

[BOO] Requirements Specification

Version 1.0

March 30, 2022

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1. Executive Summary

1.1 Project Overview

This project is about creating and building a software, specifically a web-based application that manages the activity within the Epoka University canteen. The software is called BOO (Bereget online ordering). BOO can be used by the customers and staff/students. It covers different procedures like online ordering from the students/professors, different guests and products, price, and orders management by staff (admin or storekeeper).

The client can make the orders directly from a web browser and can be directly notified if order is ready. This is a very efficient way of buying, as it provides a better coordination between clients' sellers and admin (storekeeper). Basically, the app has a special user interface for each user. Another task being managed by the app is sales management. The lists of products are updated every time a new product is added in a specific category. These lists are accessible by the customers, who can check the prices, product description and photo. The staff (sellers) can see the orders, description of them for additional changes. Sellers are those who notify if order is ready and are those who make the purchase with the customers. Extra feature is that staff can keep track of entire bills purchases by them during a working day till the decide to quit the shift. Admin is the maintainer of the entire system with feature like adding, updating, deleting product and checking their supplies. Also staff is managed by admin that can add, delete and update particular members. All purchasing record are accessible by admin where he/here can audit, manage weekly, monthly, annual balance. Admin is fully responsible for finances and entire billing records.

1.2 Purpose and Scope of this Specification

Describe the purpose of this specification and its intended audience. Include a description of what is within the scope what is outside of the scope of these specifications.

The purpose of this web app is to provide a set of solutions to the university canteen that depend on sales management and user management. In the current state, when ordering a product when it comes to management it is clear that it is very unorganized. Clients have to wait in a long queue and the employees have a very frustrated way of managing the orders since they have to deal with many people at once. This becomes uncomfortable because some orders may be overlooked by mistake or when there is no more stock of a product and someone is waiting it is timewasting and frustrating. This software will provide a very organized and comprehensive solution for these issues, which will increase the cooperation between administrators, employees and customers. It will make the life inside the canteen easier and save needed time and energy for all the parties that go through the process.

2. Product/Service Description

BOO (Bereget Online Ordering) is a software which aims to redesign the lifecycle of the university canteen and provide new technological solutions to every step of the process. This software will be used by the administrator, storekeeper and the customer. We want to create a dynamic software, which will become useful to every user (staff/students and clients (outsiders/guests)).

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The software aims to help every step of the company job, starting from simple order receiving to order status tracking, report generation, and much more. If we divide the company in two major subsections, we are able to give a more detailed description of what this software provides for both parties.

➔ Company Staff (Administrator, Storekeeper, Economists)

☐ Real time Statistics, Sales Performance

☐ Order Receiving and Tracking, Reports and much more.

➔ Company Customers

☐ Order Making

☐ Order Status Checking (ready or not)

2.1 Product Context

The context of this software is related to the Epoka University. This software solution will be used by every employee of the canteen and also by the customers in order to enhance the cooperation between staff and clients, make their jobs/purchases easier and make sure they make a full use of their time and energy.

2.2 User Characteristics

There will be 3 types of users in this software:

➔ Administrator

➔ Staff (sellers)

➔ Customer (clients like students or teachers/ guests)

a) Administrator (admin/ super user)

- Add/ remove sellers.
- Add/ remove/ update product.
- Check all bills of all sellers during a day, month, entirely.
- Make query for bills and also check the inventory.
- Add/ remove bills.
- Can update his credentials.
- Admin is created since production, a hardcoded one

b) Staff (seller)

- Receive orders that are going to be prepared.
- Notify user for the preparation.
- Delete order if user doesn't come to receive it.
- Confirm the order after the purchase and automatically bill is created
- Able to check bills that are being prepared during his/her shift.
- Is able to change his/her username and password.
- Close the shift/turn at end of the day.

c) Customers (simple user, professor/student)

- User is temporary as long his order is not purchased yet.
- User is created when he enters the website.
- User can give description to a specific buying (example "kafe e shkurter , sanduic pa qepe etc. ")
- User can add remove sells entity (sells are orders of the same product).
- The entire order is every particular product ordered by a user (customer).
- After confirming the bought product, needed to and a contact to notify if order is ready.
- Order is created and is assigned to a seller.

2.3 Assumptions

- ➔ It is assumed that the data generated from the system will be fully confidential and only available to the university
- ➔ It is assumed that every staff member is equipped with a smart device from where they will perform every operation they are required to. If not, the university is assumed responsible for equipping every member with the required device. These smart devices have to be capable of receiving information from web browsers. The smart devices are assumed to have a Windows Operating System.
- ➔ It is assumed further that the staff are able to use smart devices and especially the BOO web application effectively and efficiently.
- ➔ It is assumed that every customer should be limited to overview only his orders and not interfere with other customers.
- ➔ It is assumed that administrator, staff, clients have a web browser and an active internet connection.
- ➔ It is assumed that every completed order in a form of bill needs to be stored in the system for documentation and report purposes.
- ➔ It is assumed that the staff member is responsible for the progress of the orders and real time notification.
- ➔ It is assumed that the administrator is responsible for updating stock in real time.

2.4 Constraints

This system will be potentially constrained by:

- The fact that employees need to be equipped at all times with smart devices
- Customer need to provide contact to get order notification.
- The need of a fast internet connection and real time database update.
- Having all employees understanding the way the system works and training them to use the web application correctly and efficiently.
- The need of a browser in every device to run the application.

2.5 Dependencies

- Users need to have a strong internet connection in order to run effectively.
- Customer should provide contact number to be notified.
- The order needs to satisfy product stock availability.
- The costumer needs to have at least 1 product in bag in case to make an order.
- Sellers receive orders in turs, depending to the customer who is currently ordering.
- Bills, purchases track for a seller is available only for current working day.
- The system is also dependent on the browser performance.

3. Requirement

3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date Rvw'd	SME Reviewed / Approved
BR_01	The software should have different view for each user.	View for client that should be smartphone prototype, view for the sellers and view for the administrator both computer size prototype.			
BR_02	Administrator and staff accounts should be secured with basic authentication (log in)	Data will be saved hashed in DB.			
BR_03	Administrator can add, update and delete product information.	Admin can add product according to the given categories or can add new categories also every product is editable and deleted by admin. Validation is important for them.			
BR_04	Administrator can add, delete and update staff members (sellers).	At first time a seller is created by admin also only admin can delete. Validation must be passed.			
BR_05	Administrator audits the entire inventory.	Check sold items according to the date (annually monthly, weekly, daily), name, category, division.			
BR_06	Administrator should make custom query in inventory	For example: admin can add range of dates, can add item name or category for search.			
BR_06	Administrator can check bills, also may cancel any of them.	Admin has a detailed view of the bills also hard printed views. Cancellation is needed because wrong bills may be saved.			
BR_07	Administrator should update his/ her credentials.	Validation of data must be passed.			
BR_08	Client is saved temporally.	As long as has an open order not purchases is open. After that client is deleted in form DB.			

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_09	Client can freely chose the product as he/she want.	Search should made handy using division cantina/ cafeteria, categories or direct search using name			
BR_10	Client can add custom description for prepared product in cantina.	Each client may need to remove some ingredient of product or add some other.			
BR_11	Bag should be created at user view.	At the bag the user see entire order with different product. Add more amount form there, remove any of them or decrease amount.			
BR_12	User can not send the order without adding the contact number.	The only requirement is the contact number for notifying the order preparation.			
BR_13	A copy of order is saved locally in user device after order confirmation.	This is needed to show that he is the user with that order or just showing the notification message by the cantina.			
BR_14	Seller has a panel that waits for the incoming order.	There might be 2-3 sellers working at a time so the orders should go one at a seller other at the other seller and repeated the same logic.			
BR_15	Seller notifies the client when order is ready.	Message is sent to the client using the contact number, notifying that your order with x id is ready.			
BR_16	Seller confirms the order only if client purchases it.	After confirmation bill is created and saved in DB.			
BR_17	Seller deletes the order if the client doesn't purchase the order.	The bill will not be saved on the database.			
BR_18	Seller is responsible in viewing all his daily bills.	After closing the turn no bill can be seen.			
BR_19	Seller closes the turn and all bills are remove.	Bills are removed because a seller cannot view other seller's bills.			
BR_20	Sellers can update their credentials.	Confirmation is made after completing the necessary validation.			

3.2 Non-Functional Requirements

3.2.1 User Interface Requirements

Every user is going to access the software using the browser using every device that access the internet. There will be 3 different independent interfaces for each user. Client interface will have smartphone resolution that can be adaptive for each prototype. Other 2 interface will full HD (1920 x 1080) resolution for computer base usage.

Three main interfaces are:

- **Client site**

Ways that use can access the site:

- Using the QR code that redirect to the website link.
- Typing the website in browser
- There is no need for login

- ***This is the first page of the website (is the view of division and category selection)***

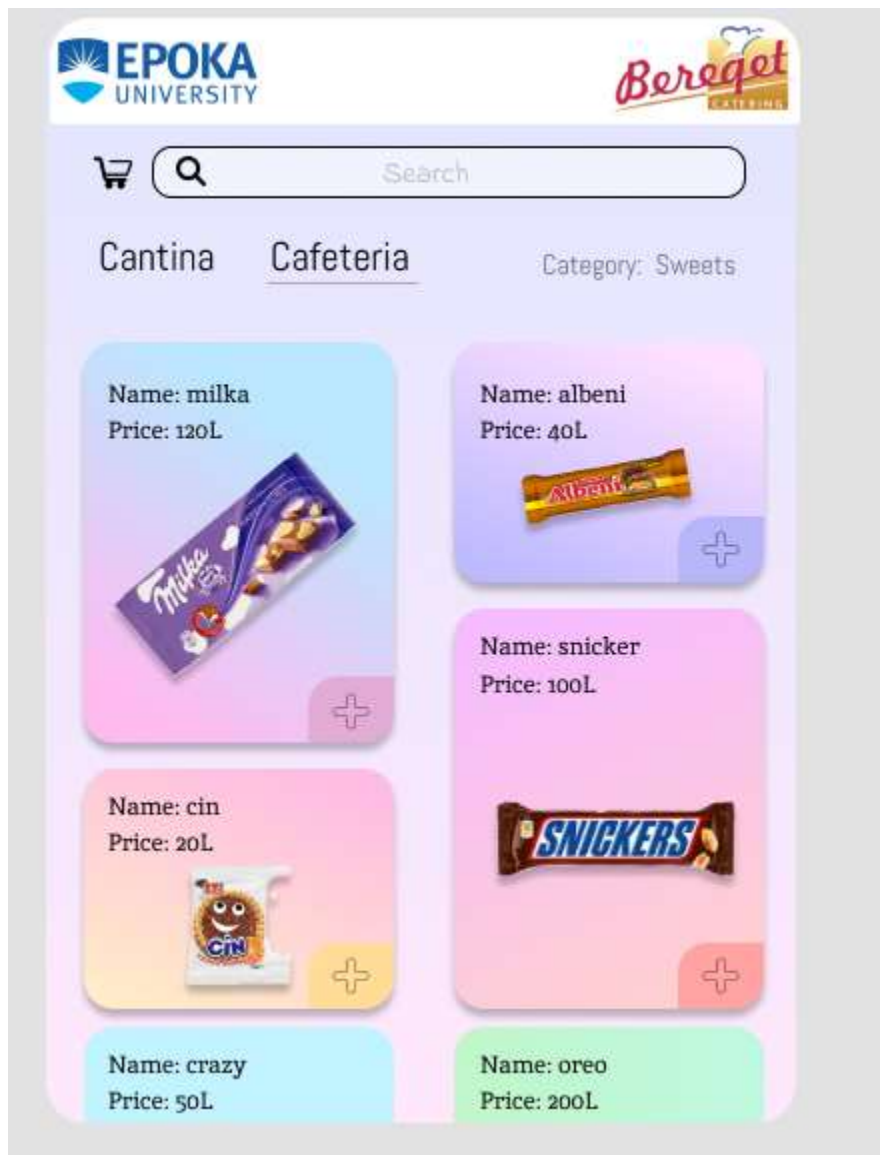


Elements of the page are:

- Logo of Epoka University and Bereget. These will be present in every page.
- 2 Divisions arranged in a nav bar.
- Categories for each division that continue horizontally.

User enter the site and the first page is this. He/she can select the division and the categories of each division will be displayed horizontally. Client can easily scroll and find the desired category. After selection the other page will be displayed.

- ***Chose product page***

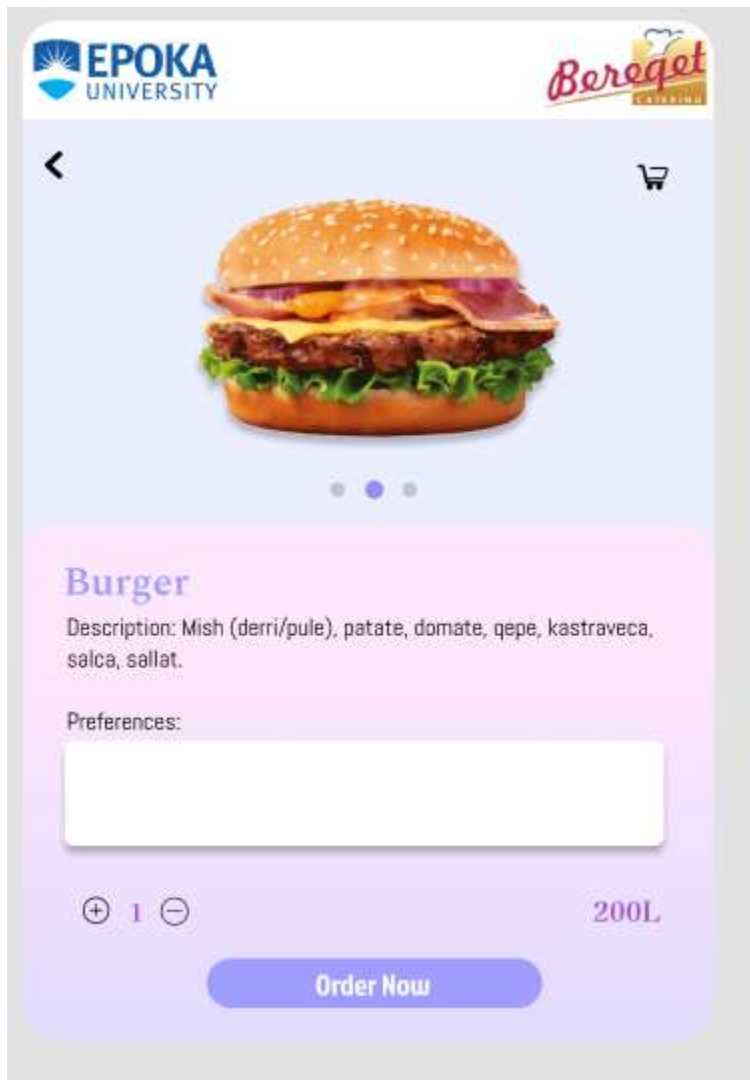


Element of this page are:

- Common header and footer logo and other information.
- Bag icon that presents the bag of ordered product.
- The search bar that finds product by name.
- Nav bar which defines the division.
- Select list at the corner near the nav bar that defines the category of the product.
- Product that are arranged in div using grid system.
- Plus icon in every product.

User can open the bag view page clicking the bag icon. The search bar is needed to search product by name. Navigation bar define the division and by clicking it will display by default the first category of the division. Category can be changed using the category select list. Then are listed well arrange product for defined category and client can continue scrolling for finding the wanted product. By clicking the product, the product description panel will open. Client can add directly the product by clicking the plus icon. Every extra clicking of the same product will increase its amount in bag.

- **Product description page** (have 2 different instances depending on product division)

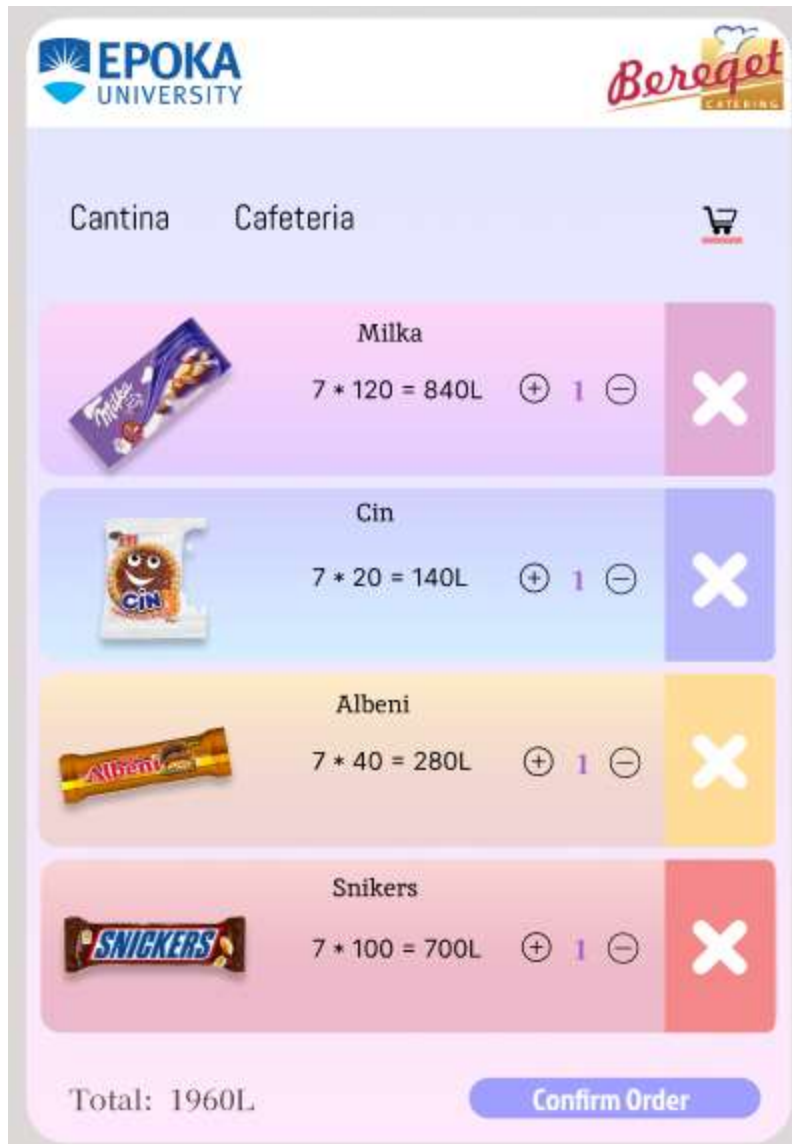


Element of this page are:

- Turn back arrow
- Bag icon
- Product image
- Product name and description.
- Preferences text area
- Price and amount (input number)
- Order Now button

Use can turn back to the product selection page using the arrow. Bag icon open the bag of ordered products. There is a preview of product given by the image also name and description are given. There is an extra text area for preferences if the products belong to cantina. There, client can add custom preferences like adding ore removing ingredients. This field is not present in the product belonging to the cafeteria. Client can chose the amount using plus or minus in the amount input component. Lastly by typing Order now product is added to the bag and after clicking site is redirected to the Bag page.

- **Bag page**



Element of this page are:

- Custom header and footer
- Nav bar with division and the bag icon
- Products grid structure that contain image name, amount the price
- X icon
- Total
- Confirm order button

Here in the bag are all products ordered by the client. On top is nav bar, by clicking the division it redirects the page back to product selection. On the product grid are given the price of the

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product, amount, name image also an X icon. Client can remove product by clicking the X and can increase or decrease the amount using plus and minus. If the amount of product is decreased until it reaches 0, that product will be removed from the bag. At the end, order is confirmed by pressing confirm order button. A prompt is shown that will ask for a contact number, than order is confirmed.

