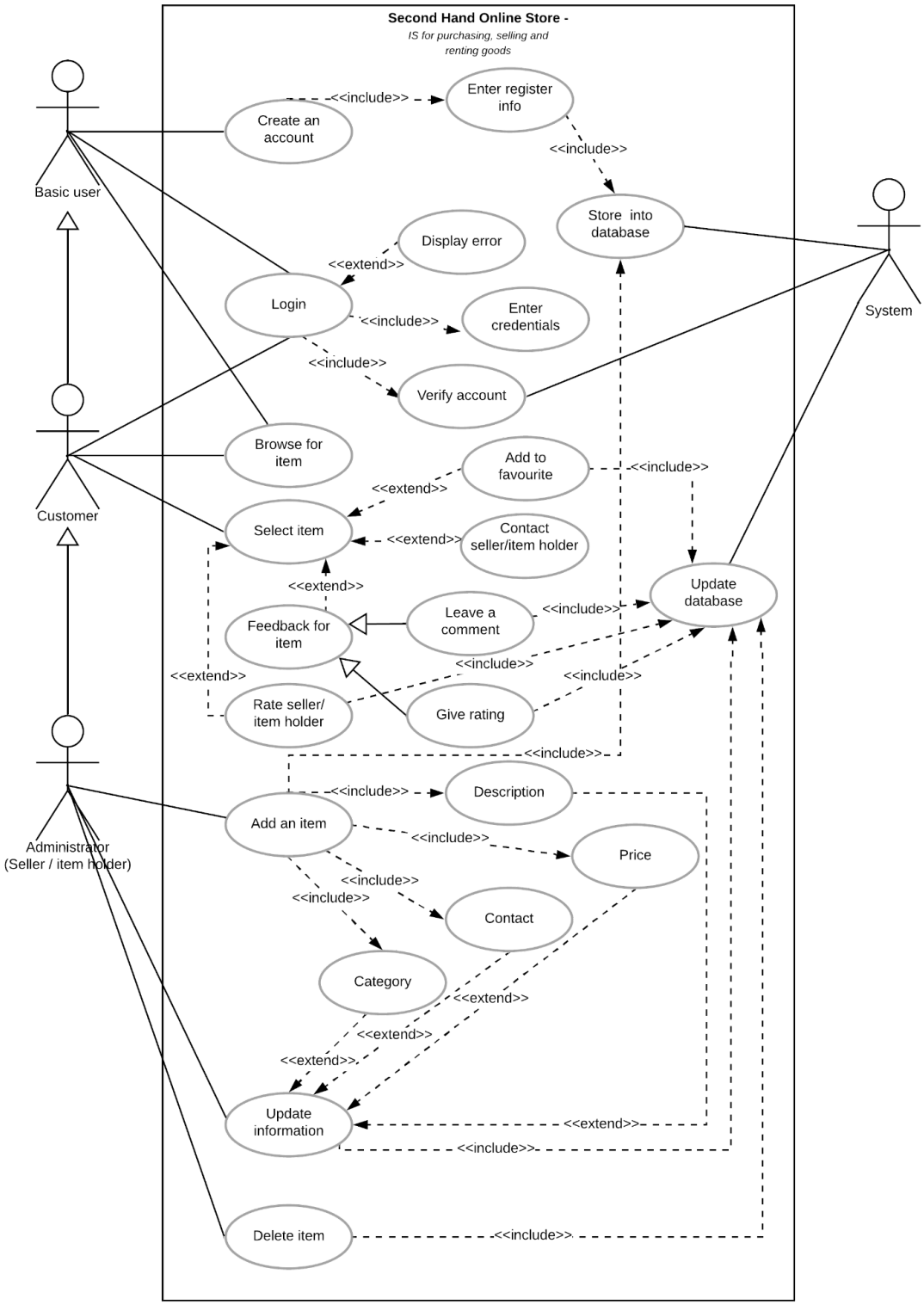

Figure 3: UML Use Case diagram

UML Sequence diagram

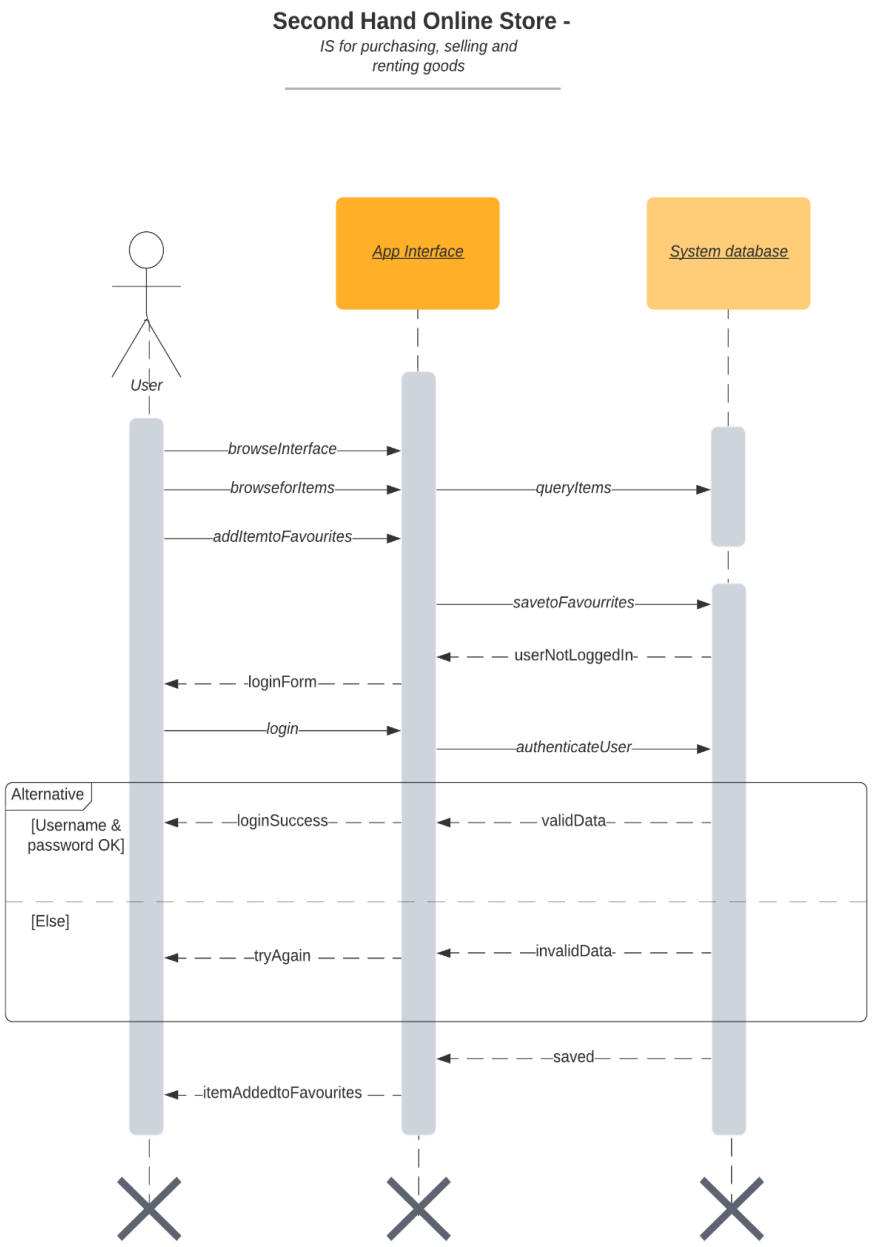

Figure 4: UML Sequence diagram