


Web Applications A.Y. 2021-2022
Homework 1 – Server-side Design and Development

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

Deadline: 22 April, 2022

<p>Group WAD-Team</p>	<p>Electromechanics shop A web application to manage a store</p> 	
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1 Objectives

The objective of the project, in continuation with the one developed during the Foundation of Databases course, is to develop a web interface to manage an electromechanic shop. The project is focus to manage the list of product, the online orders and the requests of assistance done by customers.

2 Main Functionalities

This web application will be mainly used to allow the not registered users to retrieve information about specific product sold by the shop. Instead the registered user can buy products and ask for assistance. Below we specify better the functionalities of the web application:

- **Customers:** can register to our web application using the specific form and then they can buy product and seeing the online invoices related with the orders, request for assistance ticket, modify their account changing the information provided during the registration.
- **Employee:** they can do different things inside the application according to the role they have inside the shop, their account is provided by the administrator of the web application:
 - **Sellers:** can manage the product, adding new products and modify their details (e.g. name, brand, price, discount...), can see the order done by the customer and update the order status.
 - **Technicians:** can manage the request for assistance from the customer (Assistance Ticket) and update the information of the ticket status.
 - **Accountants:** Can manage the payment done by the customer, in practical terms they can manage the online invoice.
 - **Administrators:** are to be considered the "super user" of the web application. They own all the permission of the other user and, in addition, they are the user that create the account for the employee user.

In practice, to simplify the development of the project, we implemented only a generic employee (except for the administrator) but, we keep into account that division in order to maintain a logical division between the functionalities. With "manage" we intend the main operation : Insert, Update, Delete, Select. Only for product we decided to not implement the delete operation in order to maintain the history of the other information related with it (i.e. orders and ticket assistance).

3 Data Logic Layer

3.1 Entity-Relationship Schema

We decided to start our project starting from the database designed by the e-team group during the FTB course. We report in the following figures the design from we started. In particular in figure 1 we reported the ER schema and in Figure 2 the corresponding relational schema.