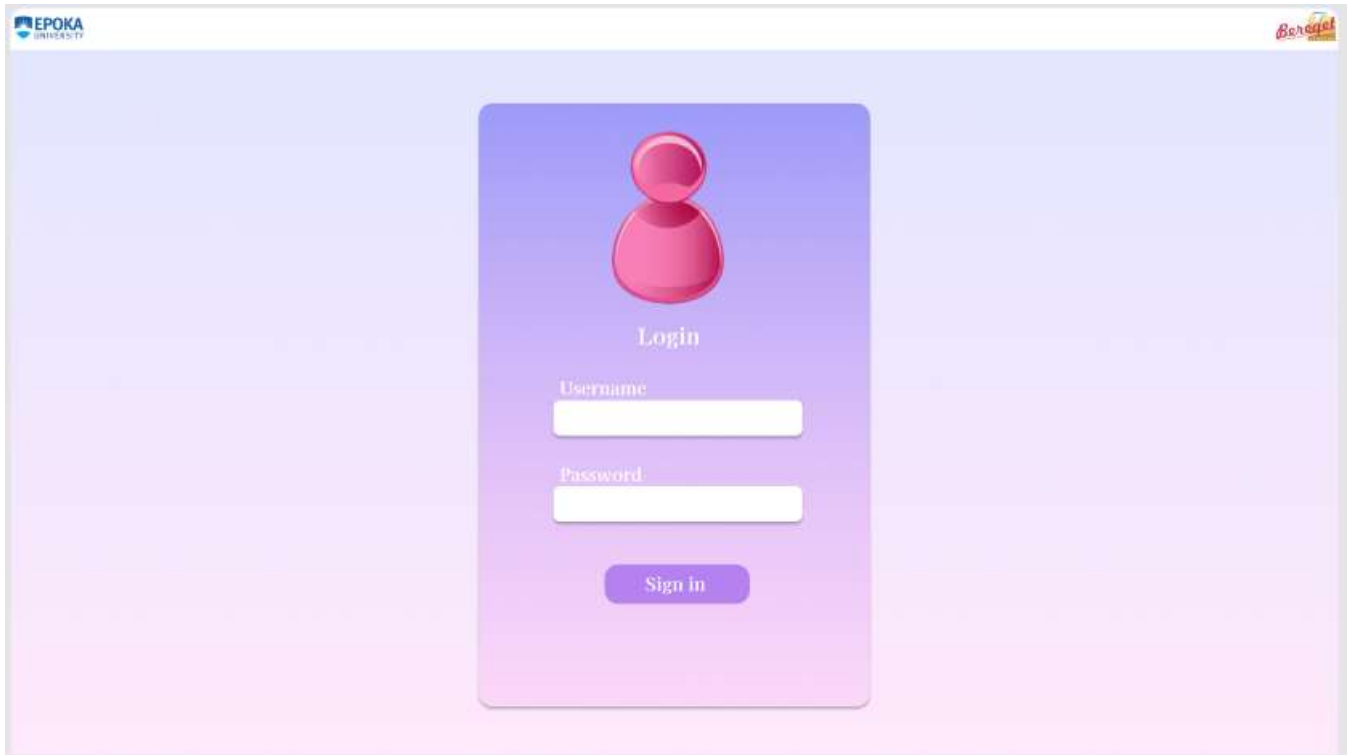
- **Seller site**

Ways that use can access the site:

- Seller enter the site by typing site name and adding/user (made this way not to interfere with user interface).
- Seller should login first to enter the site.

Pages:

- ***Login page***

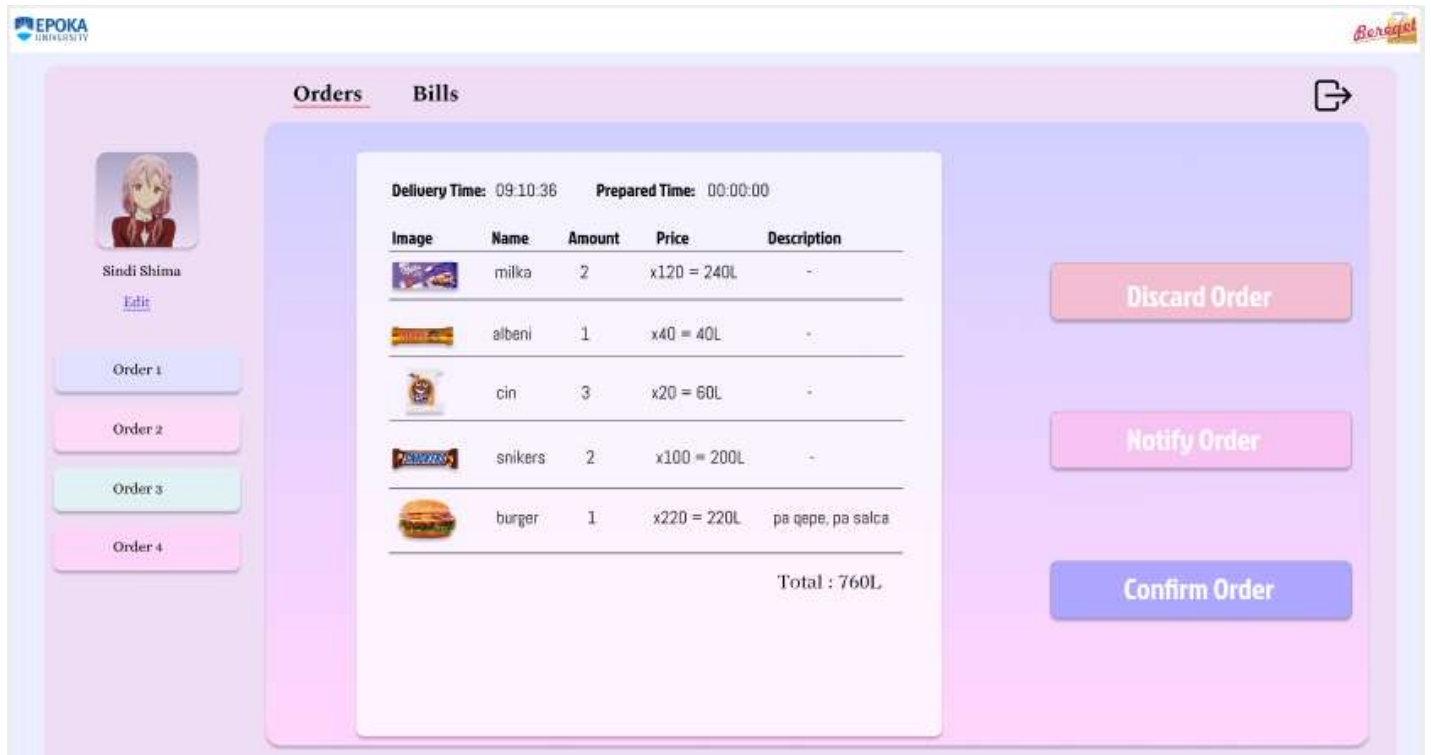
The image shows a web browser window displaying a login page. The page has a light blue header with the 'EPOKA UNIVERSITY' logo on the left and a small 'Beranda' button on the right. The main content area has a light purple background. In the center, there is a white rounded rectangle containing a pink user icon, the word 'Login', a 'Username' input field, a 'Password' input field, and a pink 'Sign in' button.

Element of this page are:

- Custom header and footer
- Enter username input field
- Enter password input field
- Sign in button

Seller types the username and the password then presses the sign in button to enter the website. If validation or the credentials are not correct, seller cannot login.

- **Order page (main page)**

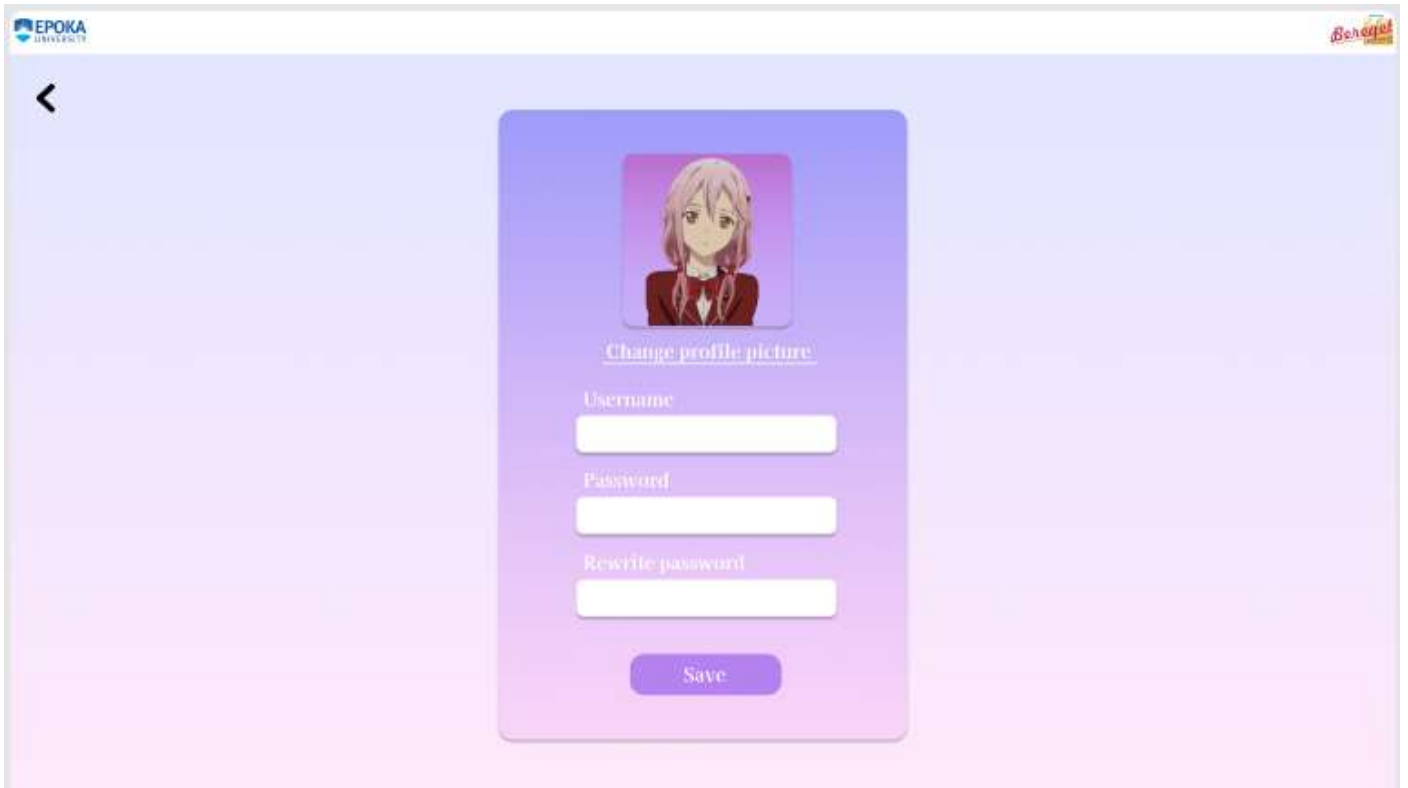


Element of this page are:

- Custom header and footer
- Nav bar
- Photo and name of seller
- Edit link
- List orders
- Order panel
- Log out icon
- Discard, Notify and Confirm order Buttons

At the top is the nav bar that contain orders and bill. By clicking the bills, bills page will open. At the right corner is the log out icon, which is used to log out. At the other corner, is the seller's image and name. If the seller wants to change its credentials, he/she can click the edit link, which will redirect the seller to the 'edit credentials' page. Below the edit link, are the orders list arranged in a scroll panel. By clicking an order, a detailed view of this order is shown, that contains all products the user has chose to buy. Seller clicks the notify button in order to notify the client that his/her order is ready. Seller clicks the confirm order when client has purchased the order. After that order is removed from order list and saved as a bill. Seller clicks the discard order button when client do not purchase the order and again order is removed from the list but not saved as bill.

- **Seller update page**



Element of this page are:

- Custom header and footer
- Turn back arrow
- Edit profile picture link
- Username, Password, Rewrite Password input fields
- Save Button

Seller can turn back by using the arrow icon, if he/she doesn't want to save changes. Image is edited using the change profile picture link. Seller complete the given input links and if data entered are valid seller is updated successfully. After updating, the seller should re-login.

- **Bills page**

- Custom header and footer
- Nav bar
- Log out icon
- Bills list
- Detailed view panel
- Total incomes during day
- Close day button

As explained previously, the navigation bar is used to pass from a page to another and icon is used to log out. At the left is the list of all bills purchased by seller during a working day. Bills are visible as long as are purchased in working day. Each bill is clickable and when one is clicked, detailed view of the bill will be shown. At the bottom the total incomes for today are visible. Seller ends the turn by clicking Close day button. After clicking this button seller is log out and if he/she wants to login again a new working day start.

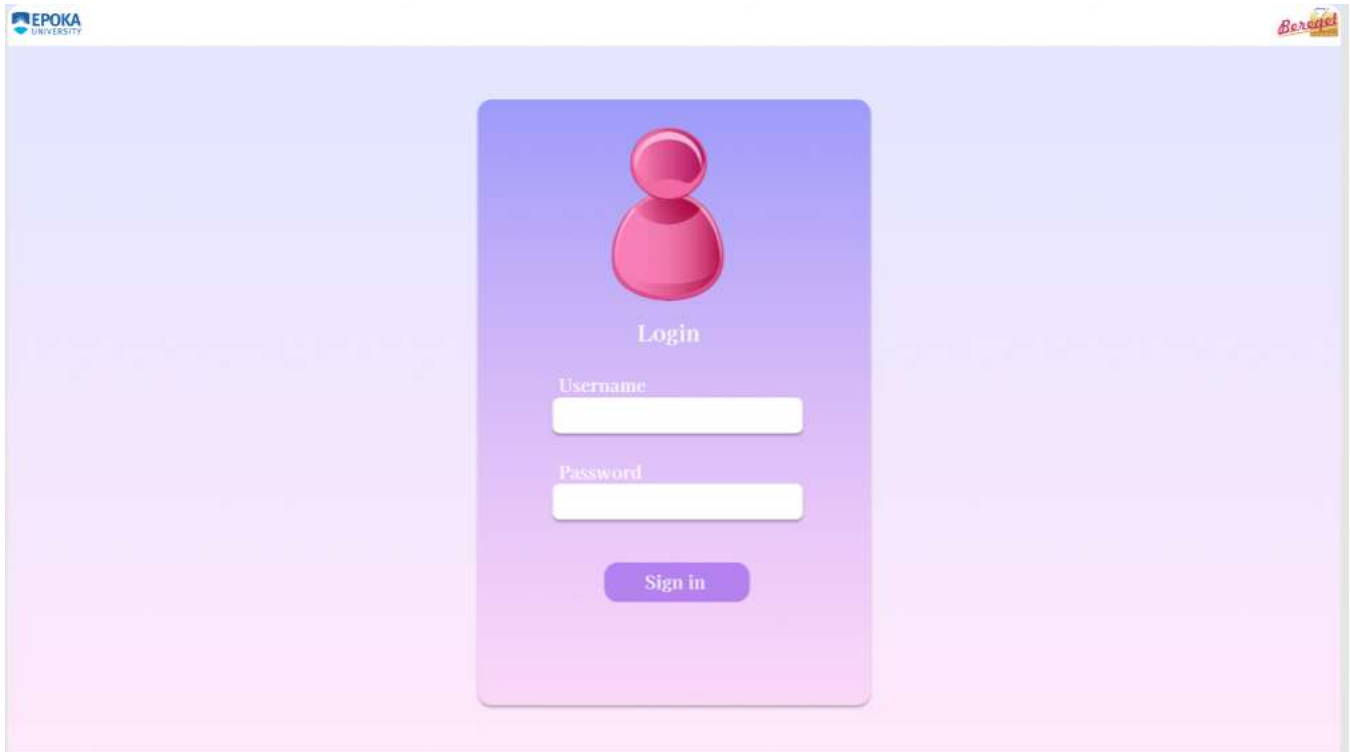
Ways that use can access the site:

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- Admin should login first to enter site.

- Login Page



Element of this page are:

- Custom header and footer
- Enter username input field
- Enter password input filed
- Sign in button

Admin should enter his/her credentials. If credentials are correct admin can enter admin main site, if no will re-enter credentials.

- **Product Page**

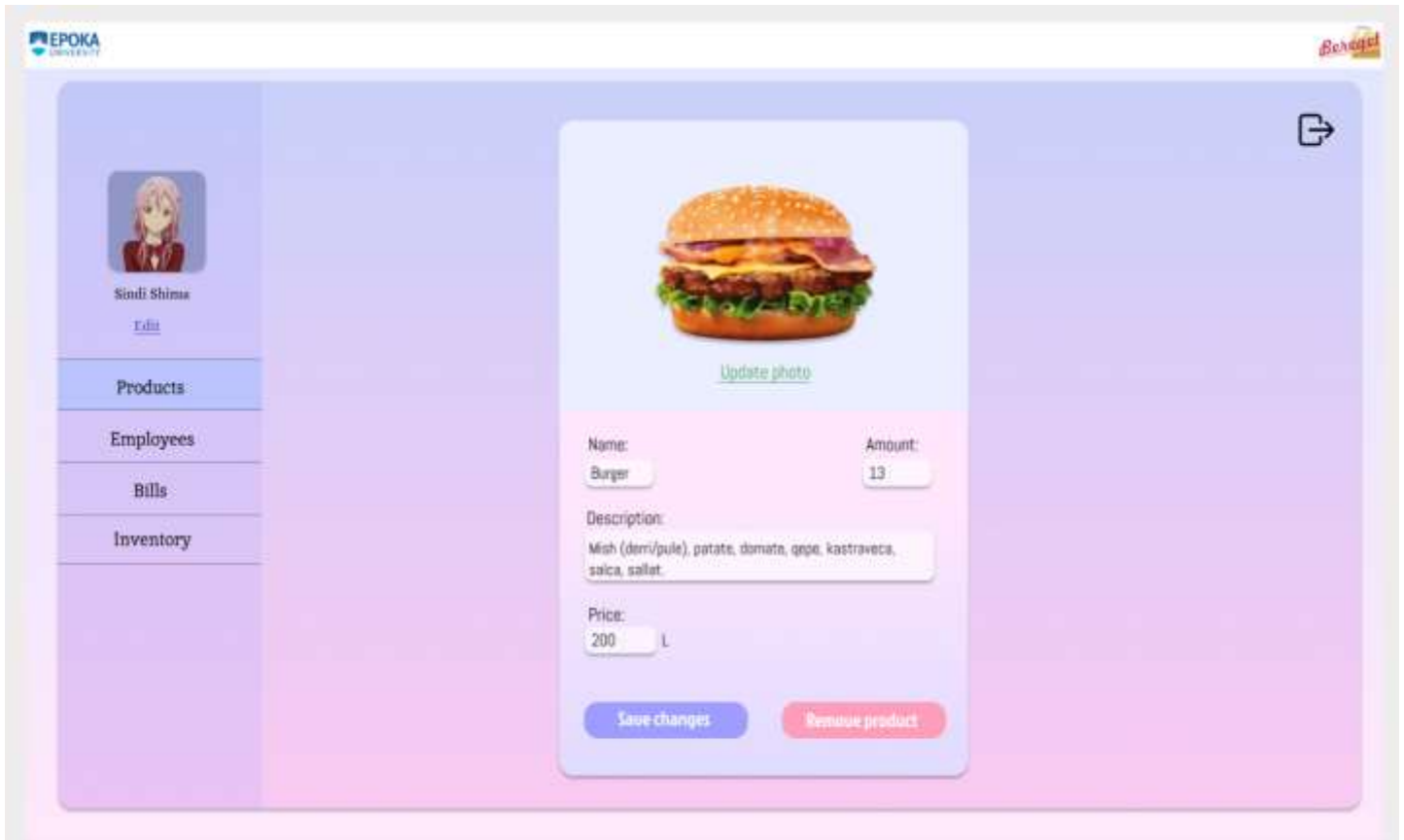


Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- There are two grids of products according to the division
- Add new product icon
- Category nav bar for each division
- Add new category (plus button)
- Search bar

This is the products window which is shown directly after login configuration. In this window admin can switch to another window (navigate) using the left nav bar. Admin can filter the desired products according to category or by using the search bar. If an image of shown product is clicked, a new window is opened (Edit Product page) where admin can update the selected product. Admin, by using the plus icon in the beginning of the product lists, can add new product, also by using the plus button in the end of category list can add new categories.

