IT 314 SOFTWARE ENGINEERING

LAB 6: Domain analysis modelling

64. E-COMMERCE PRICE COMPARATOR

GROUP: 28

Boundary, Entity and Control objects

Boundary Objects

- **Feedback :**
  Consumers can compare the quality and value of various products across various shops using feedback, which is a boundary object. Retailers can utilize this feedback to improve their goods and services based on that feedback.

- **User authentication :**
  The authentication interface enables users to access the website by entering their login information, such as their username and password. By doing so, the website can confirm the user's identity and guarantee that only users with the proper authorization can access their account information and place orders.

- **APIs :**
  Application Programming Interfaces (APIs) are boundary objects that enable communication across various e-commerce platforms and services. Price comparison websites can use APIs to gather information from various merchants, while retailers can use APIs to link their pricing and inventory data with various e-commerce platforms.

- **Filters :**
  By choosing particular criteria like brand, price range, or product attributes, filters let users focus their search results. Because they offer a common language for consumers with diverse preferences and need to find the things they're looking for, filters can be thought of as boundary objects.

- **Comparison charts :**
  Users may compare the features and costs of several items side by side using comparison charts. Because they offer a common visual language for customers with various preferences and needs to compare and contrast various products, comparison charts can be thought of as boundary objects.

Entity Objects

- **Users :**
  The people who use price comparison websites to look for products and compare costs are known as users. A username, password, email address, and potentially some user preferences or search history would be among the attributes that each user would have.

- **Products :**
  Products are the things that users are interested in comparing costs for across a range of vendors. A product's name, description, manufacturer, model number, and numerous product specs are just a few of the properties it would have.

- **Adding Products to Shopping cart :**
  A user's items that have been added to their cart for purchase are represented by the shopping cart, an entity object. Each shopping cart would have information about the products added, how much of each product was added, and how much the cart contained in total.

- **Searching of Items :**
  A search entity object may have features like timestamps, filters, and search keywords. Information about user searches on the price comparison website would be stored in search entity objects. The website's search capabilities would be improved with the use of this data, which would also offer insights into consumer behavior.

- **Availability of Products :**
  Customers might filter products depending on their availability, such as in-stock or out-of-stock items, by using the availability filter. Finding things that are currently on sale and preventing disappointment can both benefit from this.

- **Feedbacks :**
  Consumers may wish to filter products based on this. Finding products with a high customer satisfaction rating and avoiding those with unfavorable ratings can both benefit from doing this.