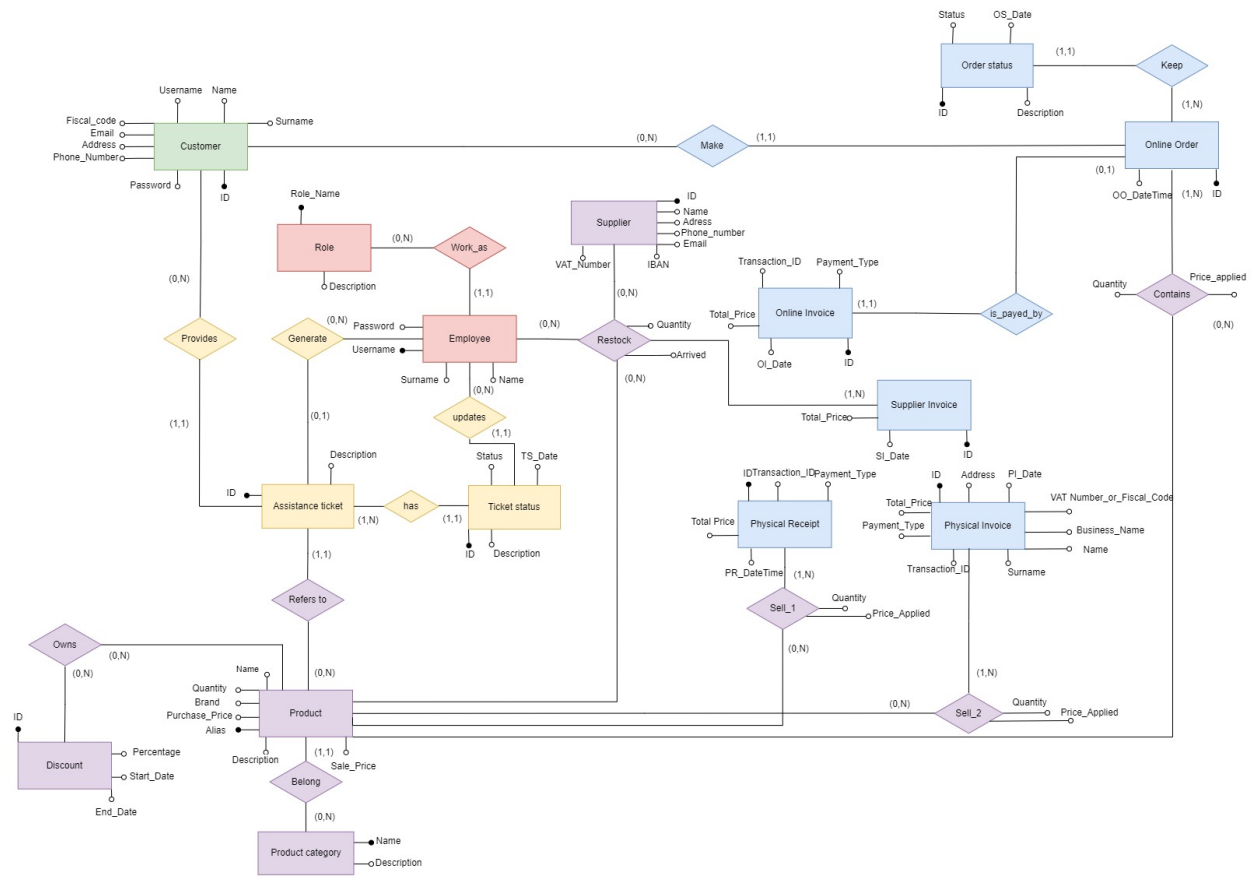


Figure 1: Original ER schema designed by e-team

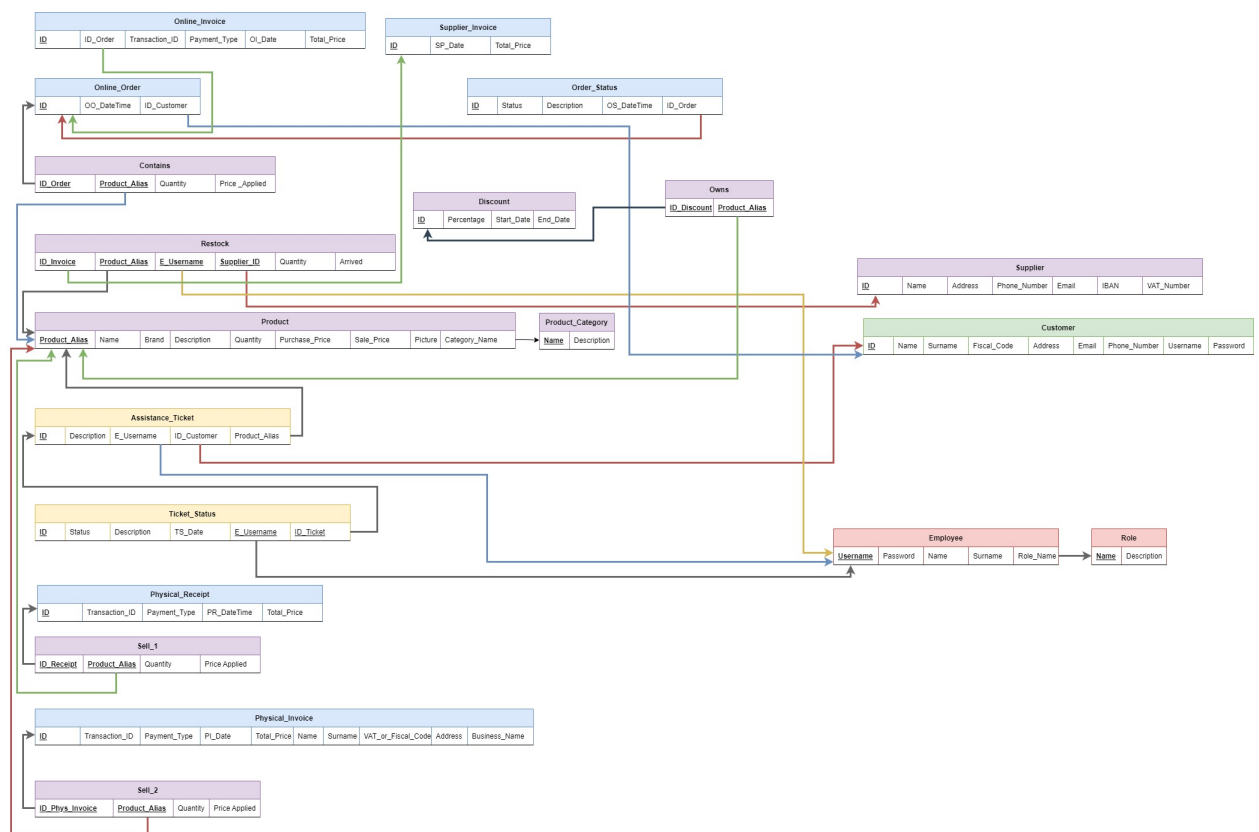


Figure 2: Original Relational schema designed by e-team

In order to maintain the project manageable, we decided to remove some parts. In particular we decided to remove all the "offline services" and to built our web application only to manage the online store. Another part we removed is the management of the supplier, dedicating the development of our project only to the services seen by the client of the shop (excluding the management of the employees that is need in our web application since we needed them to setting up the permission.). In Figure 3 and 4 are reported the final version of the design for the data layer(ER schema and relational schema respectively).