- **Edit Product Page**

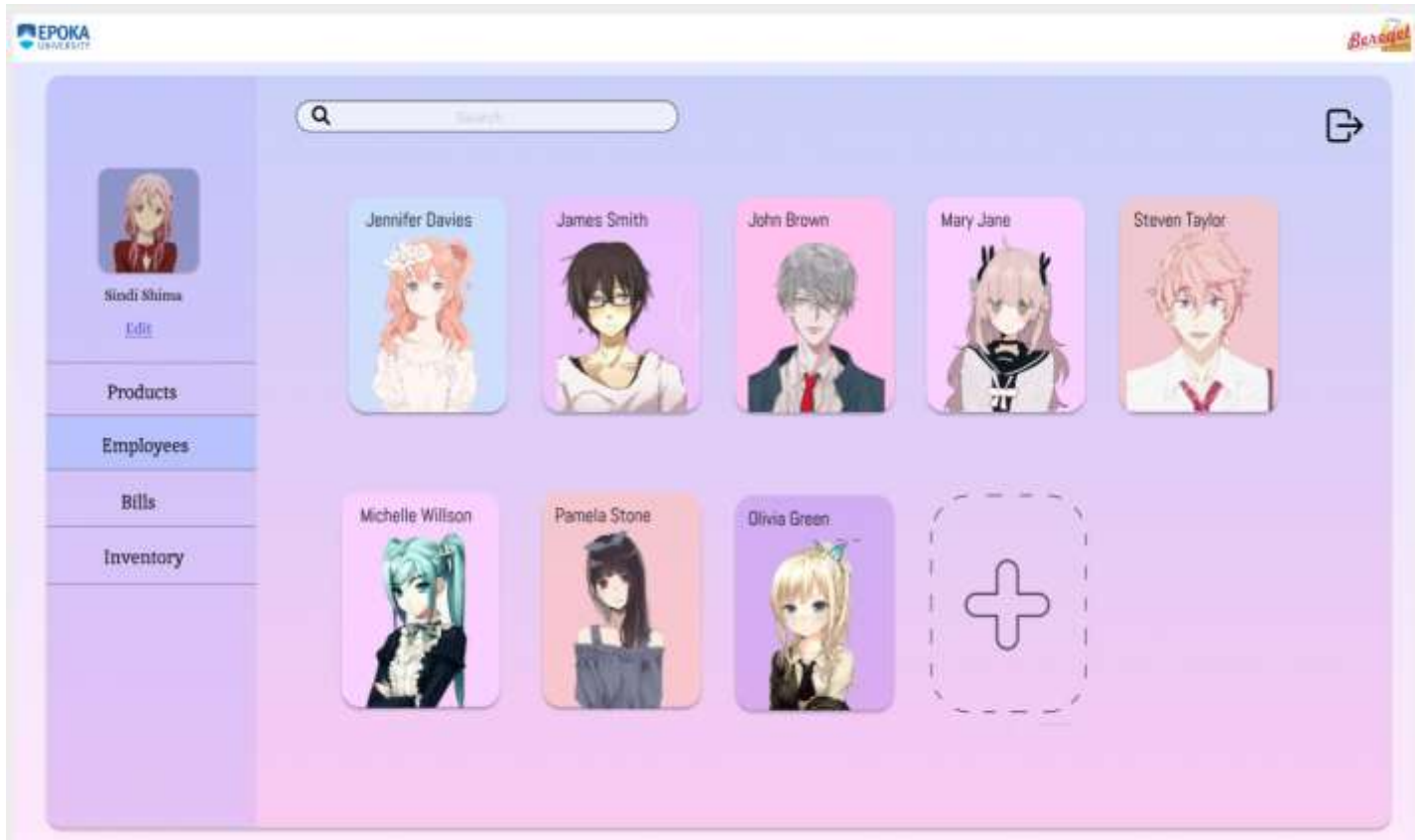


Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- Input tags to edit price/ name/ description/ and amount
- Image edit link
- Save changes and remove product buttons

In this window, admin can navigate to other windows using the left nav bar. Also admin can add changes to the open product. He/she can edit image, name, amount, description and price of a product. In the end can save changes using the save button. Admin can also delete the product directly by pressing remove button. When a button is clicked the products page will be opened again.

- **Edit Product Page**

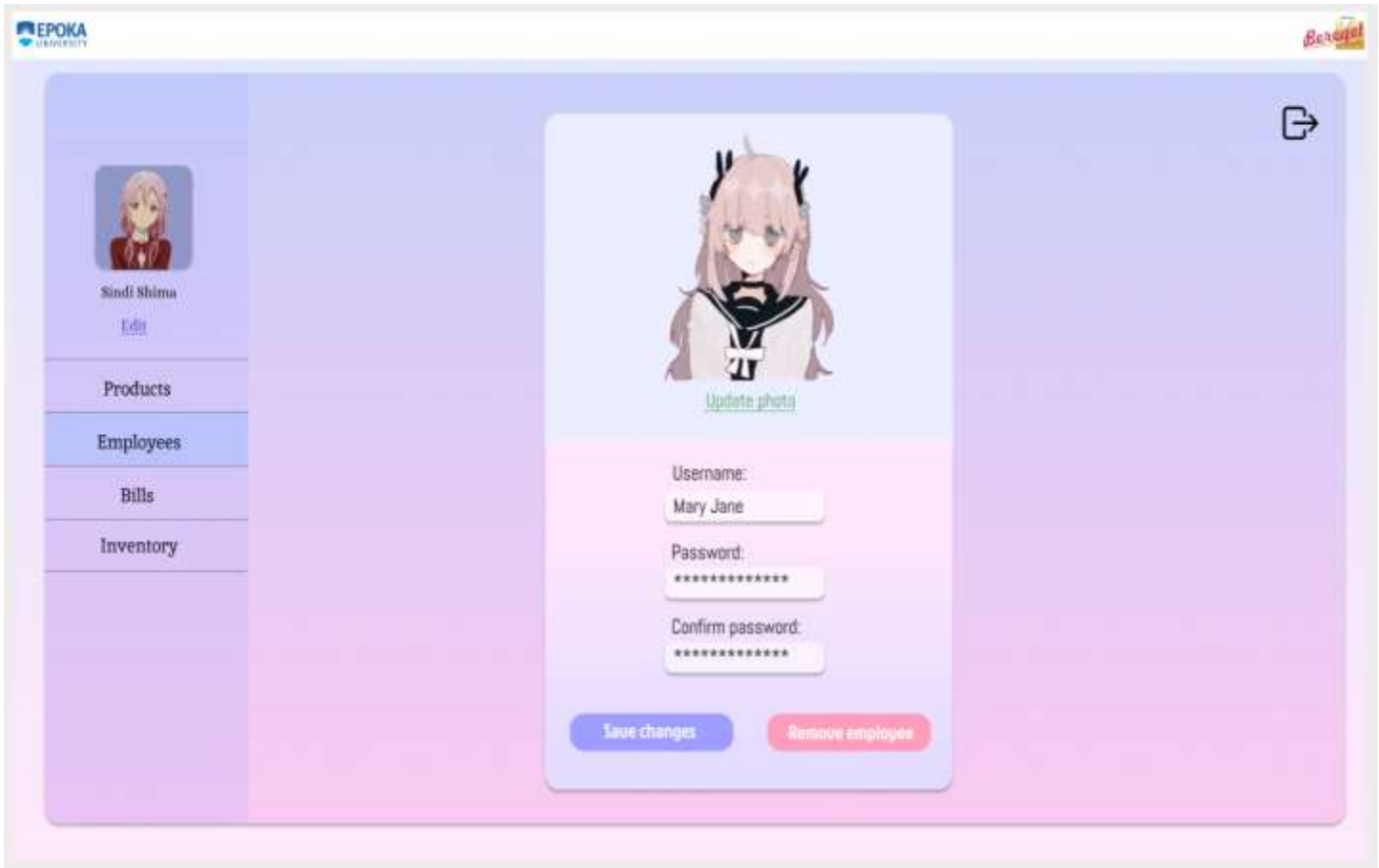


Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- Employee's arrangement grid
- Plus icon
- Search bar

In this window, admin searches for sellers and can see all registered sellers. By using the plus button admin can add a new seller. If admin wants to change the credentials of a seller, he/she can click the image of the desired seller and a new page where he can edit its credentials will be opened (Seller edit page). Admin can navigate to other pages using the left navigation bar. Also admin can search a seller by name using search bar. It will display only the searched seller.

- **Edit Seller Page**



Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- Input tags for username, password and password configuration
- Upload photo link
- Save changes and remove employee buttons

In this window, admin can edit seller credentials like username, password and image. Password need confirmation before saving it. Admin uses the save change button to save changes. The remove button is used to remove the seller and all his/her's credentials.

- **Bills Page**



Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- From/ To Date input tags
- Find button
- Bill table

In this window, admin sees the list of bills purchased in a day or during a period of time. Admin set from and to date to specify the range date for bill displaying. If admin enter just from date, all bills from that date till today will be displayed. If admin enter just to date only bills of specified date will be displayed. If no date is entered for both cases only today purchased bills will be displayed. In table if admin click a row a new page will open (Bill detailed view).

- **Bill Detailed View Page**

The screenshot displays the 'Bill Detailed View Page' within the EPOKA UNIVERSITY system. The interface includes a sidebar on the left with a user profile for 'Sindi Shima' and navigation links for 'Products', 'Employees', 'Bills', and 'Inventory'. The main content area features a date range filter (From: Apr 28, 2022 To: May 4, 2022) and a 'Find' button. A central table displays the bill details for 'Bill 1', including the delivery time (09:08:25) and a list of items with their respective amounts and prices. The total amount is 760L. On the right side, there are two buttons: 'Cancel bill' and 'Print preview'.

Name	Amount	Price
milka	2	x120 = 240L
albeni	1	x40 = 40L
cin	3	x20 = 60L
snikers	2	x100 = 200L
burger	1	x220 = 220L
Total :		760L

Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- From/ To Date input tags
- Find button
- Bill view
- Cancel bill and print preview buttons

In this page, admin has a detailed view of the bill selected. The view contains product, amount, price, total price and date of purchase and the bill id. If From and To inputs are set again and find button is pressed a new table will be shown again. Admin can cancel the bill and also can have a pdf preview that can download if he wants.

- **Inventory Page**

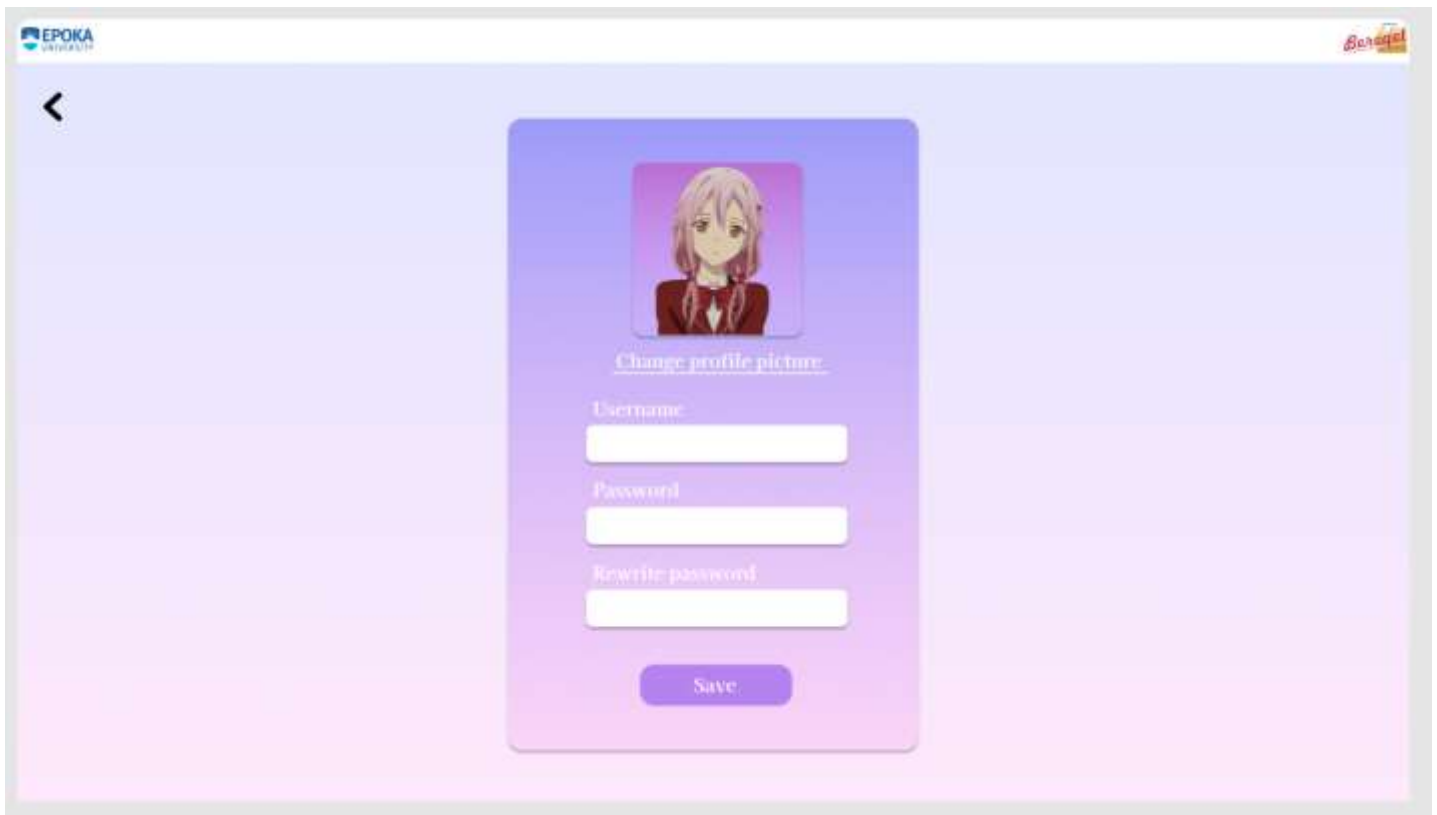


Element of this page are:

- Log out button
- Edit profile link
- Profile view
- Nav bar with Products/ Employees/ Bills/ Inventory
- From/ To Date input tags
- Find button
- Search button
- Division nav bar and categories vertical sub bar
- Inventory table

In this page admin can see and keep track all product sold and the amount for each. Admin can search product according to category, can add a range from a date to another date. Also can add the name of product in the search bar to find easier wanted product.

- **Inventory Page**



Element of this page are:

- Turn back arrow
- Change profile picture link
- Input tags for username, password and rewrite password
- Save button

In this page admin can edit his/her credentials by changing photo, username or password. Changes are saved using save button. If password is edited, a password confirmation is required. Admin use the turn back arrow if he/she doesn't want to save changes.

3.2.2 Usability

- Learnability
 - All users will be able to use the system in less than an hour because it is very user friendly and intuitively.
- Efficiency
 - System will provide user a very fast performance and users will be able to perform every operation very fast.
- Accessibility

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- Client will access the ordering site by scanning the QR code or just accessing website name through the browser.
 - Seller will need to add “/seller” at the URL of the website. They need to enter their username and password credential to have access to their site.
 - Admin will add “/admin” at the URL of the website. And site can be access by providing correct username and password credentials.
- Effectiveness
- The Software will provide every user (client, seller, admin) feature in a very efficient way without burdening the system and causing latency.
 - The Software will help cantina work flow to increase efficiency and make the ordering process more flexible.

3.2.3 Performance

1. Capacity

The software will be responsible for all users at the same time. Back end will be responsible to make DB connection, interaction and reflect DB changes by throwing APIs. Front End will provide user interface to use the provided APIs. Database will be MYSQL server that can we are going to store locally in a web server (EPOKA servers) or using cloud AWS (Amazon web server). Software will have a maximum size of 300 megabyte.

2. Availability

- The web app will be available 24/7.
- The web app will be available to all the users that have a pc or a mobile device connected to internet.
- The web app can be accessed from anywhere.
- The orders can be done only from 8 AM – 8 PM.

3. Latency

The latency of the web application will depend on:

- Internet connection strength.
- The efficiency of the algorithm, data structure used to retrieve data from database.
- Database data arrangement.
- Back-end data manipulation.

3.2.4 Manageability/Maintainability

- Monitoring

The software will provide secure and reliable usage of all features for all the users. Every data entered into the system that makes direct changes to Database will pass secure filters and validation. This is for security reason and for not causing DB malfunctioning. There are

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error handling scenarios for every error caused by misusing of the website. There will be pop ups that inform about the errors and hints how to use properly.

- Maintenance

- The entire software will be made of 2 separate projects one for the back end (BE) and another for front end (FE)
- The used rest API design pattern of the back end will be MVC → Models related to DB entities and other model needed for arranging the software loges, other classes will be used as controllers to call the rest end points and other classes will be used as repository to implement database functionalities.
- Back end will be a maven project where new dependencies can be added from pom.xml of maven.
- Will follow the logic of Spring Boot architecture with auto configuration and dependencies injection.
- FE will be maintained using React JS framework. Using dynamic component will increase usability and flexibility.
- A health check service will be connected to our back end to keep track of every action log or service.
- Will use MYSQL server to monitor the well-functioning. Later one maybe a cloud service will be better like AWS.

- Operations

- Client enters website without any credential provided.
- Seller logs in with account created by the administrator.
- Administrator logs in with hard coded credentials since the first deployment.
- Administrator changes his/her credentials.
- Admin adds staff by creating sellers with unique credentials.
- Admin removes sellers.
- Admin updates sellers with validated data.
- Admin adds, remove product and new product
- Admin adds categories.
- Admin checks the inventory.
- Admin keeps track of finances, product stock, supplies.
- Admin checks bills and cancel them if are not saved correctly.
- Client is freely to choose any product he/ want.
- Client adds custom preferences for cantina products.
- Client adds amount, decrease amount, remove product at all in the bag preview.
- Before orders confirmation user should provide contact number.
- Seller waits for order to be shown
- Seller notifies user for order preparation.
- Seller discards order.
- Seller confirms order.
- Seller edits his/ her profile.
- Seller checks his/ daily bills and incomes (only the bills that are purchased during a current working day).
- Seller closes the day turn.

3.2.5 System Interface/Integration

- Network and Hardware Interfaces
The web application will use a Wi-Fi, Ethernet or mobile data connection to connect to the internet. Since it is a web application implementing rest full webs service logic data connection and data communication will be over TCP protocol using HTTP and HTTPS.
- Cloud Deployment using cloud services.
This is a consideration to be made later on if EPOKA server not provide access to host the website. AWS is a strong candida to host and monitor the software and DB. AWS provide secure and flexible hosting.
- Development operating system
There will be two instances serving one (production) and the development instance for adding new features and resolving possible errors. Each developer will insatiate software locally so there will be provided specification how to settle locally for development. Developers computer operating system will take the responsibility (for every know operating system will be provided configuration to develop and test locally) .

3.2.6 Security

- Protection
 - Sensitive information will be encrypted.
 - Every information entered will be validated.
 - Action, queries, request methods will be sanitized to protect information and not to cause malfunctioning.
 - All users interfaces do not interfere with other to cause data leak (only admin is able to access data from seller)
- Authorization and Authentication
 - Admin and sellers should pass the password authentication to access the system.
 - Authorization for every user type is well defined and well secured in BE using Spring Security. No user can access different endpoint without role authorization. Only client instance don not have authorization (can be accessed by every user).
 - Cookies will help to improve the security,

3.2.7 Data Management

- All data will be stored in a MYSQL database.
- The database will be an ER model.
- Will be tables for user, seller, admin, products, sells, orders, bills, categories.
- Each table contain necessary attributes and attribute types.

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- There will be 2 instances of database (one for production and one for development)
- User information will be temporarily stored in DB as long as the order is active.
- Other back up Services are needed to keep data if server goes broke.
- All server interaction are made using data JPA and Hibernate (repositories interface that provide all database functionalities)
- Back End class entities will directly represent the database entities and from there are settled validation and necessary triggers.

3.2.8 Standards Compliance

- The software will provide well following of every legislative laws related to the users data safety and will guarantee reliable service on catering, online ordering and selling field.
- Every bill generated should be in the state format bill and every bill information should be connected with the cash register approved from the state in order for the transaction to be legal.

3.2.9 Portability

Web application that can be accessed from every device that has internet connection.
Real time order sending and orders preparation notification.
System can be adopted for very business that provide online ordering.