Control objects

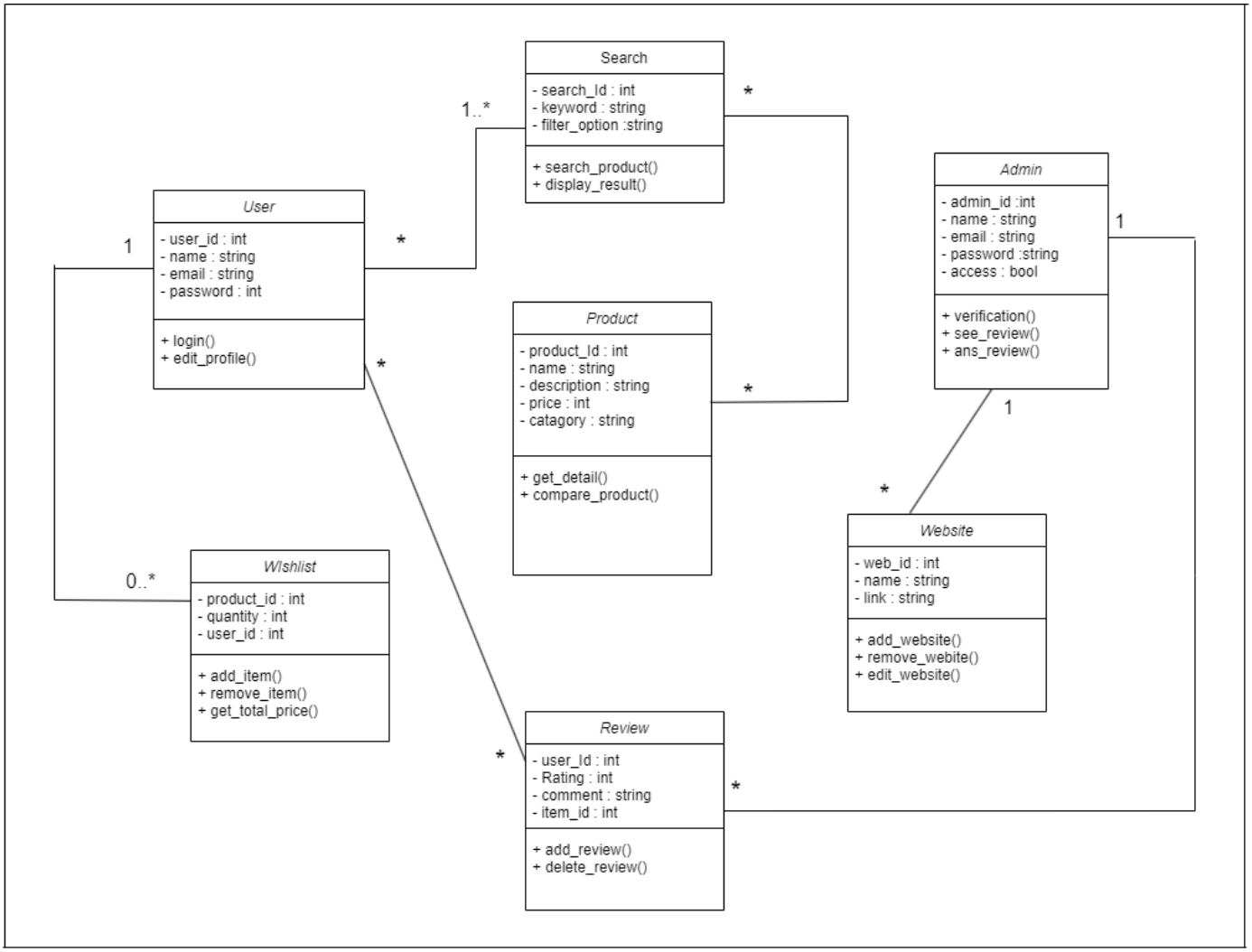
- **Search engine :**
  The search engine is in charge of letting users look for goods and merchants using various criteria, including keywords, categories, and qualities. Aside from relevancy and popularity, the search engine may also use algorithms to prioritize search results.

- **Database :**
  The database is in charge of archiving and classifying information on goods, sellers, buyers, deals, testimonials, and price alerts. Depending on the particular needs of the price comparison website, the database may employ a variety of data models, including relational, NoSQL, or graph databases.

- **User Interface :**
  Customers can browse, search, filter, and compare products and retailers using the user interface, which must offer a visual and interactive interface. For a responsive and user-friendly interface, various technologies, including HTML, CSS, JavaScript, and AJAX, may be used.