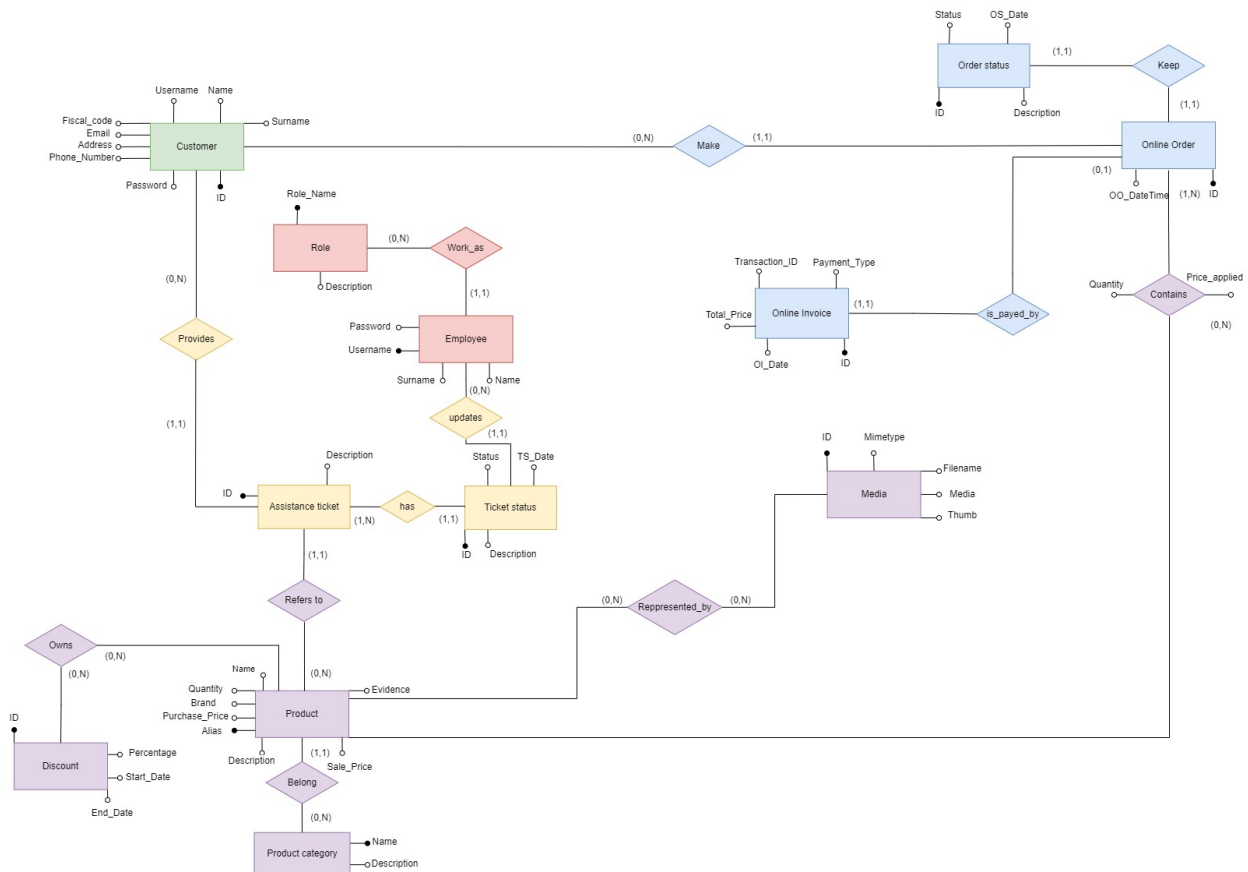


Figure 3: ER schema modified

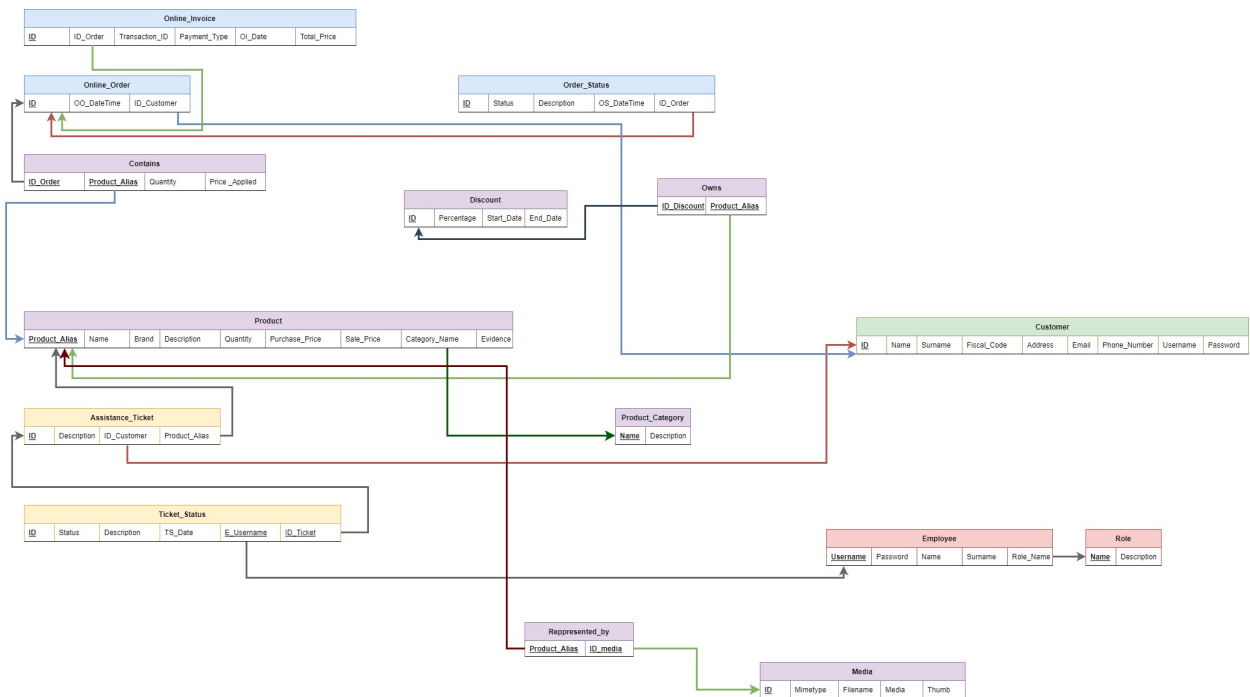


Figure 4: Relational schema modified

3.2 Other Information

The database has been modified, compared to the one created by e-team, improving the management of images, transforming it from hard-coded within the records of the product to separate with an association N:N, this has allowed to realize a more efficient and better management on the web app side.

The ticket part has been modified to make it 1:N (from 1:1) so it can contain all the information of the ticket history.

For the discount visualization was proposed the implementation of a view, but this could have problems with the storage of the list in cache and increase the slowness in the upload phase, so in the end we preferred a nested query.

For the management of orders, the management has remained 1:1 with modification of the previous state because it was not considered useful to save all the history.