3.2.10 Other Non-Functional Requirement

- Environmental

This web application is available for phones and laptops as well, based on who is using the application. For users, it will operate in all types of phones. For staff and admin, it will operate in laptops, because it provides larger dimensions, easier to work with.

- Scalability

This application is capable to perform as expected even for large amounts of data (orders) and users.

3.3 Domain Requirements

- BOO is a web application that provides three type of users, such as administrator, client and seller.
- All users are connected to the orders and products and all features are provided for those two keys entities.
- The main purpose is to digitalize the ordering process, to reduce queue at the cantina and to help cantina staff to provide more satisficing service for clients with less effort.

4. User Scenarios/ Use Cases

4.1. User Scenarios

No.	User Story Name	Description
1.	Client navigates for product	Client enters website without credentials and they navigate freely every product.
2.	Client selects product	Sets amount also description if product belong to cantina.
3.	Client makes order	Student reviews selected product and makes an order.
4.	Seller/Staff login	Seller enters his/her credentials to login into seller's page.
5.	Seller confirms the order	Seller makes order confirmation after product preparation and purchasing.
6.	Seller discards the order	Seller discards the orders if product is not purchased.
7.	Seller edits profile	Seller can change password, username and photo.
8.	Seller reviews bills.	Seller is able to check every bill purchased during his/her daily turn.
9.	Seller ends turn.	After closing the turn seller is log out. If is logged in again new turn will open.
10.	Administrator login	Admin enters his/ her credentials to login into admin's page
11.	Administrator edits credentials	Admin can change his/ her password and photo.

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12.	Administrator edits product	Admin changes product name, description, amount, price, photo.
13.	Administrator adds product	Admin adds product in the existing categories or add new categories for new product.
14.	Administrator removes product	Admin removes product in a given category and division.
15.	Administrator adds new Seller	Admin adds a new seller in the seller list.
16.	Administrator removes Seller	Admin deletes an existing seller by the seller list.
17.	Administrator edits Seller	Admin updates username, password and profile photo.
18.	Administrator finds bills	Admin makes custom date query to find bills in a selected data range.
19.	Administrator discards bills	Removes a bill from entire bills list.
20.	Administrator reviews inventory	Admin makes query to find product and amount sold during a given period, category.

4.2. User Scenarios

- **Scenario 1: Client navigates for product**
 - Client enters website.
 - Client selects division.
 - Client selects category.
 - Client selects product.
 - Product added to bag.

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- Client re-selects other product.
- **Scenario 2: Client selects product**
 - Client selects the product.
 - Client adds amount.
 - Client can add description if product belong to cantina.
 - Client can't add description to product that belong to cafeteria.
- **Scenario 3: Client makes order**
 - Client selects products.
 - If product is form cantina client can add description (how he/ she wants product to be prepared).
 - Selects other products.
 - Client reviews the bag.
 - Confirms order.
 - Enter the contact number.
 - Order is sent after entering the contact number.
- **Scenario 4: Seller/Staff login**
 - Seller enters website.
 - Seller adds username and password.
 - Seller continues to seller page if credentials are correct.
 - Seller re-enters credentials if they are not correct.
- **Scenario 5: Seller confirms order**
 - After the order is ready seller presses the notify button.
 - System generates a message that notify the client that orders is ready.
 - If order is purchased by the client seller presses the confirm button.

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- After confirmation bill is created.
- User credentials will be discarded from database.

- **Scenario 6: Seller discards the order**

- After the order is ready seller presses the notify button.
- System generates a message that notify the client that orders is ready.
- If order is not purchased by the client seller presses the discard button.
- After discard order is removed from orders table
- User credentials will be discarded from database.

- **Scenario 7: Seller edits profile**

- From the main page seller clicks profile link
- Seller changes profile photo (if he/ her wants)
- Seller changes username (if he/ her wants)
- Seller changes password (if he/ her wants)
- After changing the password seller enters confirmation password
- Seller save changes if passwords match
- Seller can turn back without making the changes

- **Scenario 8: Seller reviews bills**

- Seller enters bill page
- Seller reviews purchased bill during turn
- Seller selects any bill he/ her wants
- Seller has a detailed view of selected bill

- **Scenario 9: Seller ends turn.**

- Seller enter bill page
- Seller press Close day button
- All records of the bills purchased by seller during this day will not be shown any more
- Seller is log out automatically
- If seller re-enter, new working day will be recorded

- **Scenario 10: Administrator login**

- Admin enters website.
- Admin adds username and password.
- Admin continues to admin main page if credentials are correct.
- Admin re-enters credentials if they are not correct.

- **Scenario 11: Administrator edits credentials**

- From the main page admin edits profile link
- Admin changes profile photo (if he/ her wants)
- Admin changes username (if he/ her wants)
- Admin changes password (if he/ her wants)
- After changing the password admin enters confirmation password
- Admin save changes if passwords match
- Admin can turn back without making the changes

- **Scenario 12: Administrator edits product**

- Admin enters product page

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- Clicks product image
 - Product edit page opens.
 - Admin updates price, name, amount, description.
 - Changes are saved if data entered are valid
-
- **Scenario 13: Administrator adds product:**
 - Admin enters product page
 - Clicks Plus Icon
 - Edit page with empty credentials opens
 - Admin enters, photo, name, description, amount, price
 - Product is saved only if entered data are valid
-
- **Scenario 14: Administrator removes product:**
 - Admin enters product page
 - Clicks product image
 - Product edit page opens.
 - Admin clicks remove product button
 - Product is removed entirely from database
-
- **Scenario 15: Administrator adds new Seller:**
 - Admin enters seller's page
 - Admin clicks plus icon
 - Seller edit page open with empty credentials
 - Admin enters photo, username, password
 - Password confirmation is needed to save the seller

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- Seller is added successfully if credentials are valid

- **Scenario 16: Administrator removes Seller:**

- Admin enters seller's page
- Admin clicks seller image
- Seller edit page open with clicked seller's credentials
- Admin click remove button
- Seller is removed entirely from database

- **Scenario 17: Administrator edits Seller**

- Admin enters seller's page
- Admin clicks seller image
- Seller edit page open with clicked seller's credentials
- Admin can change photo, username, password
- Password confirmation is needed to save the seller's changes
- Seller is saved successfully if credentials are valid

- **Scenario 18: Administrator finds bills**

- Admin enters bills page
- Admin adds From date
- Admin adds To date

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- Bills purchased during this date range are shown in table
- If inly from is entered are shown bills from that day till now
- If only to is entered bills of that entered day are shown only
- If no date is entered only today purchased bills are shown

- **Scenario 19: Administrator discards bills:**

- Admin enters bill page
- Use find option to search form different bills
- Admin selects a particular bill
- A detailed view of bill is opened
- Admin clicks discard button
- Bill is removed successfully

- **Scenario 20: Administrator reviews inventory:**

- Admin enter inventory page
- If any of find options is not selected, in inventory table are shown all product and amount sold today
- Admin can specify category to search product
- Admin enters date range from-to a particular day
- If inly from is entered are shown products from that day till now
- If only to is entered products of that entered day are shown only
- Admin use also find button to see sold products and amount

4.3. Use Case

UC_1.1	Client navigates for products
Summary	Client enters website and selects wanted product
Actor	Client (Epoka Students/ Staff and Guests)
Description	First client needs to enter website and then select division and chose product according to provided categories for each division.
Precondition	Website URL, provided using QR code or website name.
Alternatives	No alternative option
Post Condition	Product are added to bag.

UC_1.2	Client makes order
Summary	Client selects preferred product that are added to bag and from there can confirm the order.
Actor	Client (Epoka Students/ Staff and Guests)
Description	First client selects product. For each product enters amount and if product belong to cantina can add a custom description. Add product to bag. Confirms order by entering contact number first. Client will be notified

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	when order is ready.
Precondition	Contact number is required to confirm order
Alternatives	No alternative option
Post Condition	Seller receives a new order to prepare

UC_2.1	Seller Login
Summary	Seller enters website by using personal account.
Actor	Seller/Staff
Description	Seller enters username and password. If credentials are correct seller logs into website, otherwise should provide correct credentials.
Precondition	Seller should have an account registered by admin.
Alternatives	No alternative option
Post Condition	Seller enters order page

UC_2.2	Seller confirms order
Summary	Seller receives the client purchase and confirm the order
Actor	Seller/Staff
Description	Client makes an order. Seller receives the order. Seller prepare the order and notify the client that order is ready. Client gets the notification from a SMS message and then purchases the order. Seller confirms order. Bill is created and client is removed from database.
Precondition	Client makes an order

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Alternatives	No alternative option
Post Condition	Bill is created.

UC_2.3	Seller discards order
Summary	Seller does not receive the client purchase and discard the order.
Actor	Seller/Staff
Description	Client makes an order. Seller receives the order. Seller prepare the order and notify the client that order is ready. Client gets the notification from a SMS message but does not purchase the order. Seller discards order and order is cleaned and client removed from database.
Precondition	Client makes an order
Alternatives	No alternative option
Post Condition	Bill is created.

UC_2.4	Seller edits profile
Summary	Seller changes username, password and profile photo.
Actor	Seller/Staff
Description	Seller enters his/her edit page. His/ Her can edit

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	username, password and profile photo. New inserted data are saved only if validation is passed.
Precondition	Seller account
Alternatives	Seller decides not to save changes.
Post Condition	Seller should login again with new credentials.

UC_2.5	Seller ends turn
Summary	Seller confirms finish of the turn.
Actor	Seller/Staff
Description	Seller has the right to close turn by his/ her own. After turns finish, all record of bills purchased during this turn are cleaned.
Precondition	A purchased order must be present.
Alternatives	Turn is finished automatically after 8 hours if seller does not close it himself.
Post Condition	Seller is logged out and all bill records purchased today are erased.

UC_3.1	Admin Login
Summary	Admin enters website by using personal account.
Actor	Admin/ Administrator
Description	Admin enters username and password. If credentials are correct admin logs into website, otherwise should

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	provide correct credentials.
Precondition	
Alternatives	No alternative option.
Post Condition	Admin enters products page

UC_3.2	Admin edits profile
Summary	Admin changes username, password and profile photo.
Actor	Admin/ Administrator
Description	Admin enters seller edit page. He/she can edit username, password and profile photo. New inserted data will be saved only if validation is passed.
Precondition	
Alternatives	Admin decides not to save changes
Post Condition	Admin should login again with new credentials

UC_3.3	Admin edits product
Summary	Admin changes product amount, price, name, image and description.
Actor	Admin/ Administrator
Description	Admin selects a product and can change amount, price, name, image and description. Product change

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	are saved only if validation is okay.
Precondition	Products should be registered
Alternatives	Admin decides not to save changes
Post Condition	Products page is reloaded with updated product

UC_3.4	Admin adds product
Summary	Admin adds product according to division and category.
Actor	Admin/ Administrator
Description	Admin decides division and category. Admin for adding a new product should put amount, price, name, image and description. Product is added only if validation is okay.
Precondition	Category should be registered.
Alternatives	No alternative option.
Post Condition	Products page is reloaded with added product.

UC_3.5	Admin adds seller
Summary	Admin adds new seller with username, password and profile photo.
Actor	Admin/ Administrator
Description	Admin enters username, password, and photo. Seller is

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	saved only if validation is correct.
Precondition	
Alternatives	No alternative option
Post Condition	Sellers's page is reloaded with added seller

UC_3.6	Admin find bills
Summary	Admin can enter from and to date
Actor	Admin/ Administrator
Description	Admin can enter form and to date. Bills between a selected date range are opened. If only from is entered, bills are shown between from date until current date. If only to is entered, only bills created into to date are shown. If any is not completed bills purchased today are shown.
Precondition	Bill should be created
Alternatives	No alternative option
Post Condition	Bills table is shown

UC_3.7	Admin reviews inventory
Summary	Admin check inventory by making custom query
Actor	Admin/ Administrator
Description	Admin finds sold products according to date, in a

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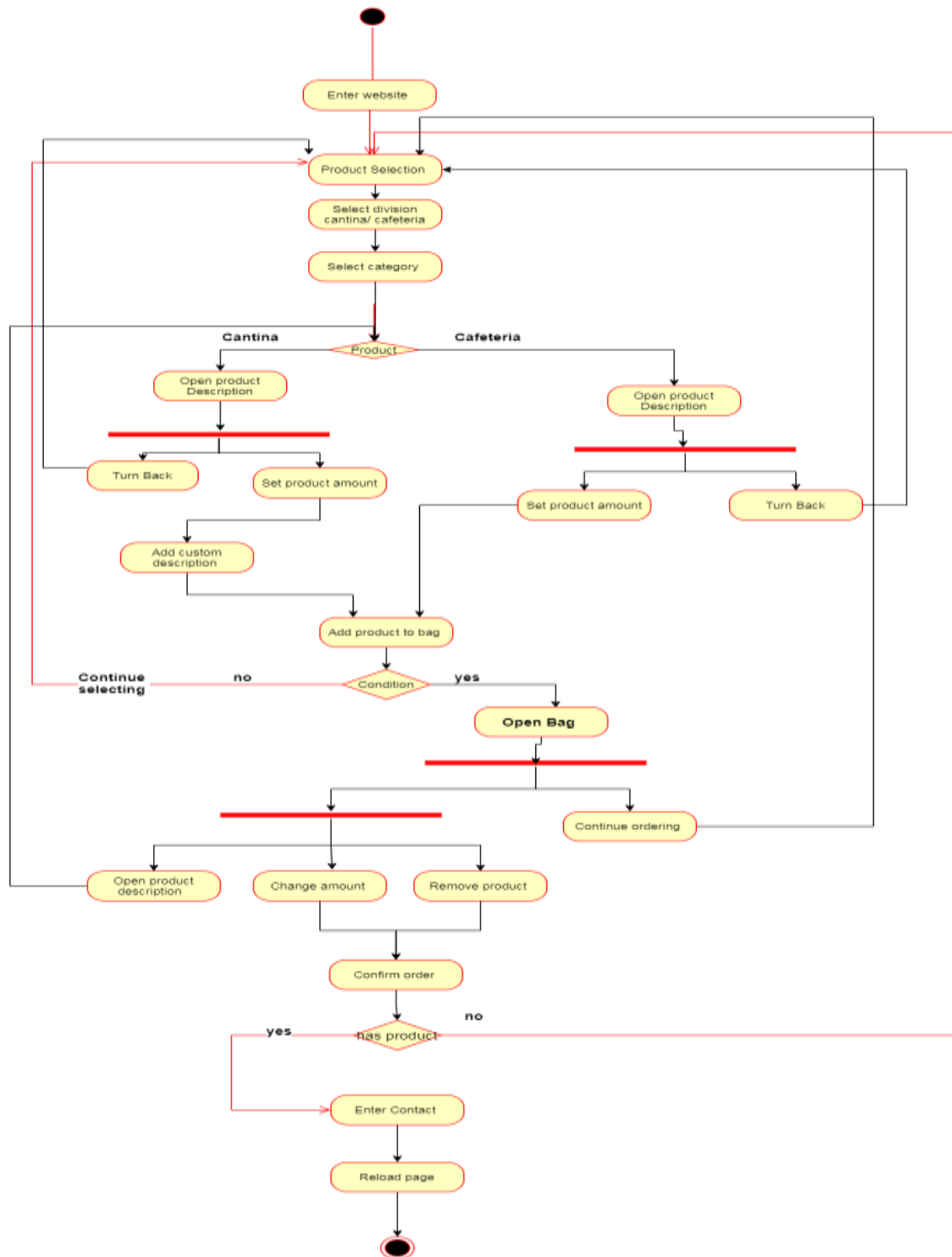
	specific date rang with from and to date. Finds according to category and name.
Precondition	Products should have been purchased
Alternatives	No alternative option
Post Condition	Inventory table is shown