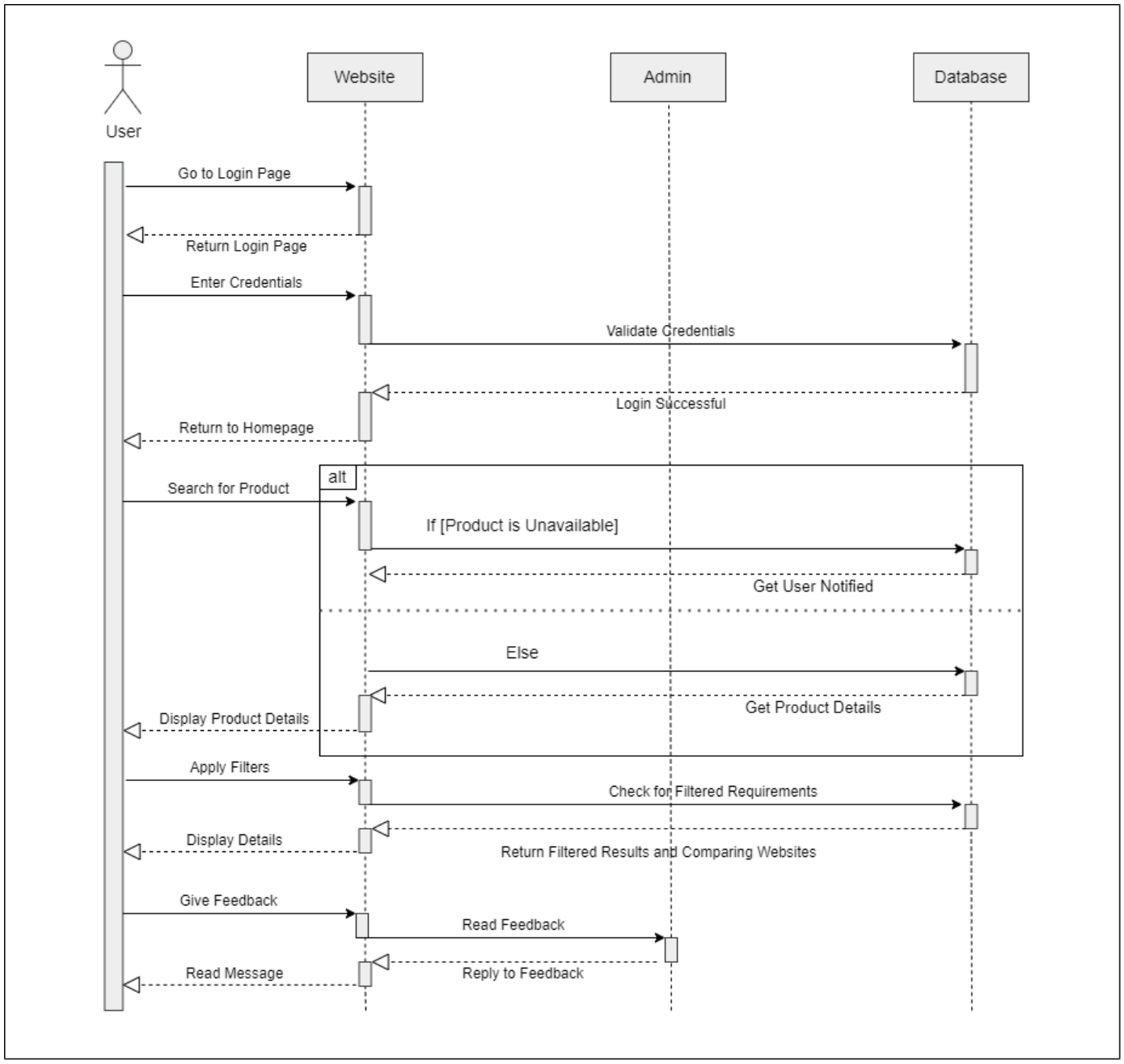
- **Web server :**
  A control object that serves web pages to website visitors is the web server. The web server can manage requests from numerous users at once and make sure the website functions properly and smoothly.