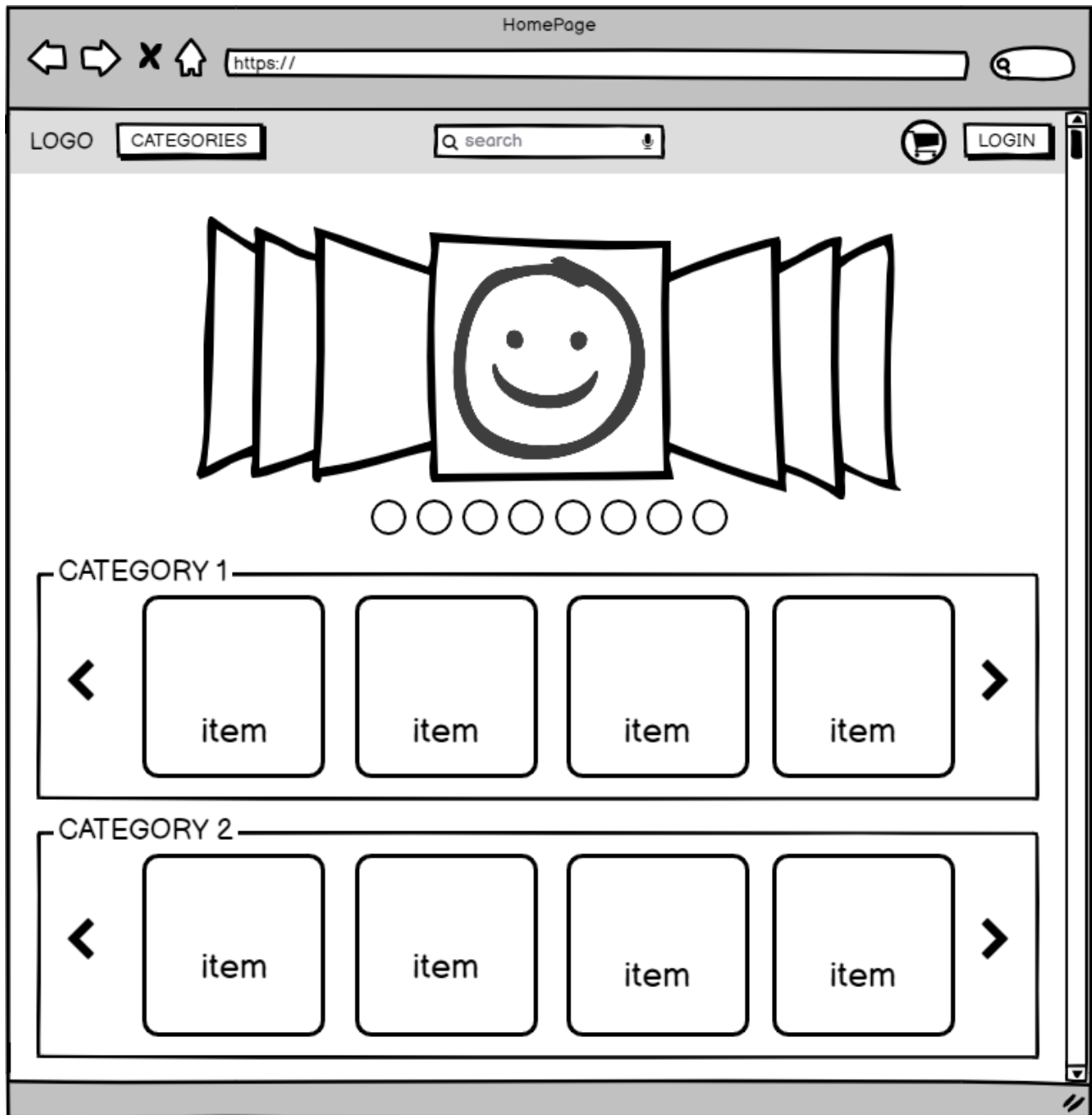
Finally, nullable values, defaults, and small writing errors discovered during the implementation of the application were corrected.

4 Presentation Logic Layer

The website will be divided into the following pages:

- Homepage: contains the showcase of the available products. Written in jsp.
- Product page: allows the customer to buy the products he is looking for. Must be logged in.
- Login page: allows both the customer and the various employees login to the web application.
- User edit page: both customer and employee are able to modify their personal data using a simple form.
- Order list and Order details page: allows each customer to look at their order history to open a ticket, cancel the order or get the invoice.
- Tickets page: allows each customer to look at their ticket history. Exists an employee version of the page that allows to manage each ticket.
- Product management pages: both simple employees and administrators are able to look at all the products and edit/delete them. Through a second page (Discount management) is also possible to add some discounts.
- Orders management page: both simple employees and administrators are able to look at all the orders and edit/cancel them. It's also possible to look at the existing invoices for each product.
- Administration page: allows the administrators to edit the roles of all the users and even delete their account.

4.1 Homepage



The homepage contains the main information regarding the various products available. The products are divided into sessions according to their category. This subdivision will be done by means of a scrollable list. Moreover, the homepage contains a bar to search by name of the single elements. Like most of the top pages, the homepage contains a status bar that allows the user to register, log in or log out once logged in. Finally, this status bar allows customers to show the history of the products purchased.

4.2 Product page



The product page shows in detail the information regarding the individual product. This page shows all the photos available for a given product, the description and the price. In addition, it also shows any discount applied to the product. If the customer is logged in, it will be possible for him to purchase the product within the maximum quantity available. It is possible to enter these particular pages by clicking on the product on the homepage or by searching by product name.