5. Diagrams

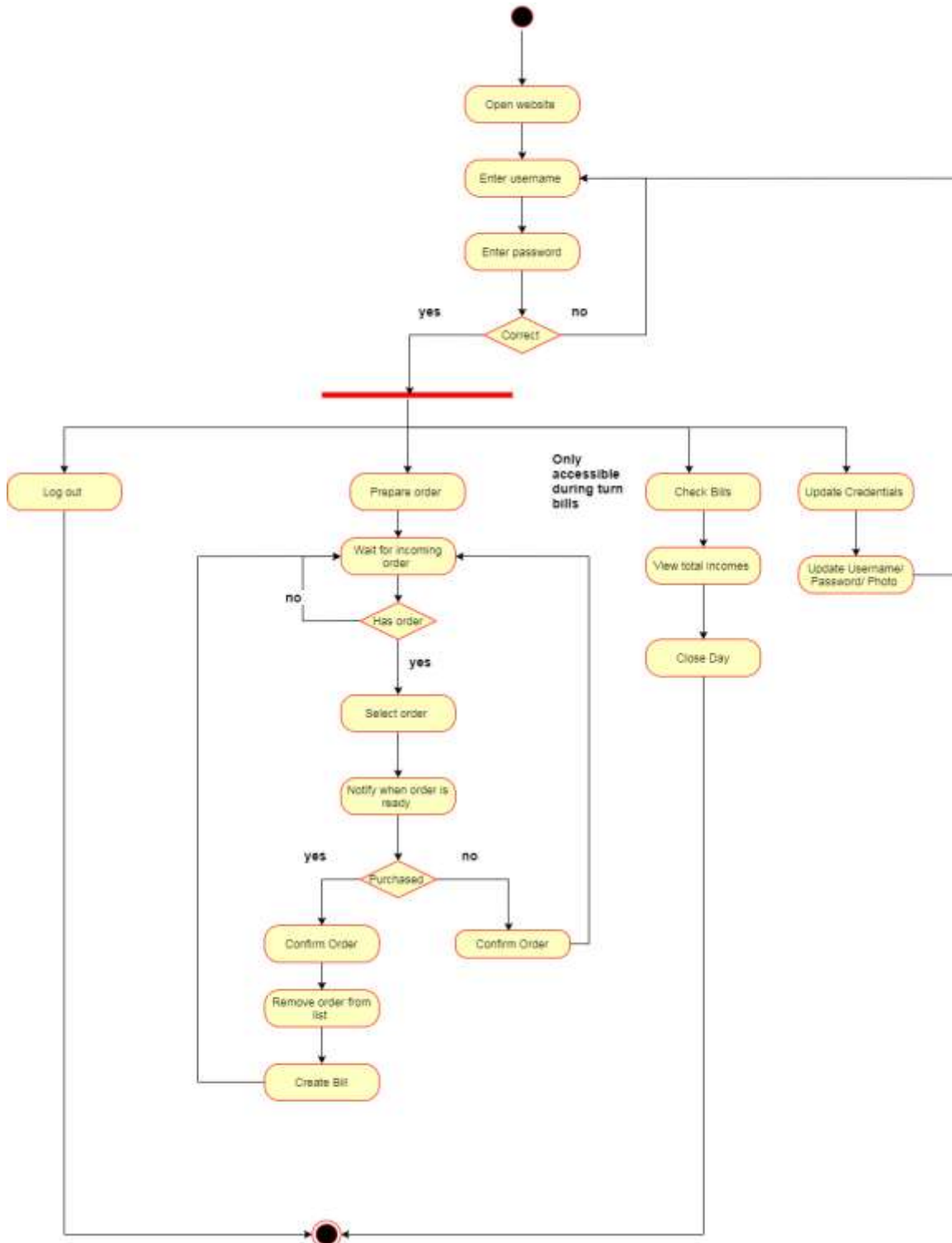
5.1. Activity Diagrams

Client Activity Diagram

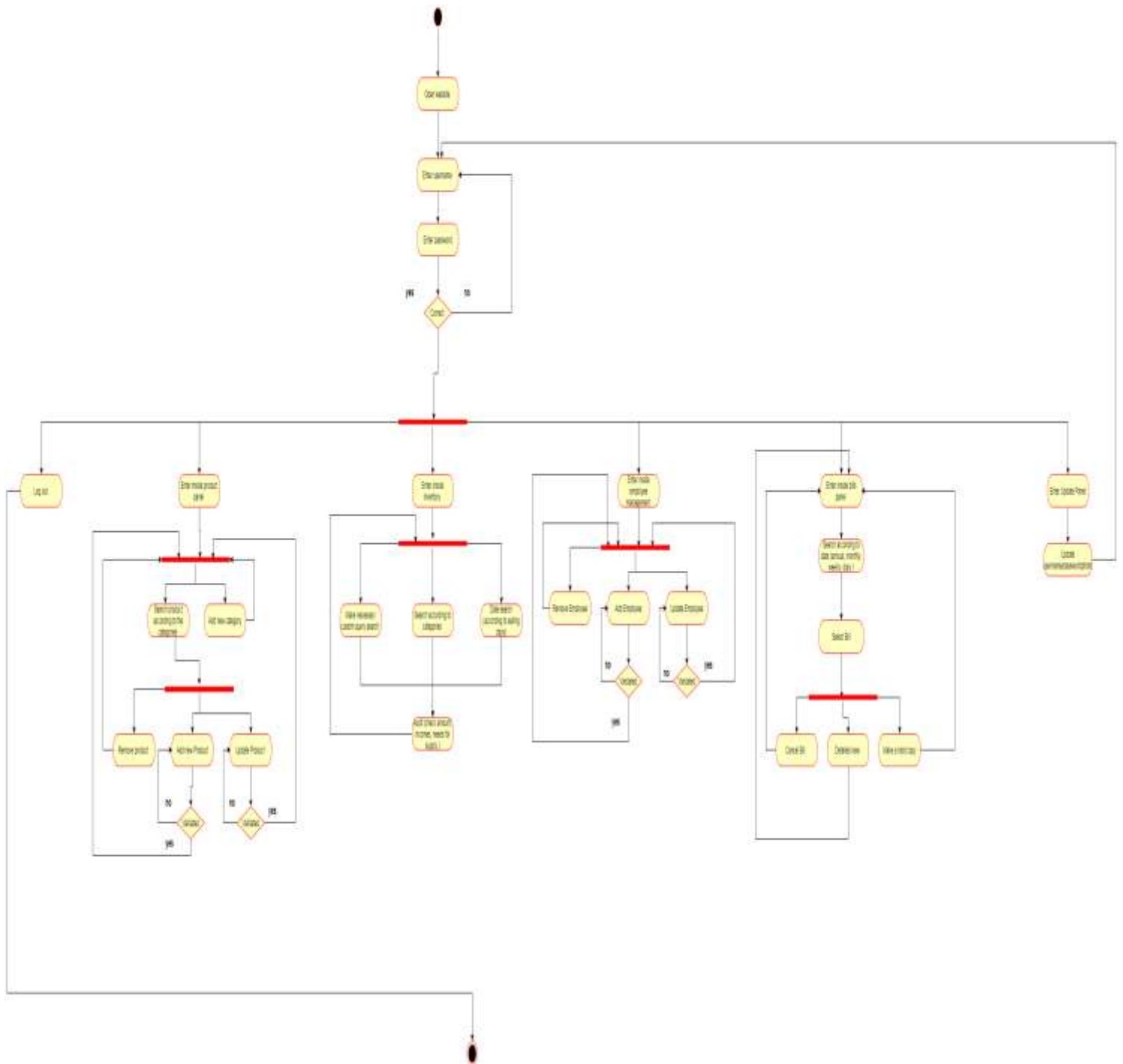
[BOO] Requirements Specification



Seller Activity Diagram

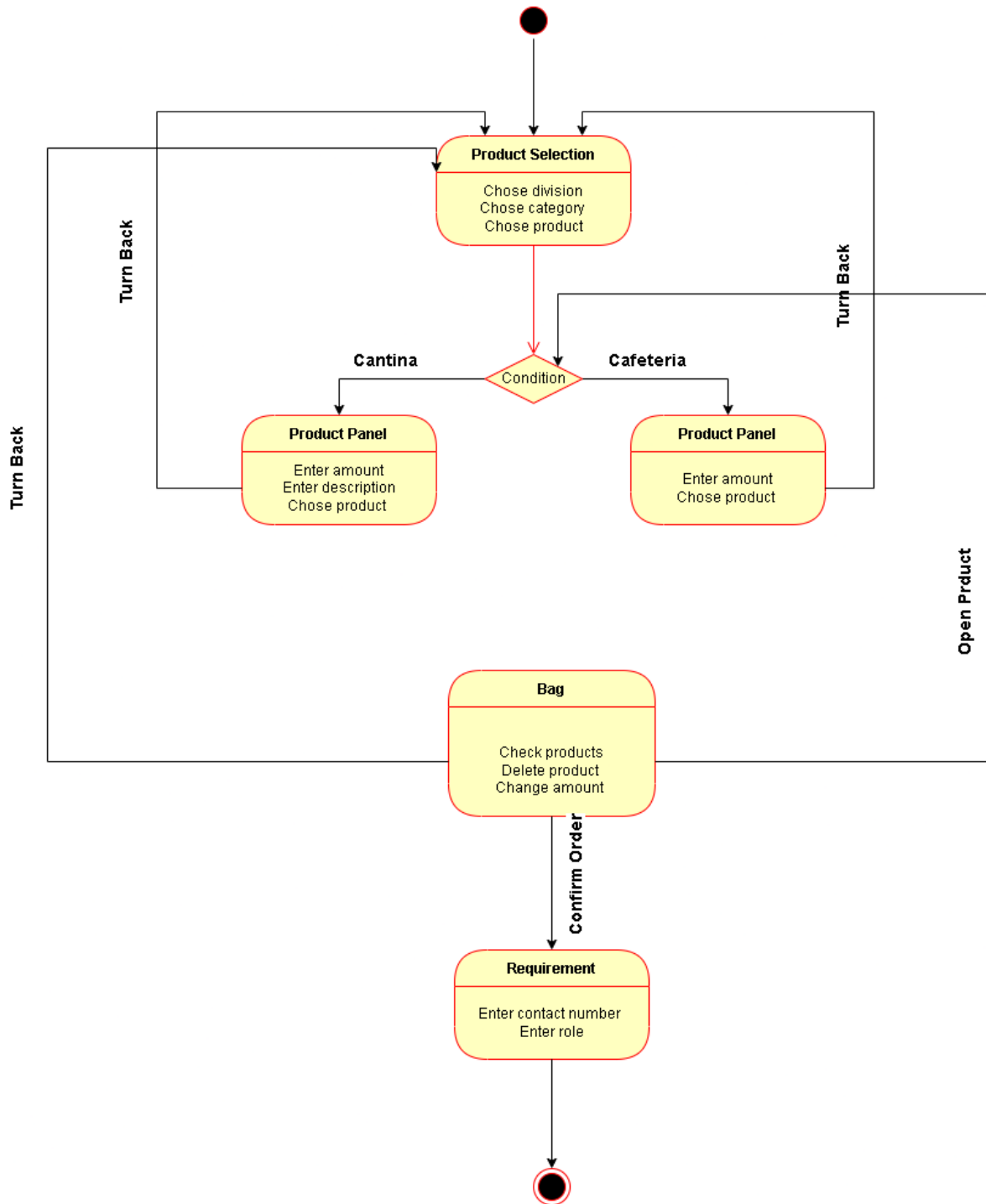


Admin Activity Diagram

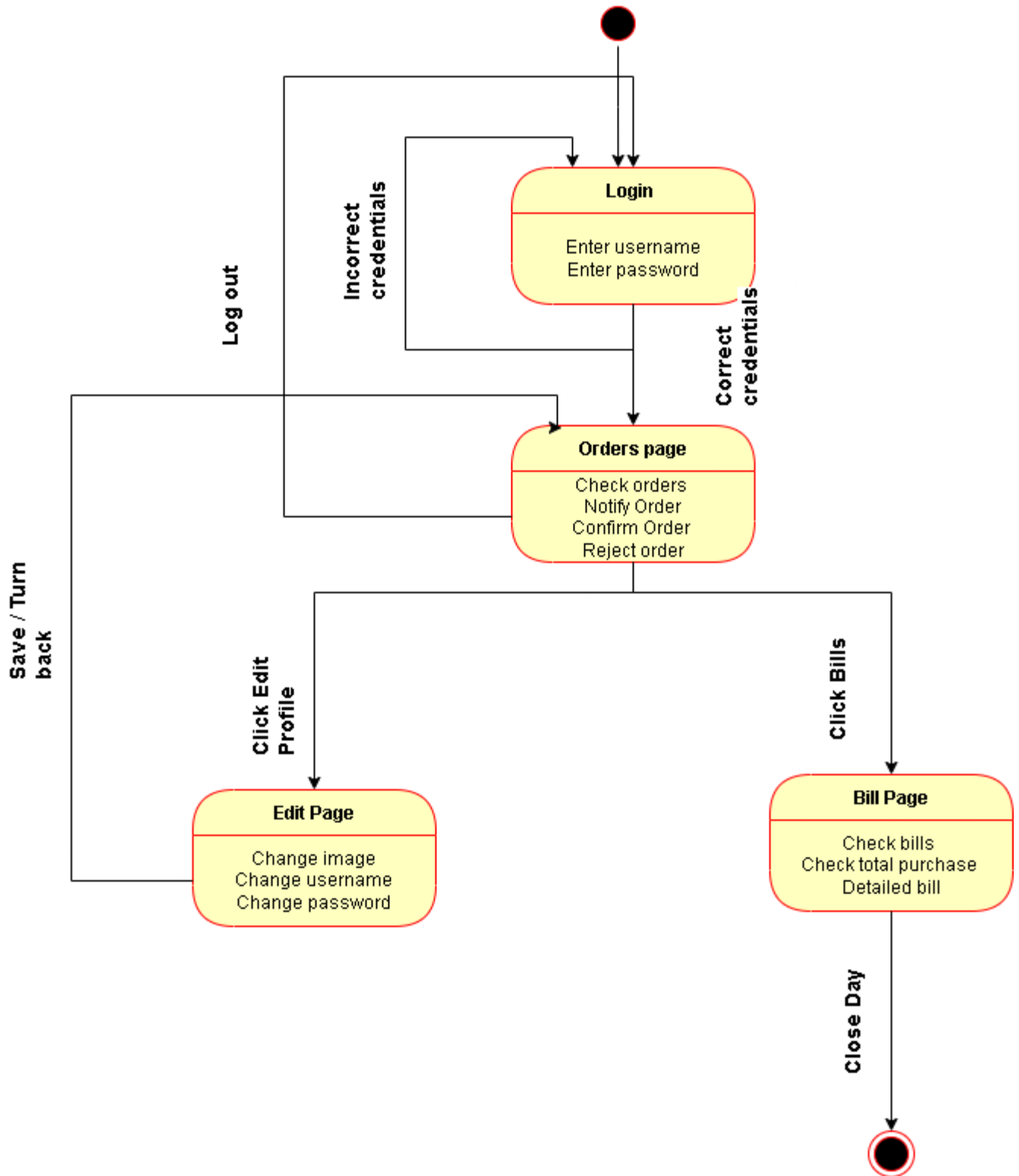


5.2. State Diagrams

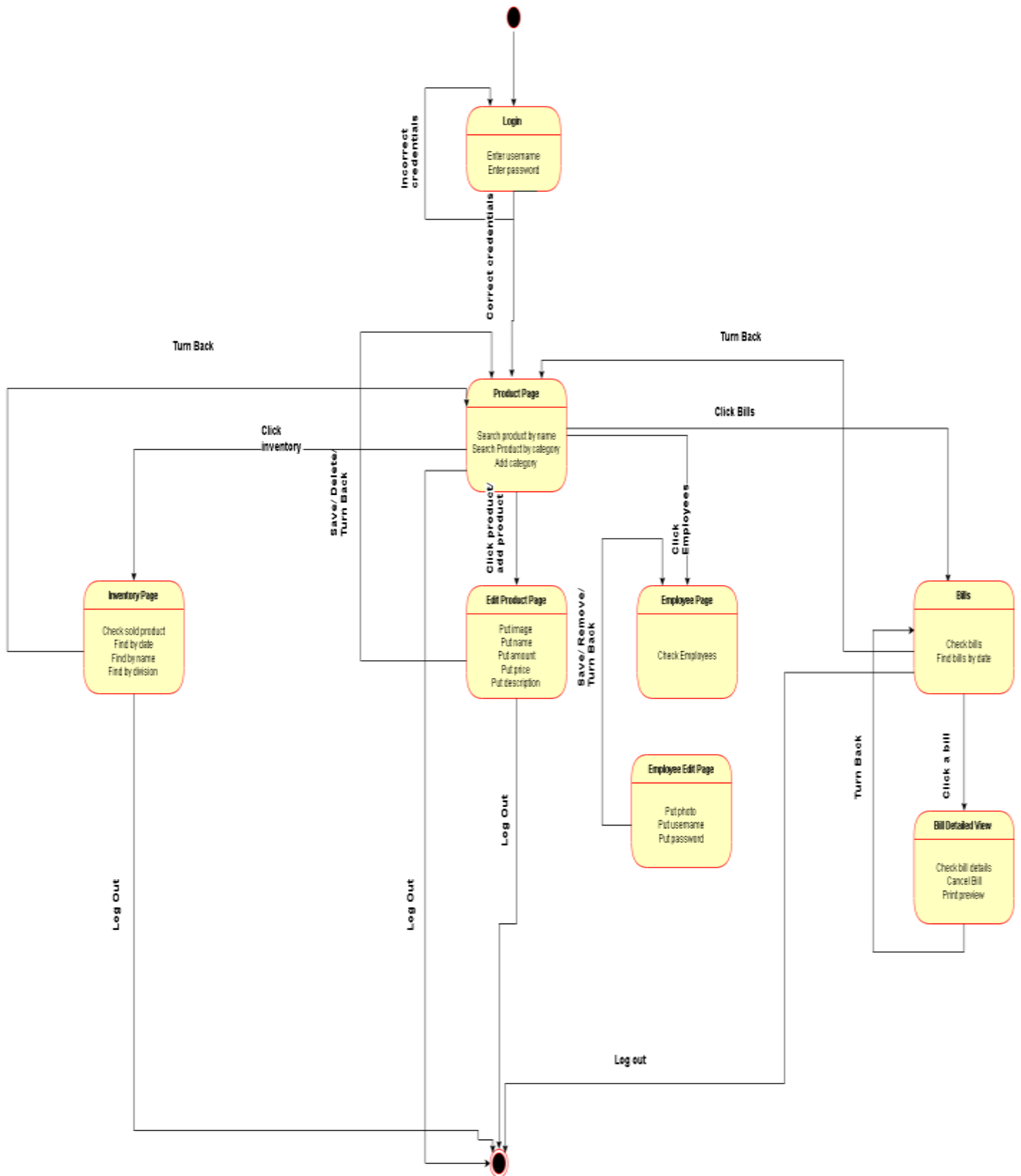
Client State Diagram



Seller State Diagram