Class Diagram

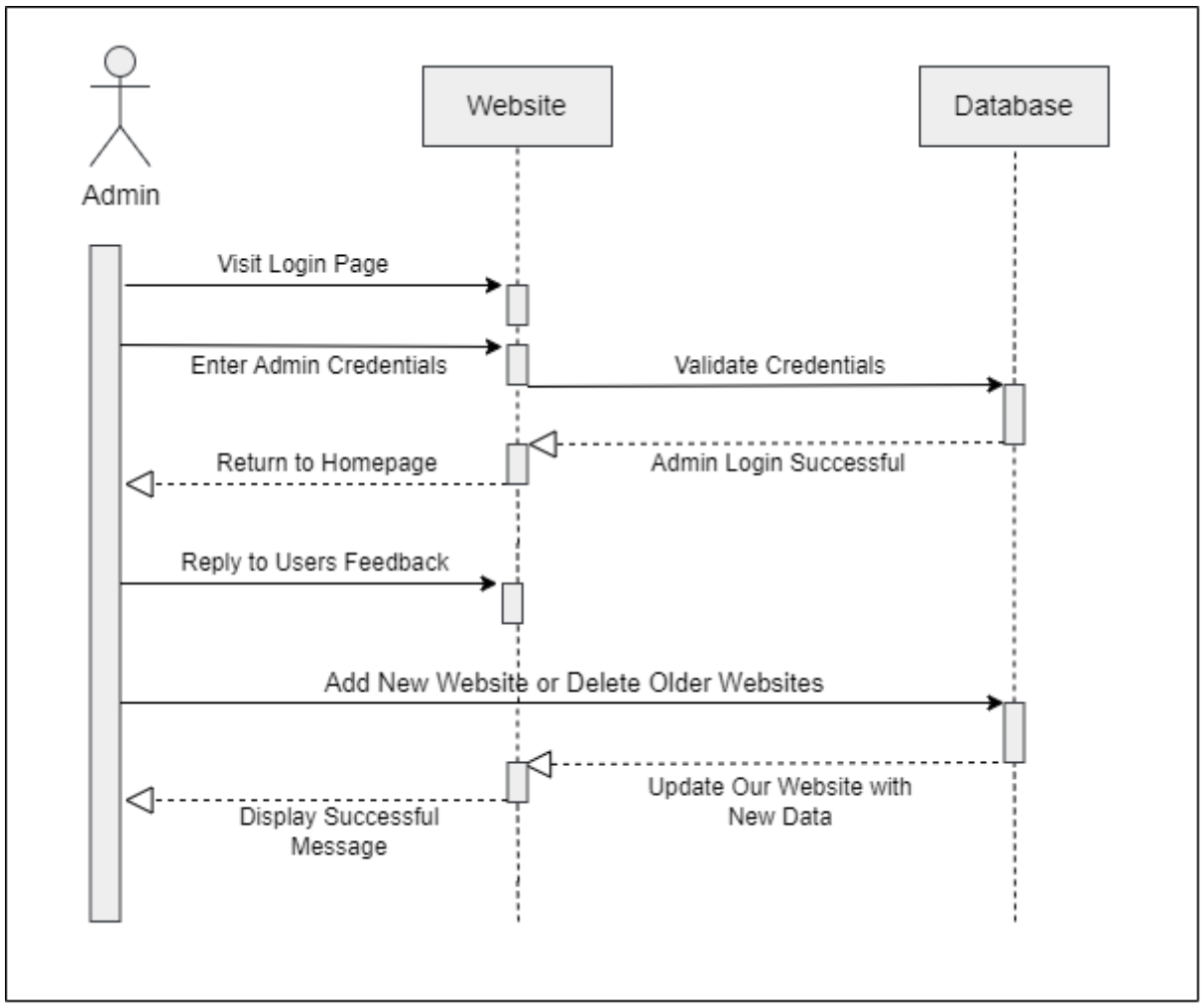


Sequence Diagram

- **User's sequence diagram:**



- **Admin’s sequence diagram:**



Design goals

1) Reliability:

Reliability is a major concern as low reliability leads to higher risk of errors and failures which potentially harm the user's experience using the system.

2) Maintainability:

The system should be easy to maintain and manage as it should provide services all around the clock.

3) Efficiency

There should not be any delays in providing services to users as it might lead to poor user experience and users may dislike the system.

4) User-friendliness

Most user's using the application may not be professional users and can find it difficult if the application is not user friendly.