4.3 UserEdit page

Browser title: Edit User

Address bar: https://

Page header: LOGO, CATEGORIES, Q search, HELLO, USER

EDIT YOUR PROFILE

your infos

Name:

Surname:

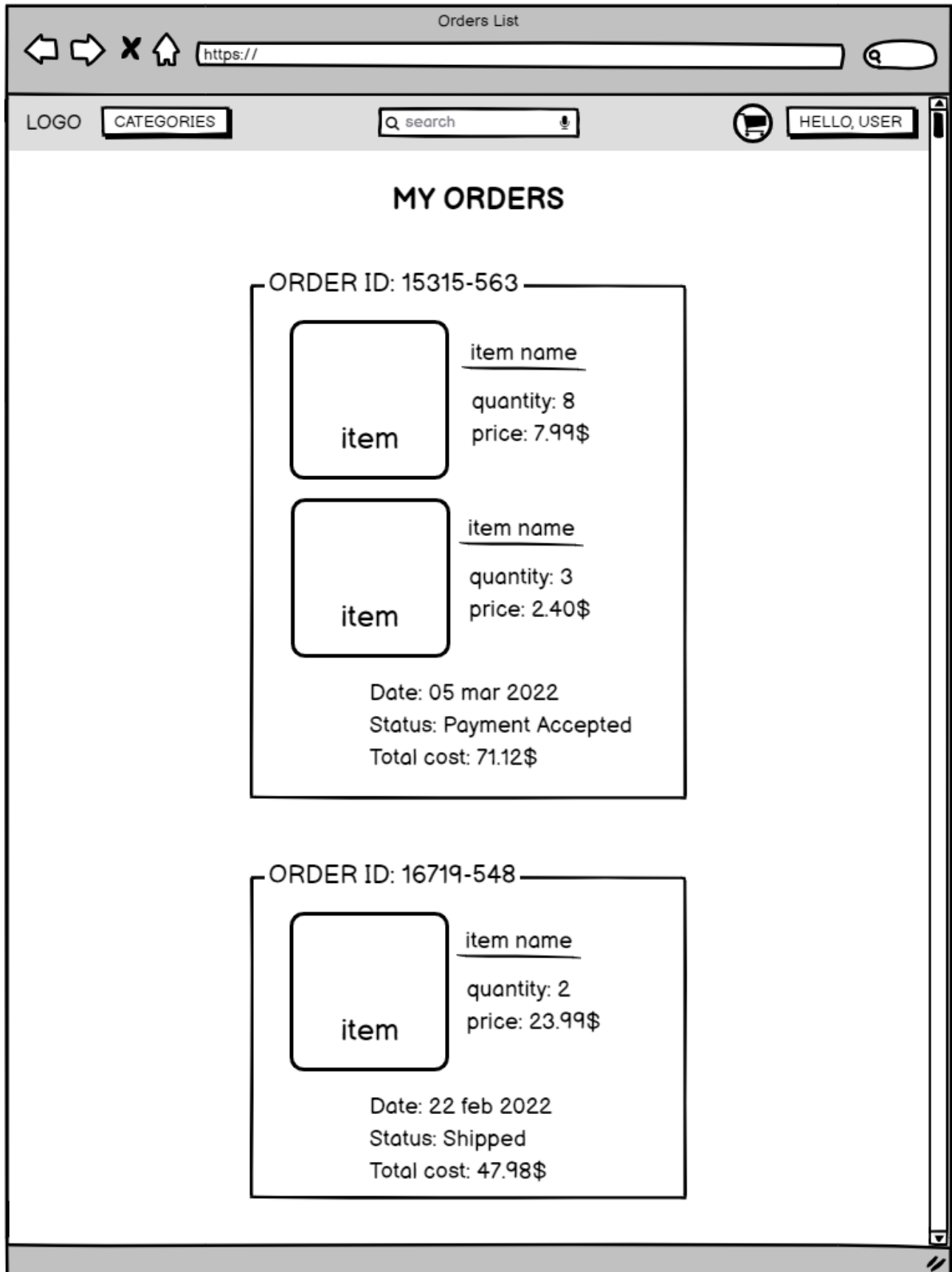
Fiscal Code:

Phone number:

Address:

The user edit page allows the customer type user to change their personal data. The page will consist of text boxes with default values corresponding to the values previously entered by the user. The page allows you to change data such as telephone number, name, surname but not unique / primary key data. This is because these particular data are used for login, and to avoid conflicts it was decided to do so. Obviously this page will be available only after the user login.

4.4 OrderList and OrderDetails



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new Product

Alias:

Name:

Brand:

Description:

Purchase Price:

Sale Price:

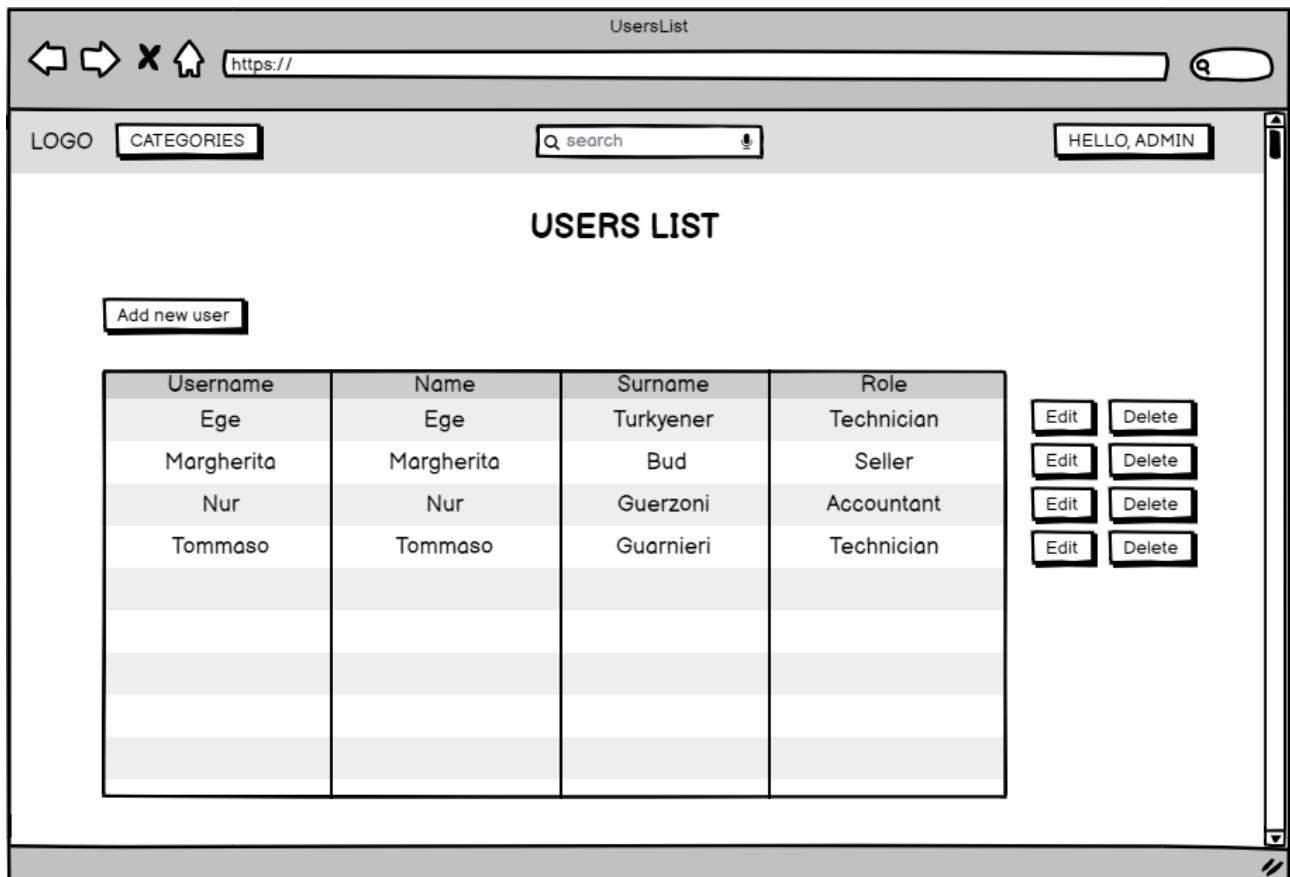
Quantity:

Category:

Evidence: ☐ yes ☒ no

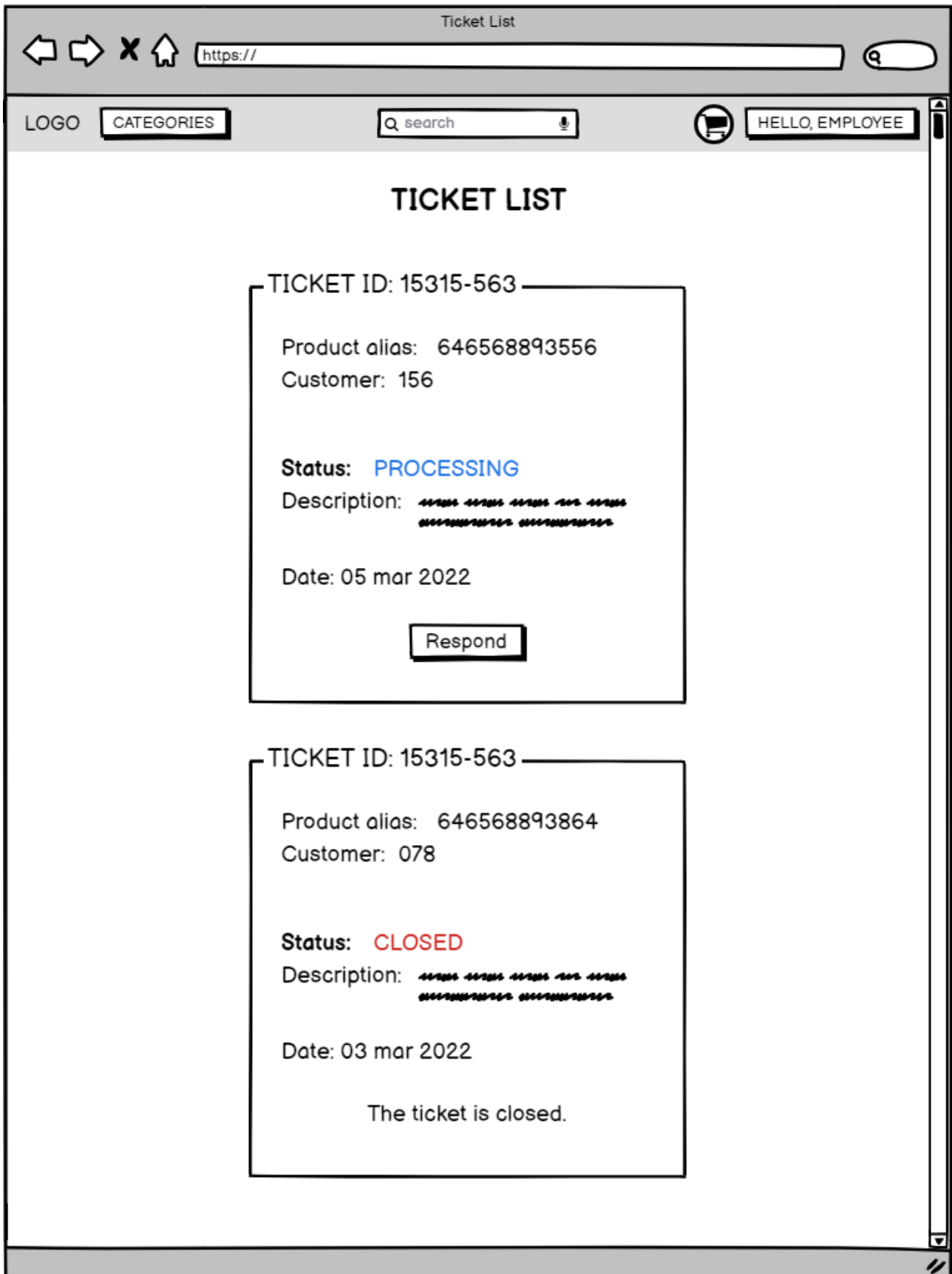
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4.6 Admin: user management



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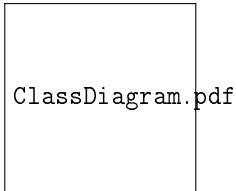
4.7 Ticket list management



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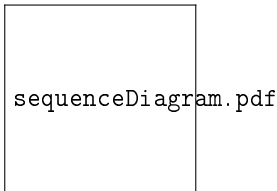
5 Business Logic Layer

5.1 Class Diagram



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5.2 Sequence Diagram



5.3 REST API Summary

URI	Method	Description	Filter
/	GET & POST	return a list of category and product	
/buy/product ?	GET & POST	performs a check on the product order if it is eligible or not	C
/buy/confirmed ?	GET & POST	finalize an order	C
/buy/			
/invoice/			
/products/details/ <i>product alias</i> /	GET & POST	return product details	
/products/category/ <i>category name</i> /	GET & POST	returns a list of products from the category	
/products/search/	GET & POST	returns a list of products matching your search text	
/products/			
/session/login/	POST	login via a session	
/session/logout/	GET	logout via a session	
/session/register/	POST	register customer amd login via session	
/session/			
/media/list/	GET	returns a list containing id, mimetype and name of uploaded media	E
/media/upload/	POST	api for the uplaod of an image	E

/media/view/image id/	GET & POST	view media	
/media/thumb/image id/	GET & POST	view thumb of media	
/order/			
/ticket/			
/user/			
/management/discount/			
/management/order/			
/management/product/			
/management/user/			

Table 2: Describe in this table your REST API

5.4 REST Error Codes

Error Code	HTTP Status Code	Description
Error Code Identifier	Corresponding HTTP Status Code	Description of the error

Table 3: Describe in this table your REST API

5.5 REST API Details

A resource

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- URL: the URL to retrieve it
- Method: Method to retrieve it
- URL Parameters:
- Data Parameters:
- Success Response:
- Error Response:

6 Group Members Contribution

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