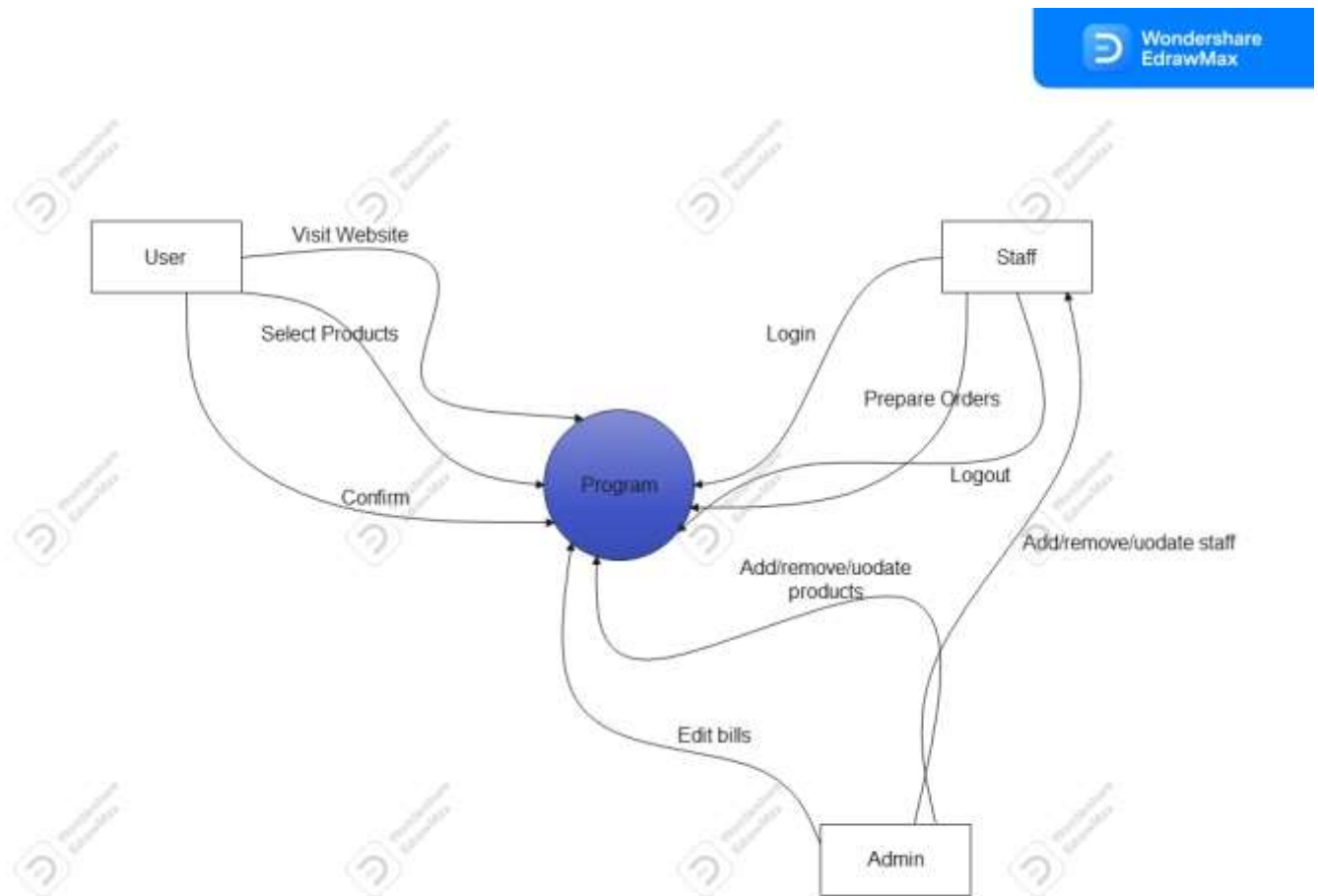


Admin State Diagram

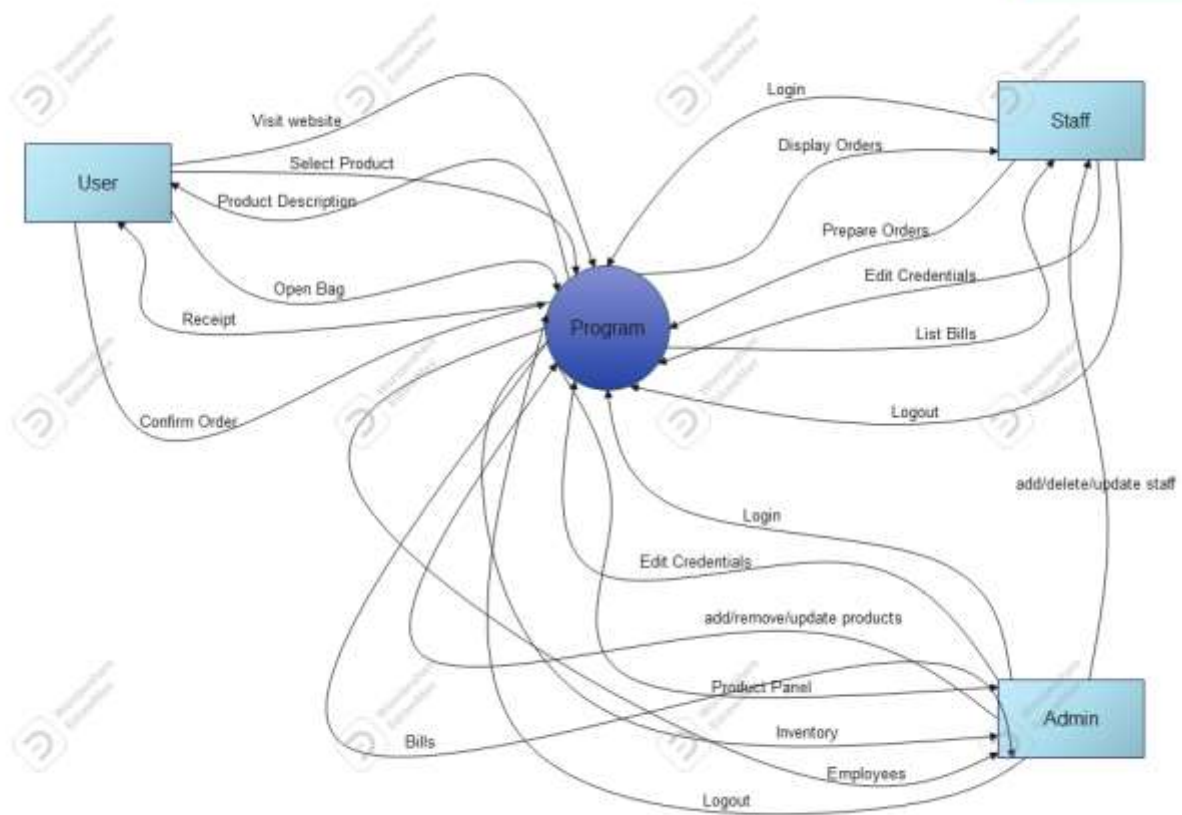


5.3. Data Flow Diagrams

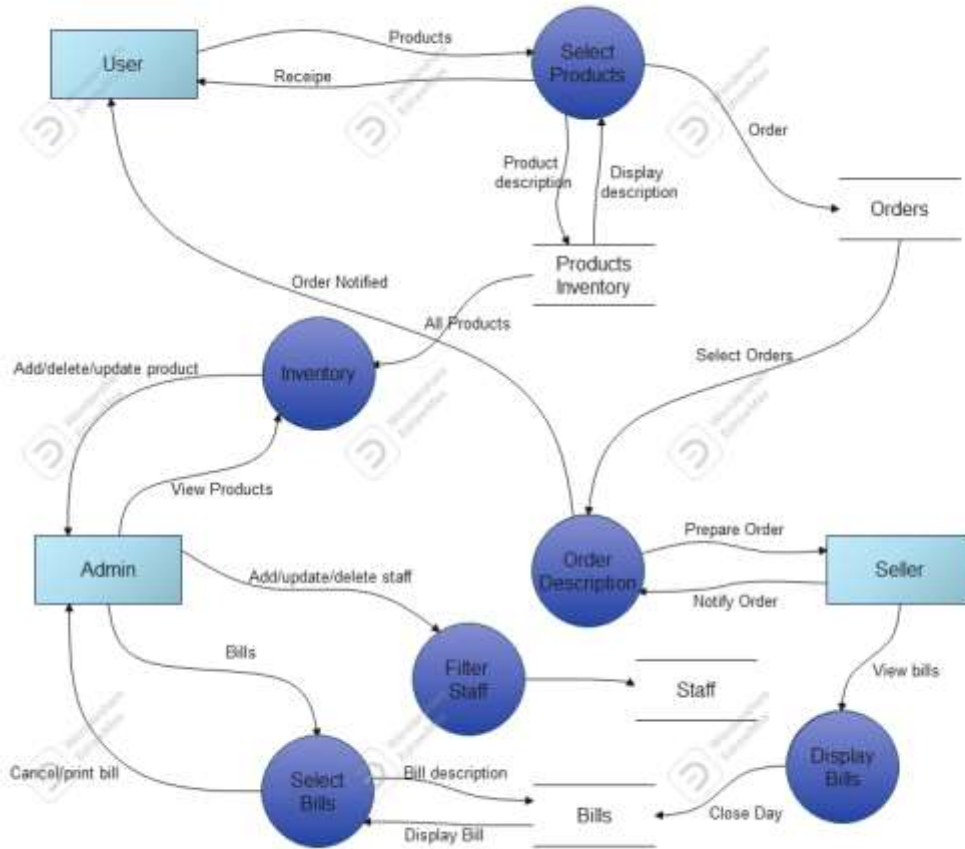
DFD Level 0



DFD Level 1

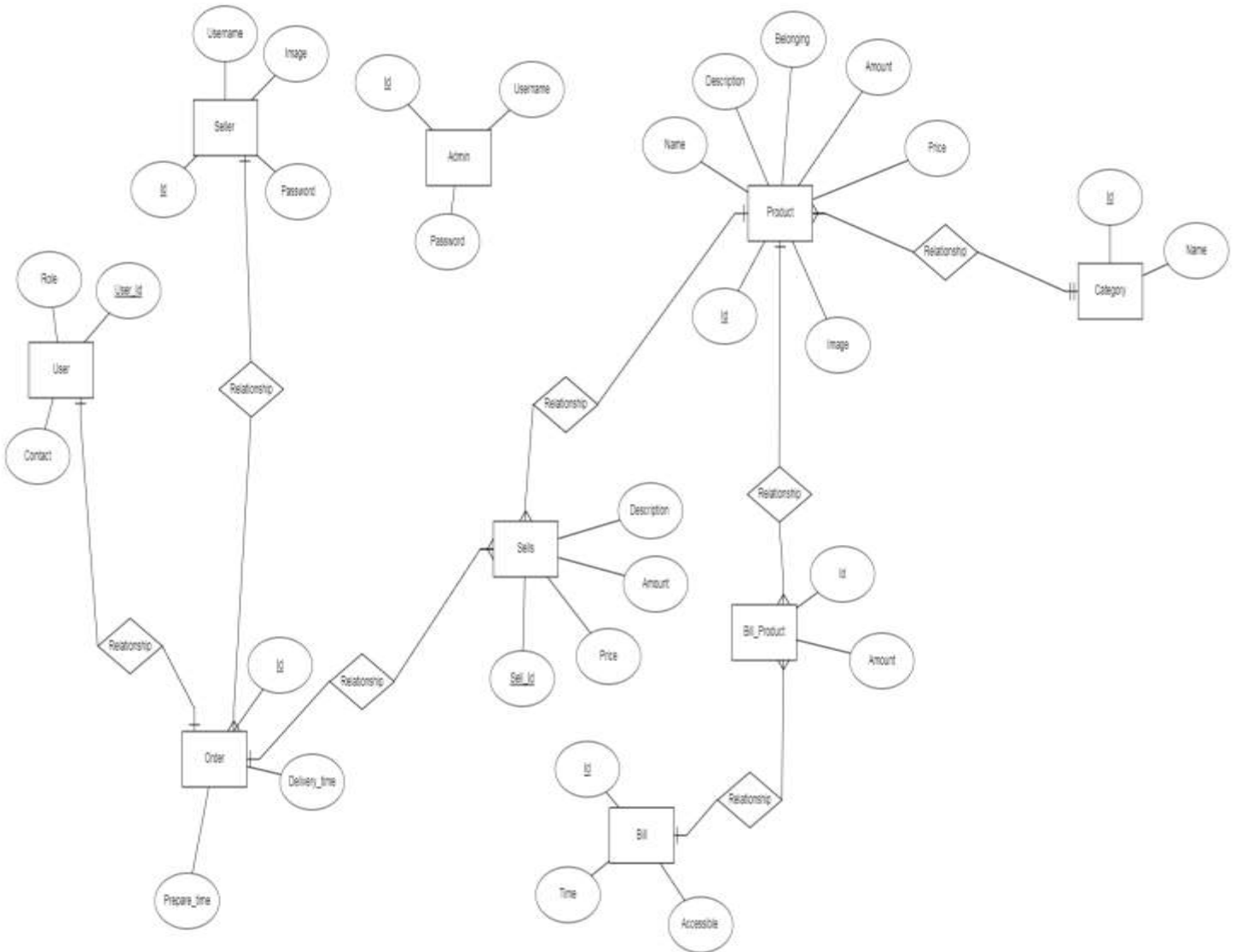


DFD Level 2

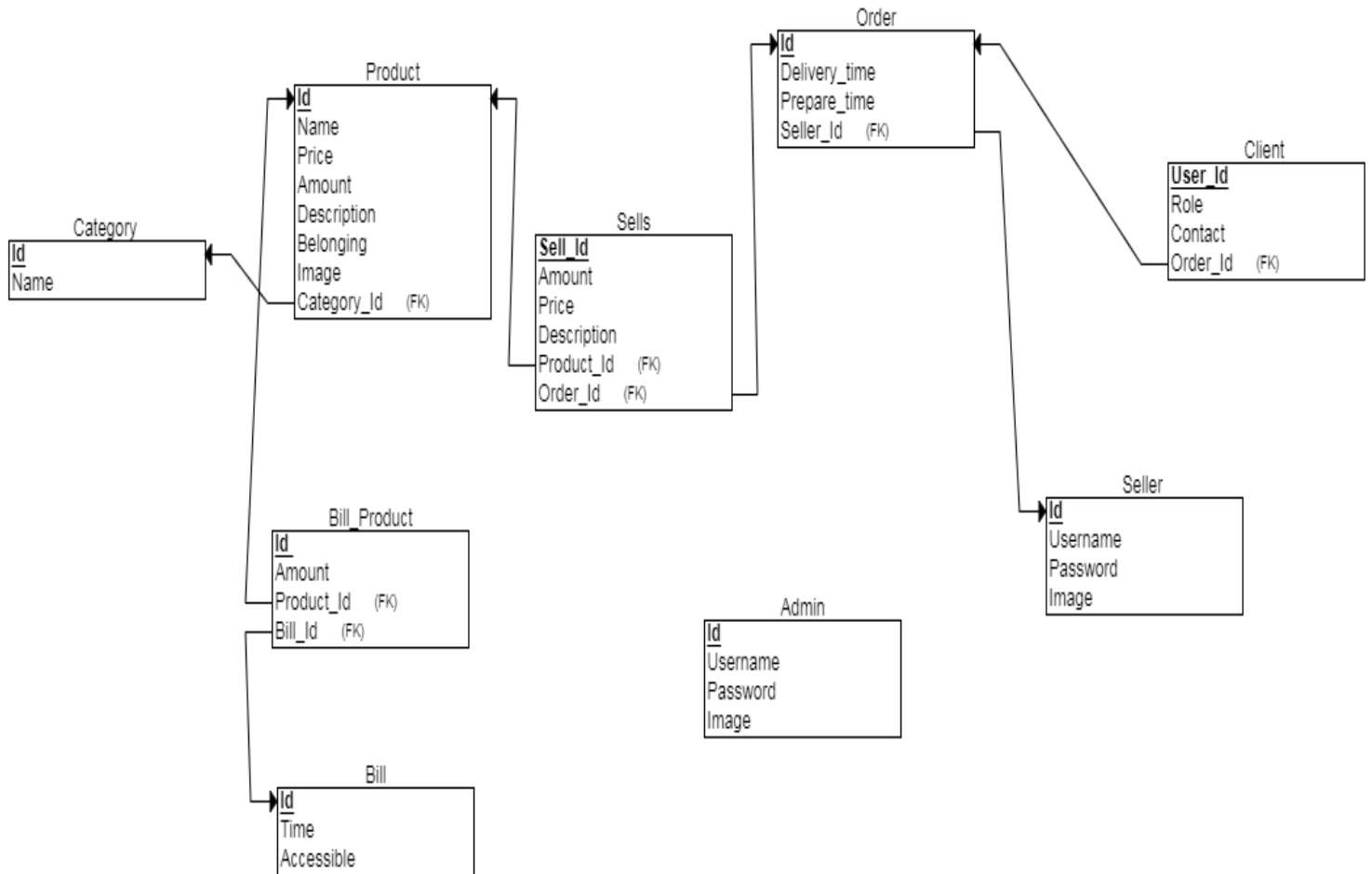


5.4. Database Diagrams

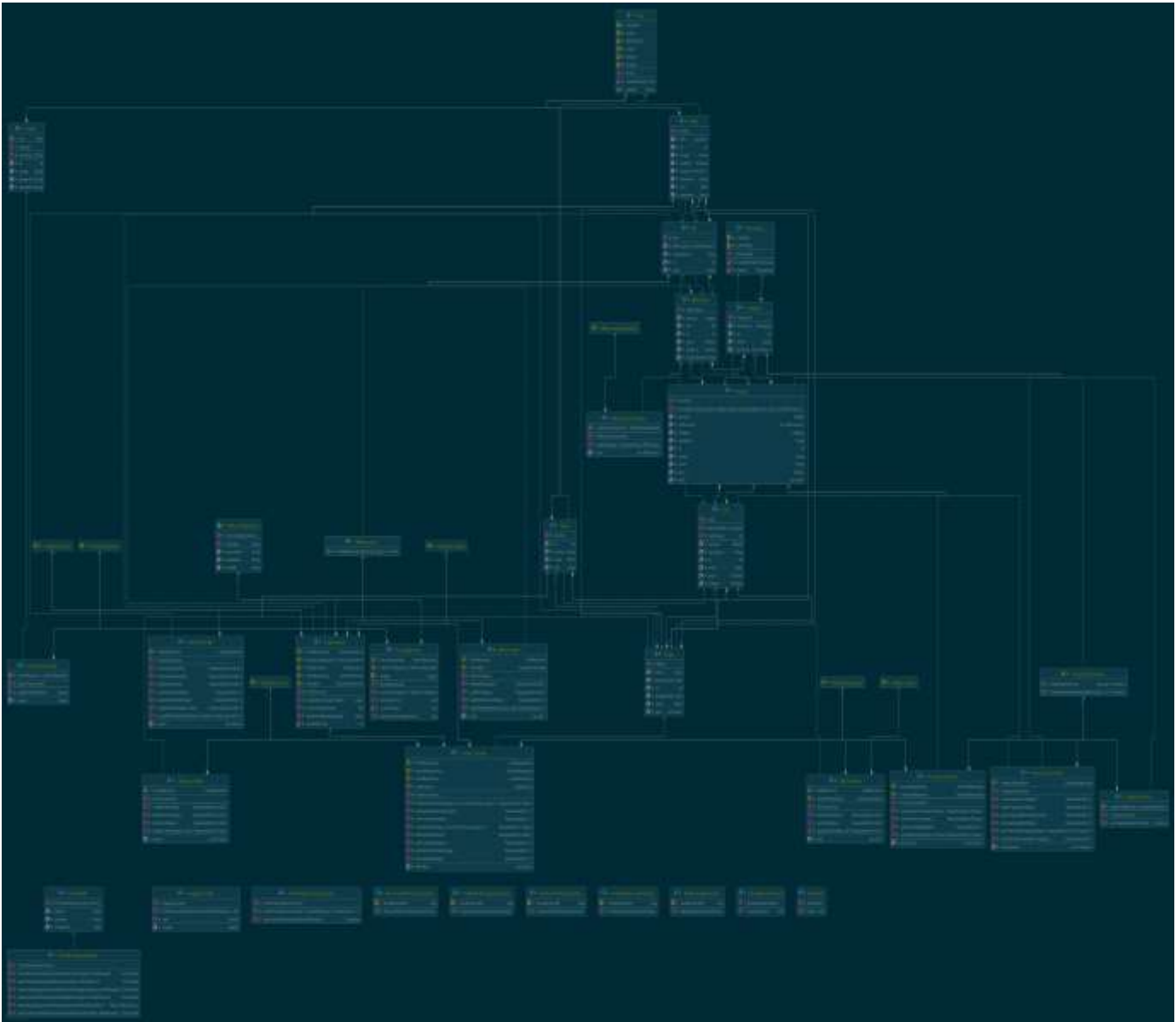
ERD



Relational schema