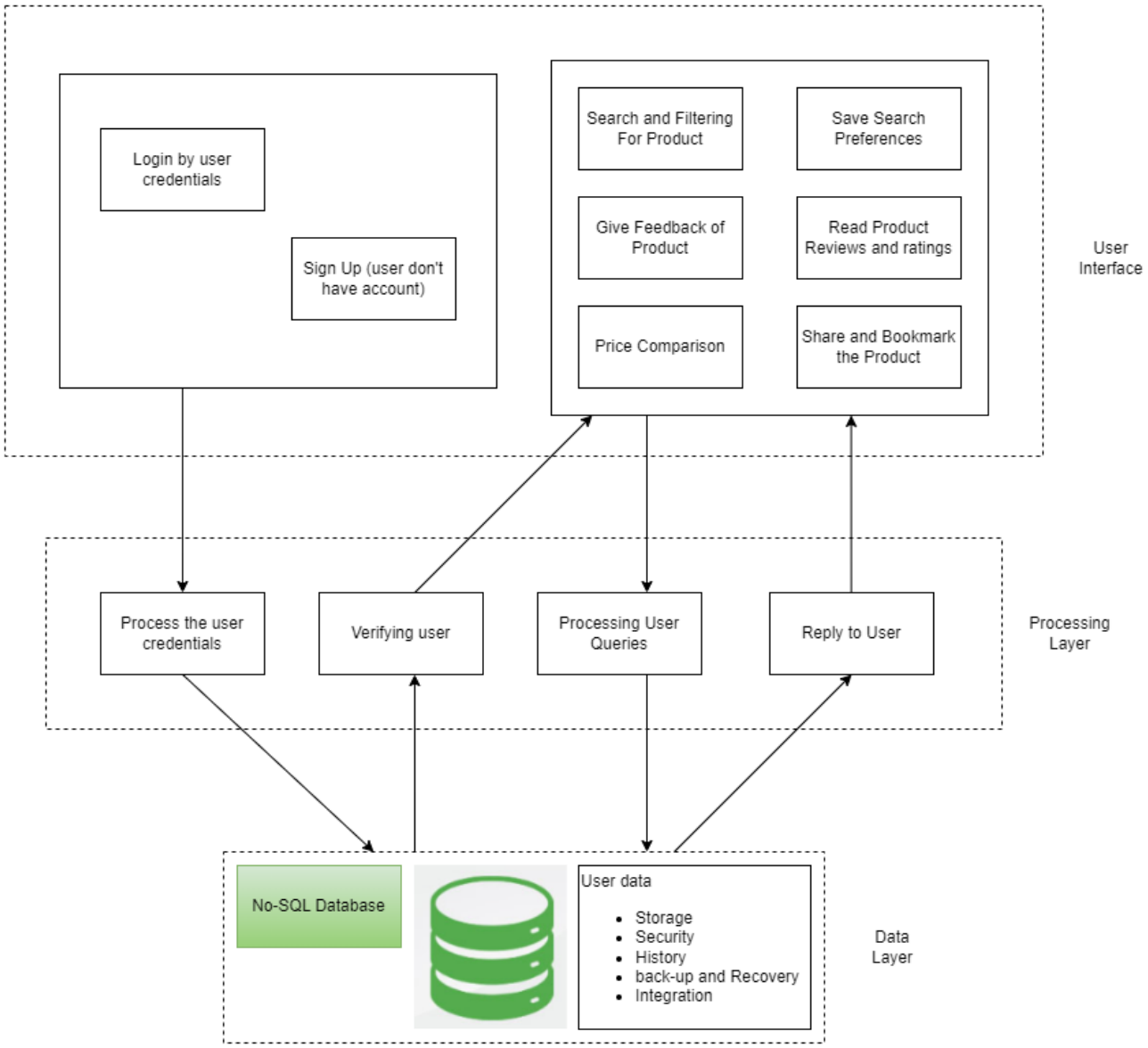
5) Flexibility

The system should be flexible enough to adapt to new changes in future as there will always be some evolving requirements by the users.

6) Fault tolerance

The system should be resistant to any potential failures and in case of failures it needs to be recovered using backups and other methods to ensure that user's data is not lost.

High level system design



Architecture : Layered Architecture

We have used layered architecture consisting of 3 layers.

- The upper layer is the user interface using which the users interact with frontend of the system. This is the only layer that is exposed to users.
- The middle layer is the processing layer which is the backend of the application which processes user queries and sends appropriate responses.
- The lower layer is the data layer which stores the data of the system. It is a No-SQL database provided by firebase used for storing and querying data.