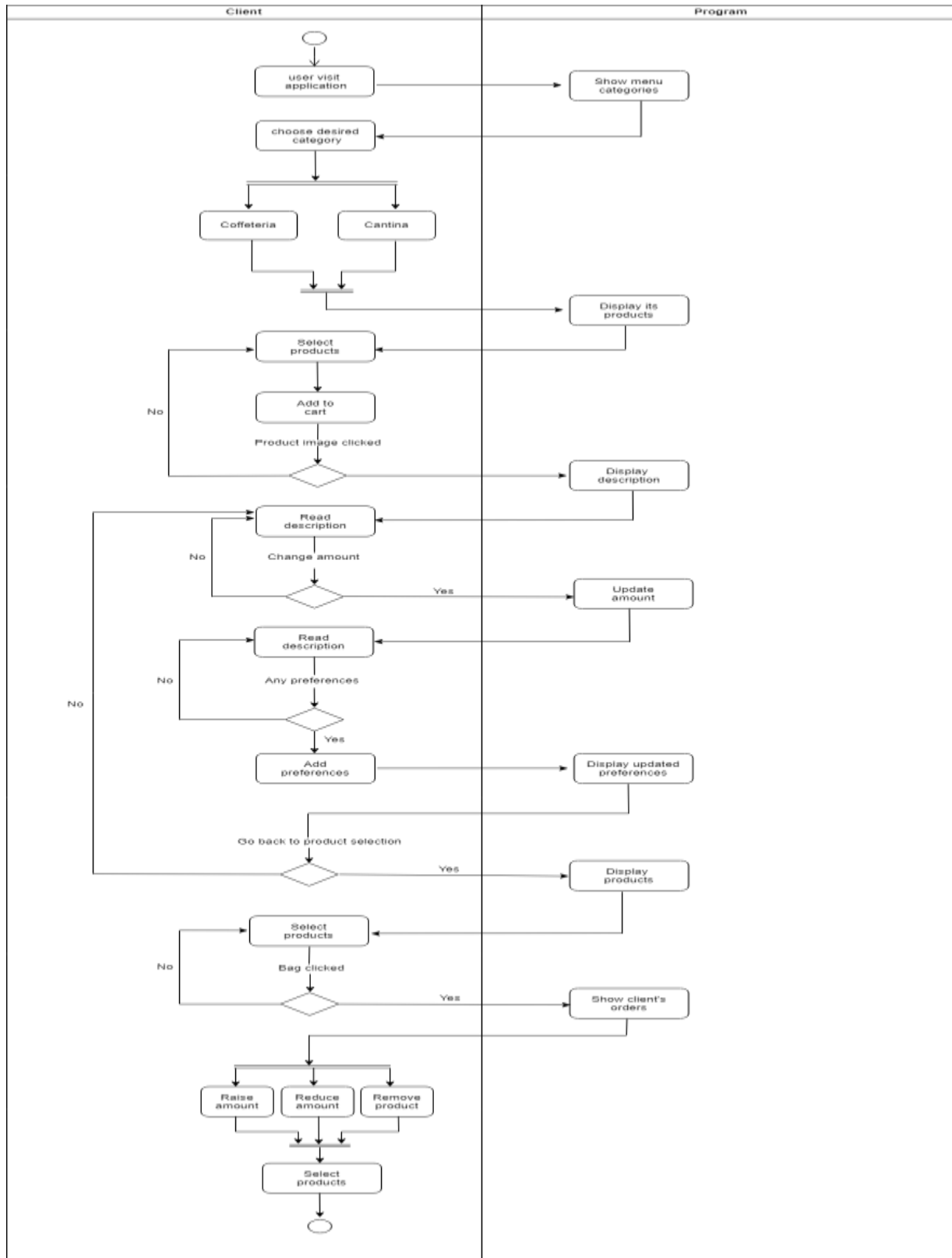


5.5. Class Diagrams

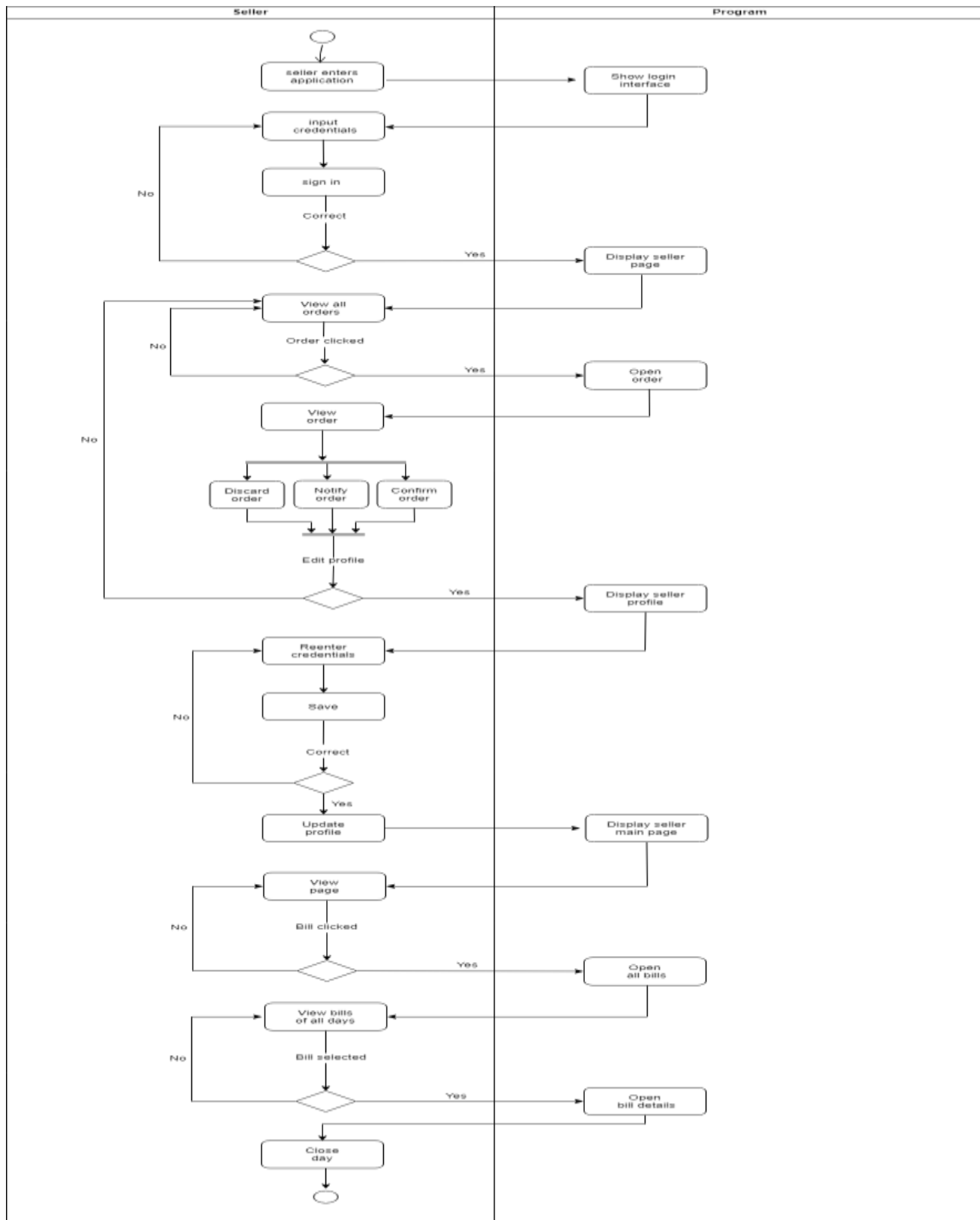


5.6. Swimlane Diagrams

Client

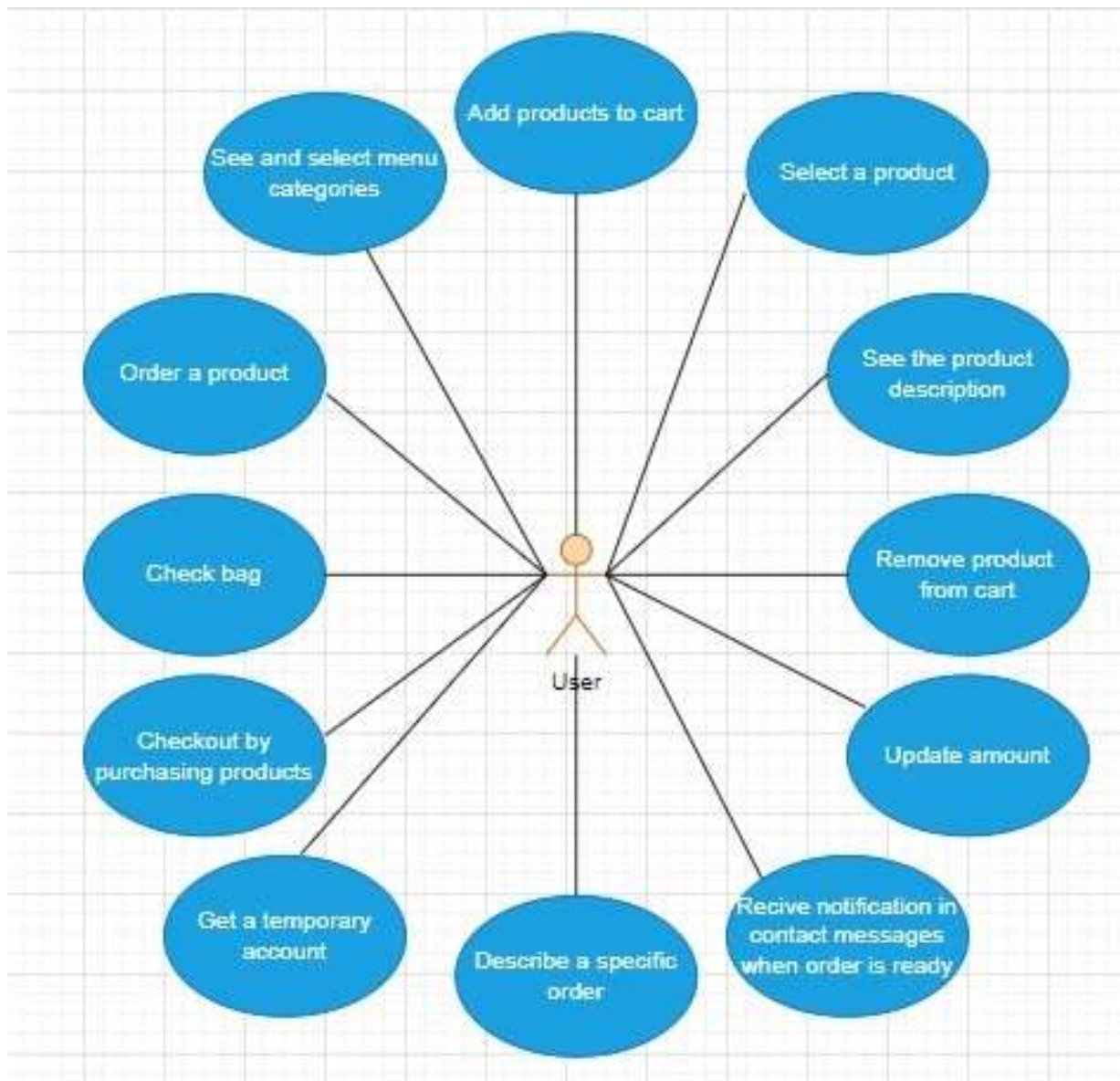


Seller



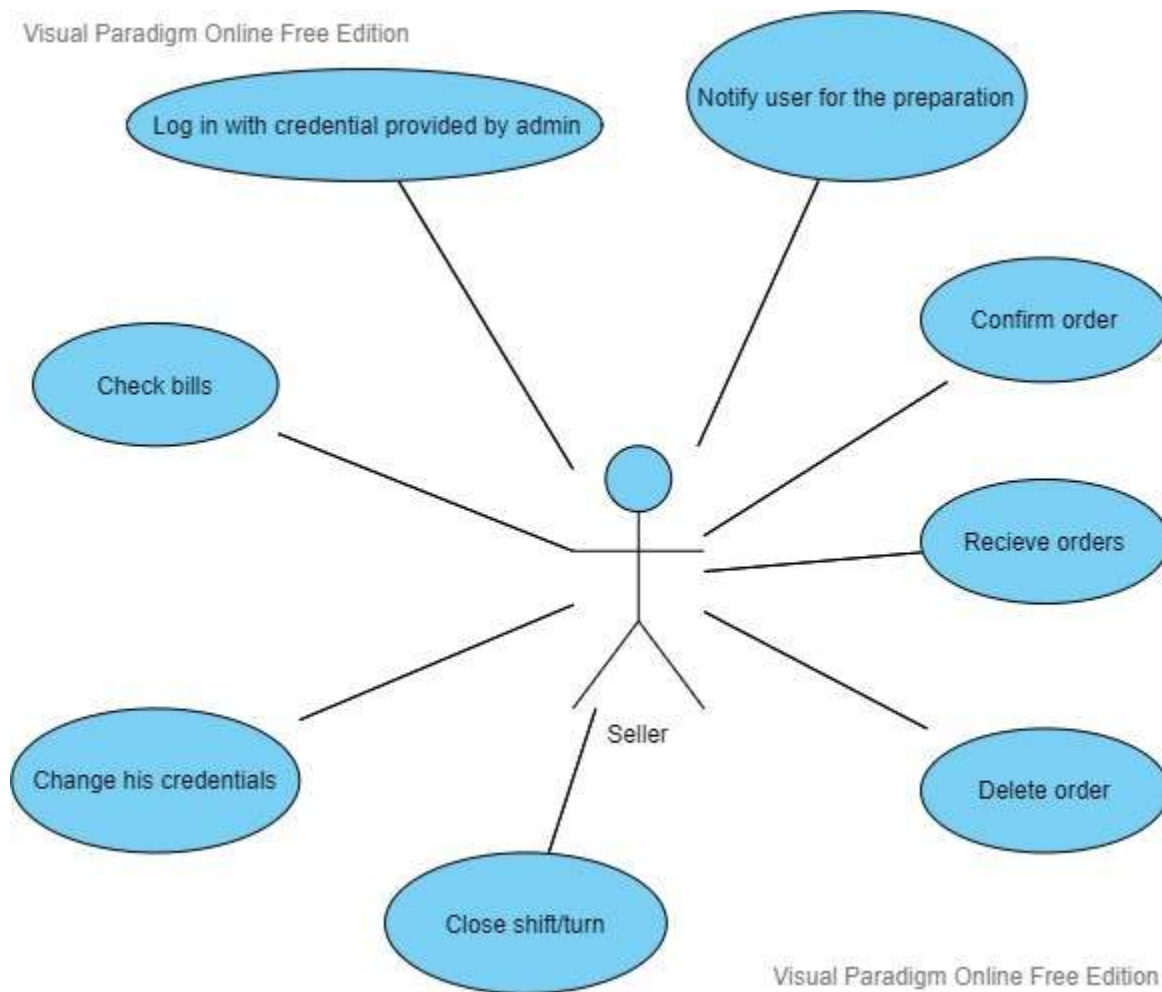
5.7. Use Cases

Client

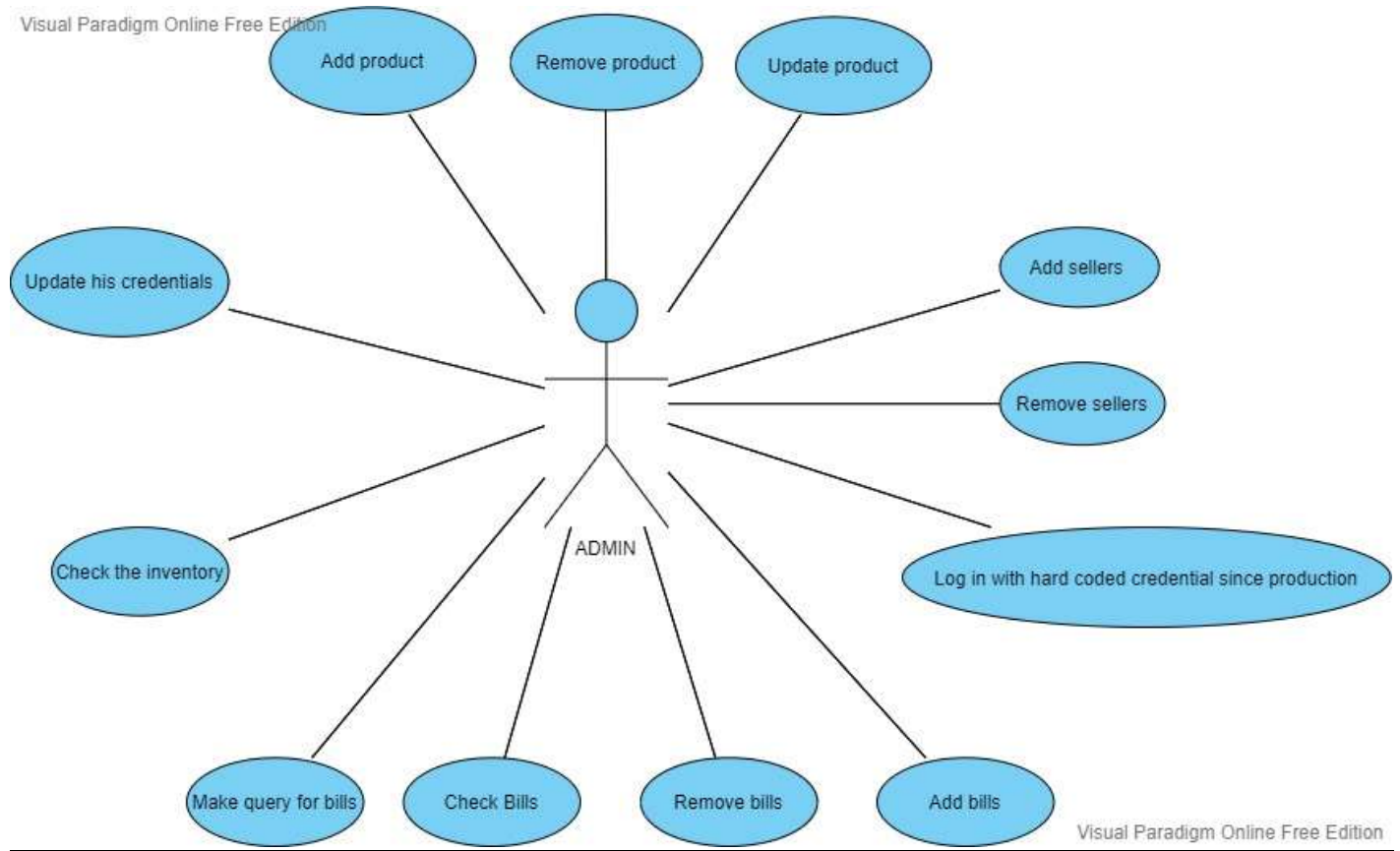


Seller

Visual Paradigm Online Free Edition

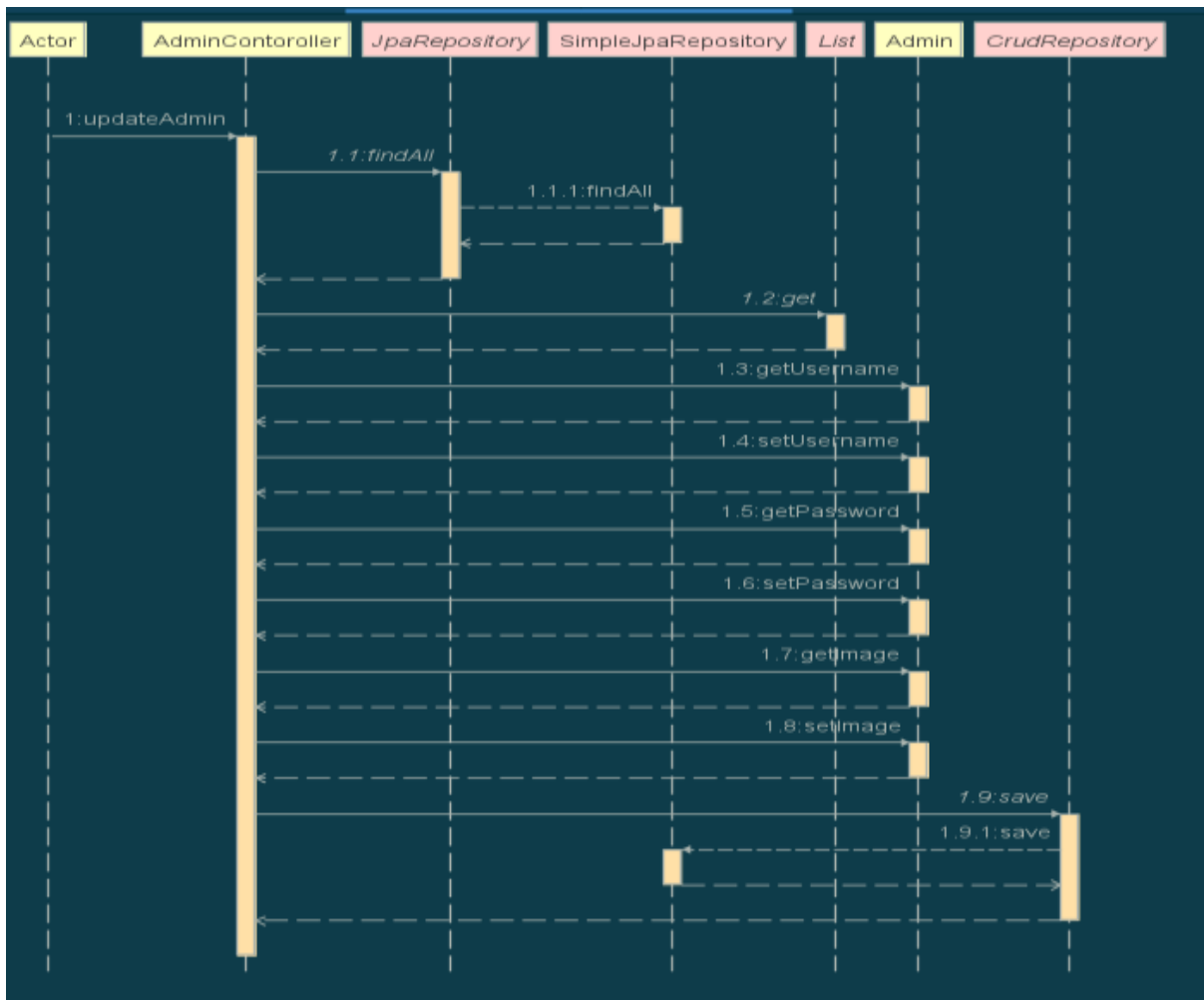
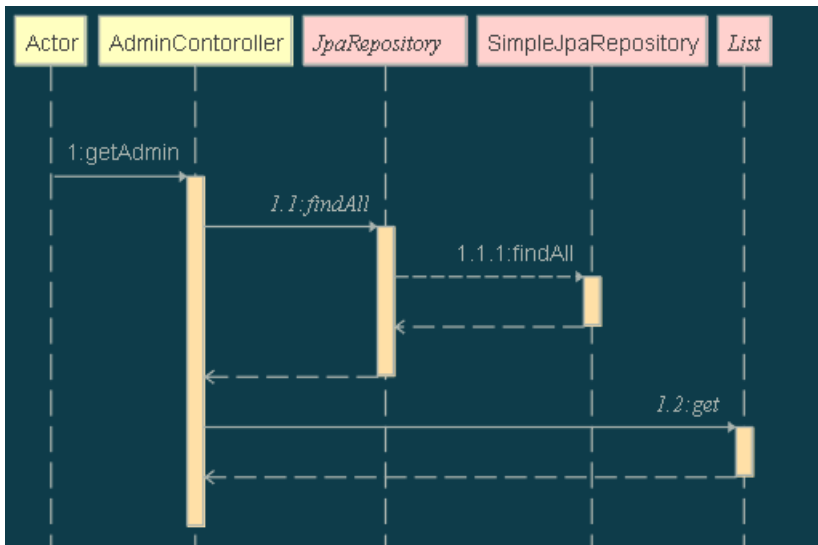


Admin

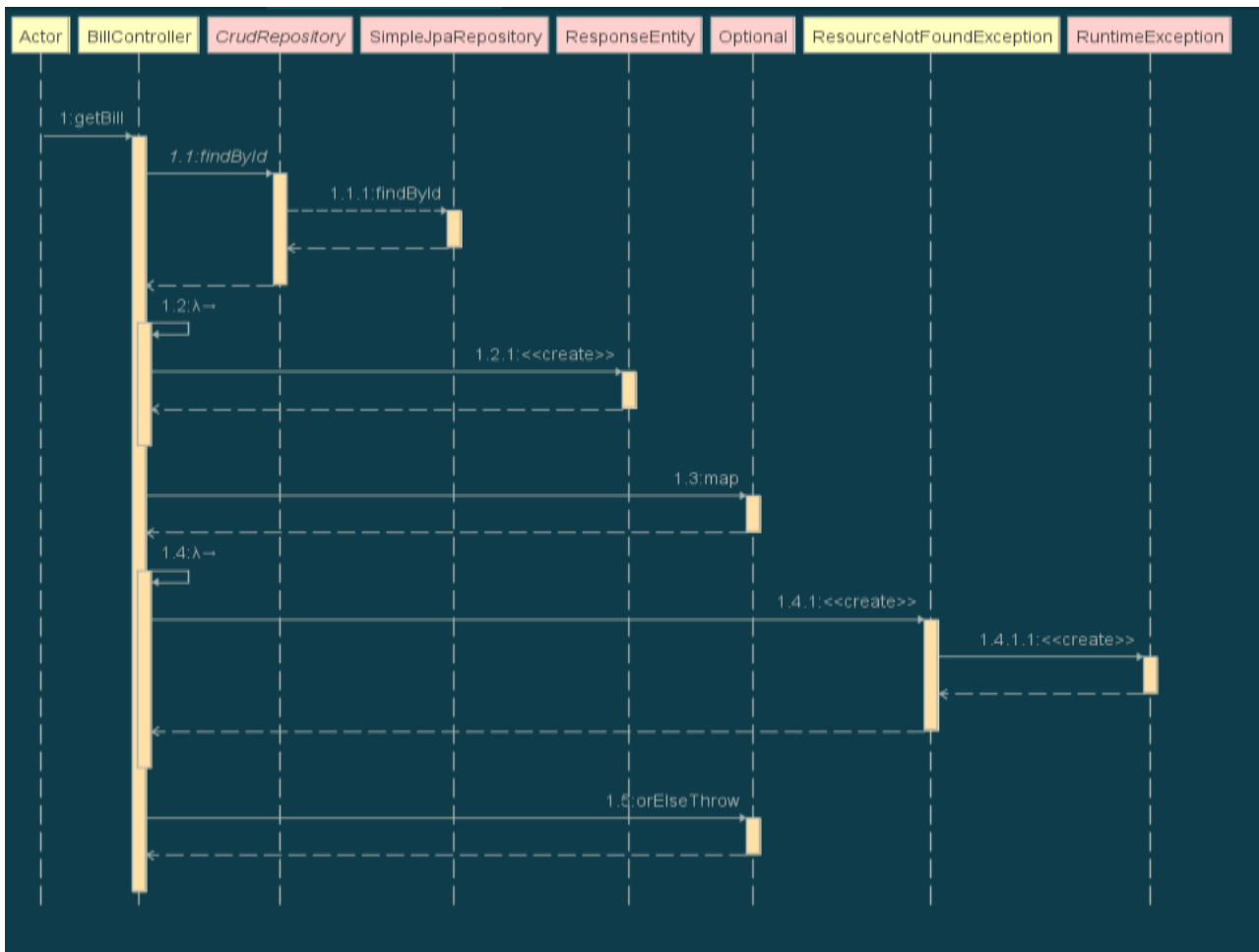
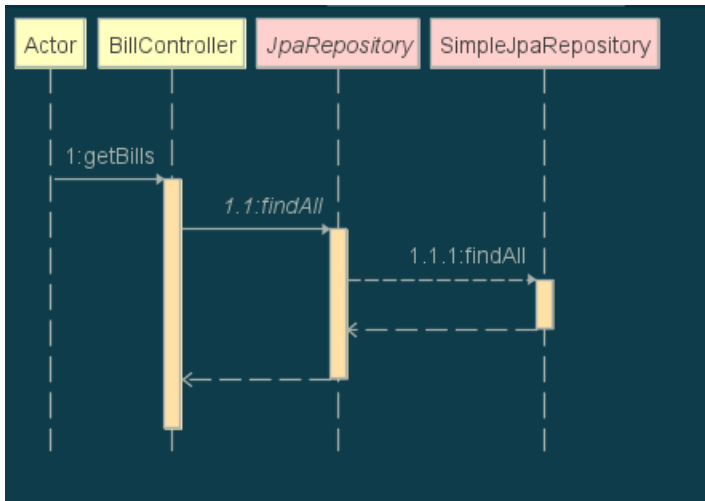


5.8. Sequence Diagrams

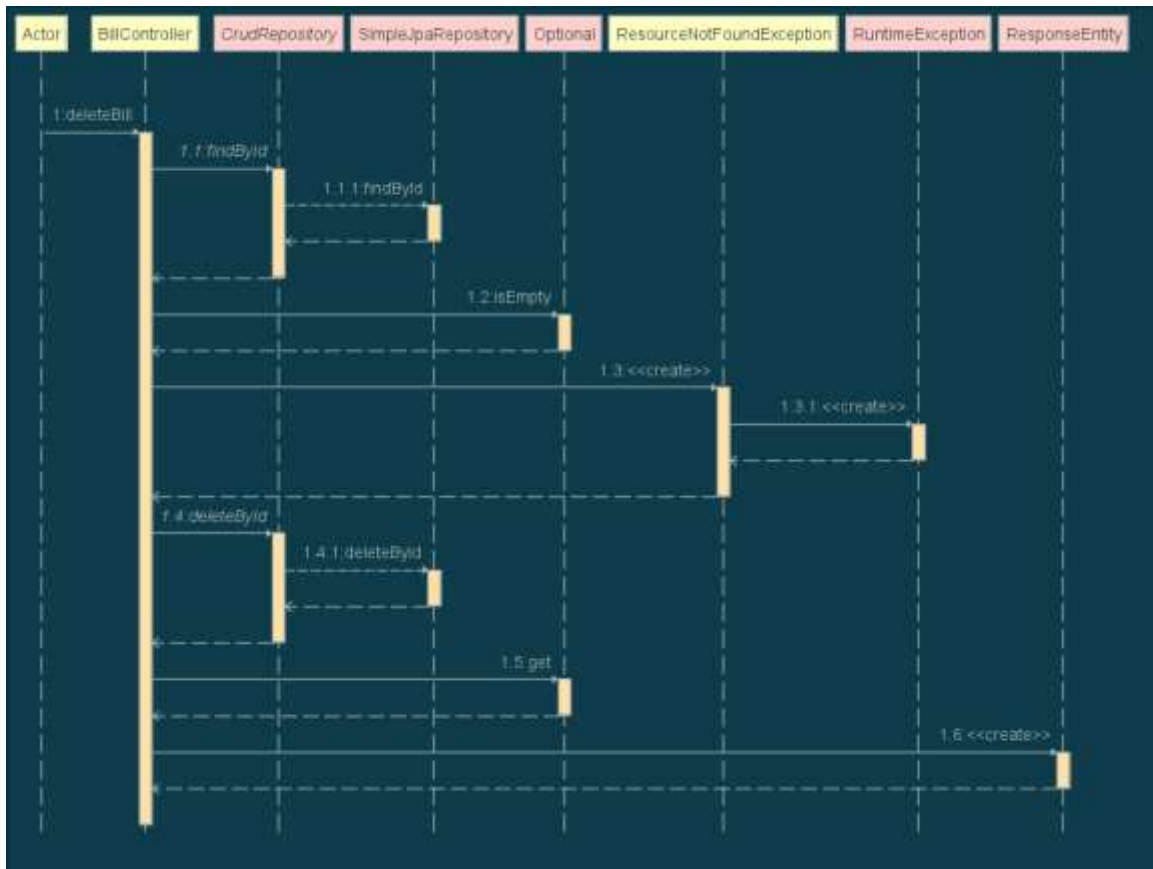
AdminController Class



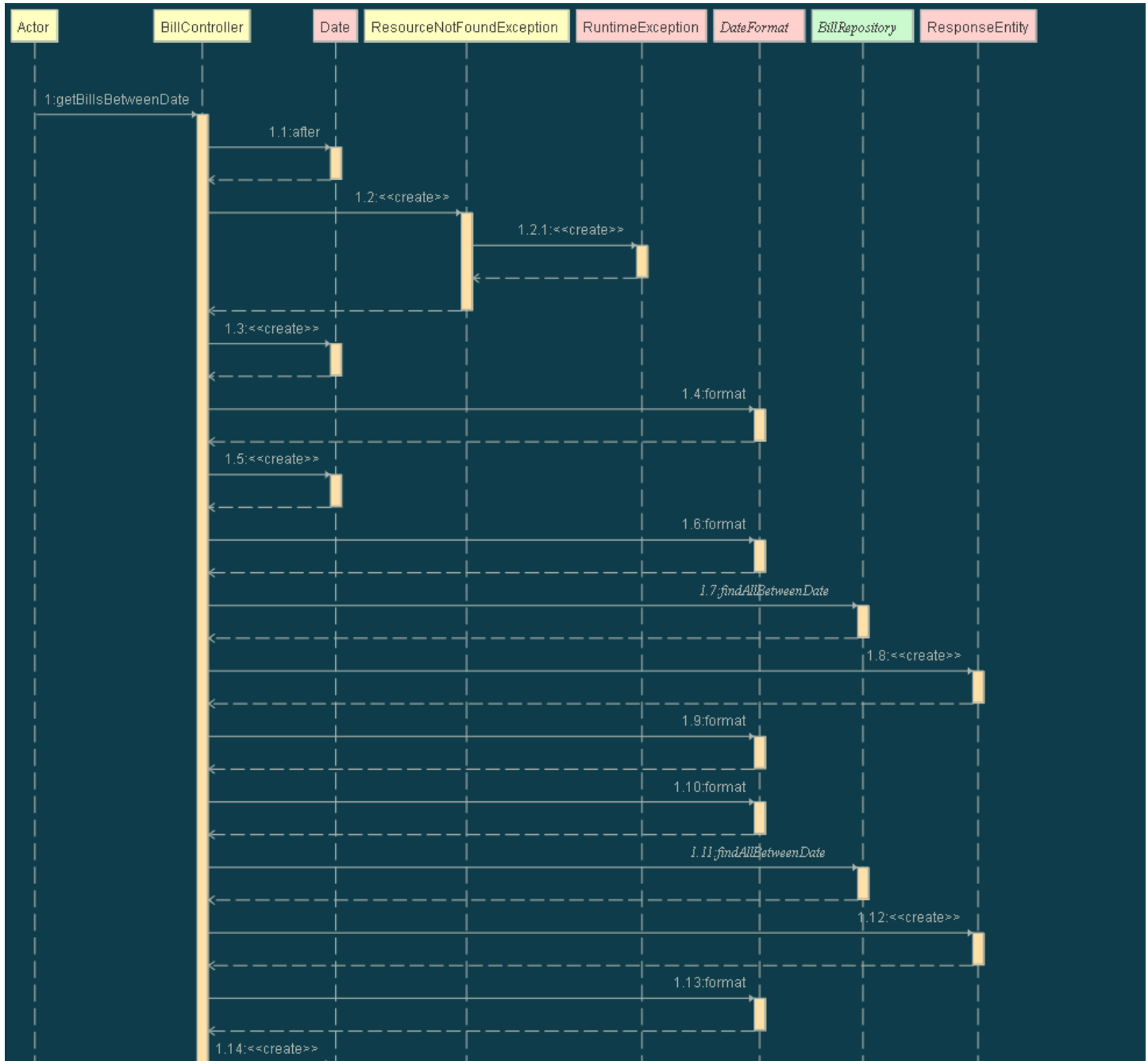
BillController Class



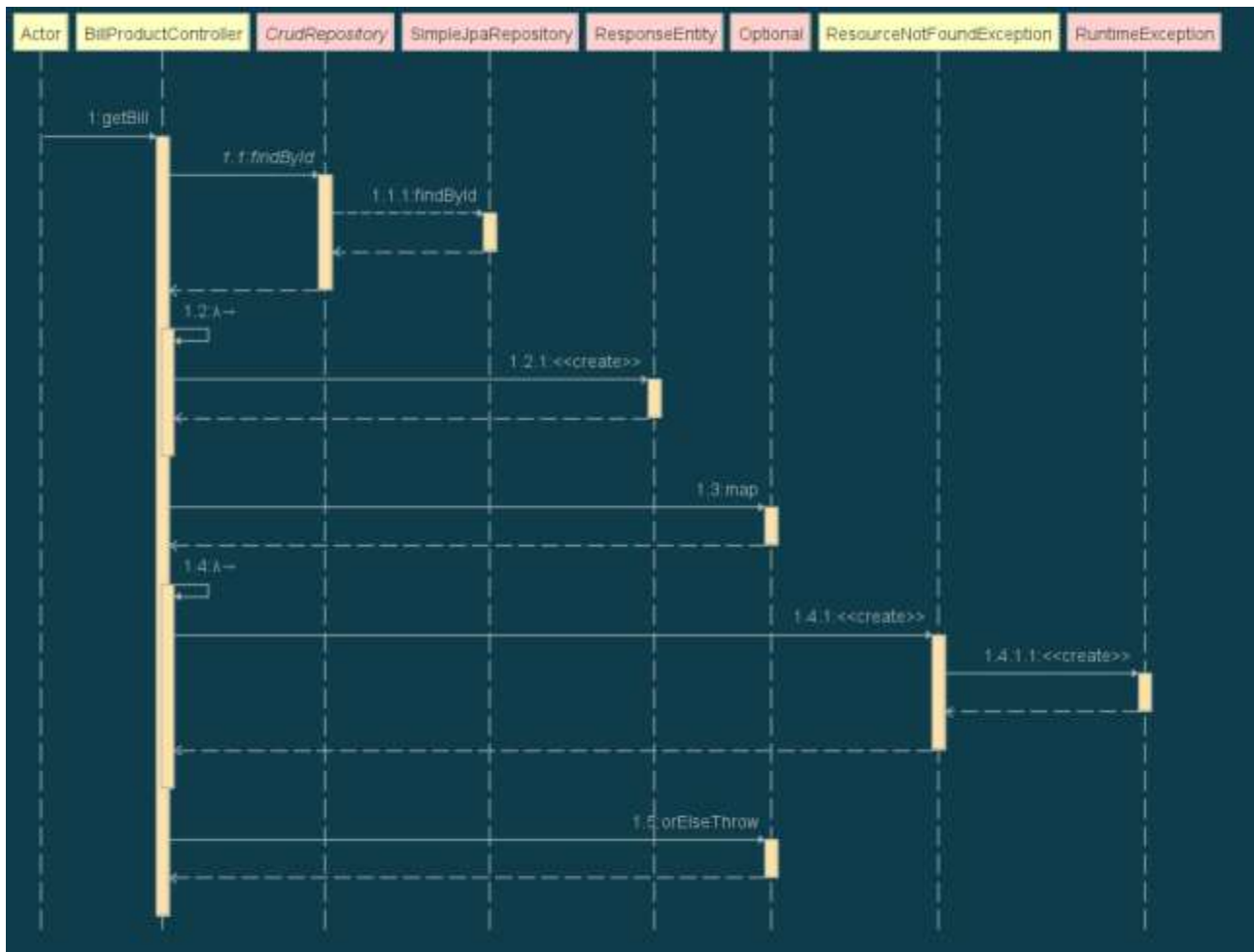
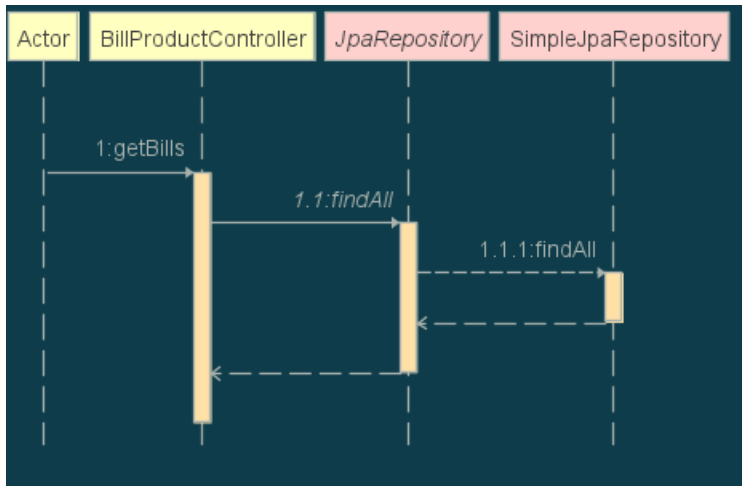
[BOO] Requirements Specification



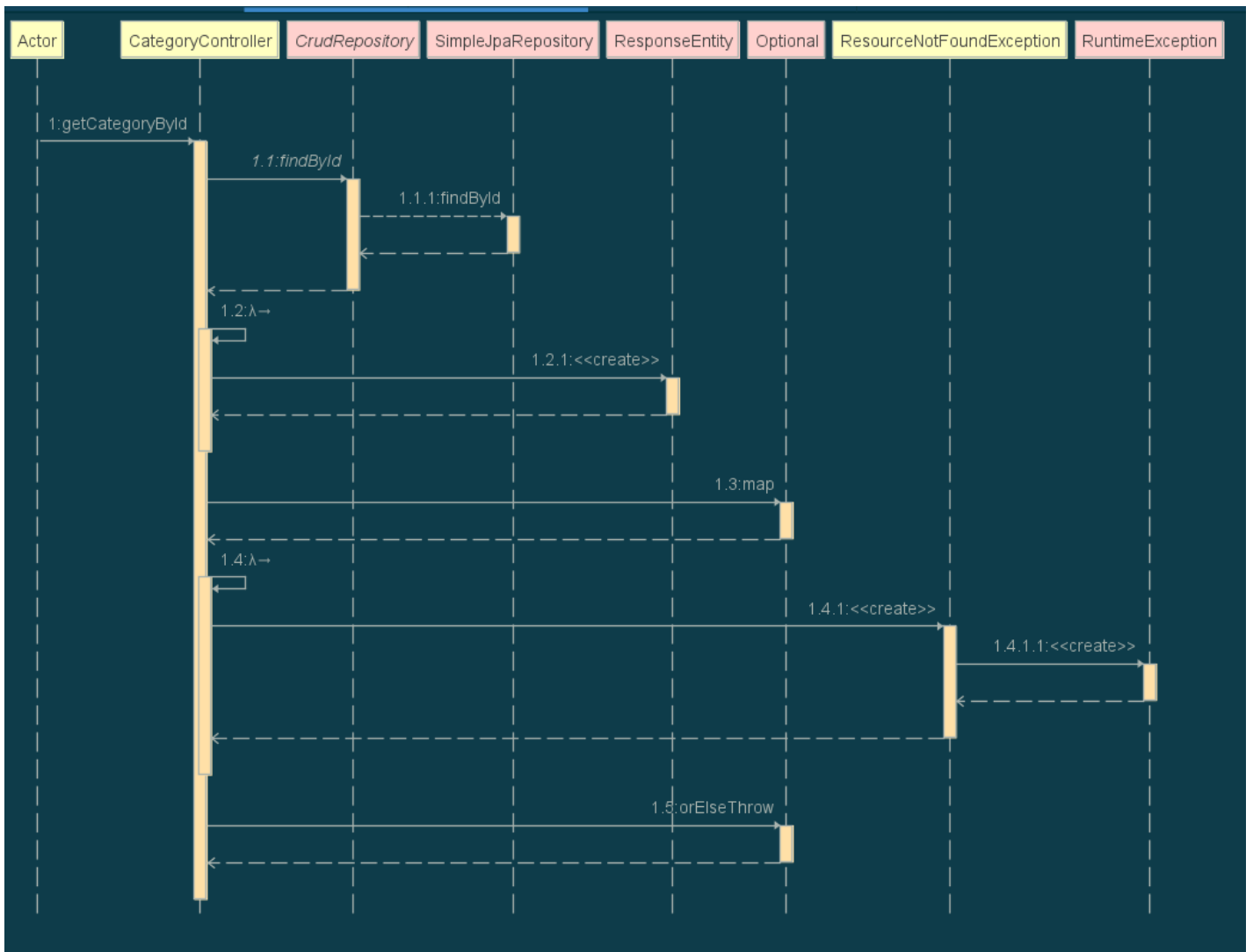
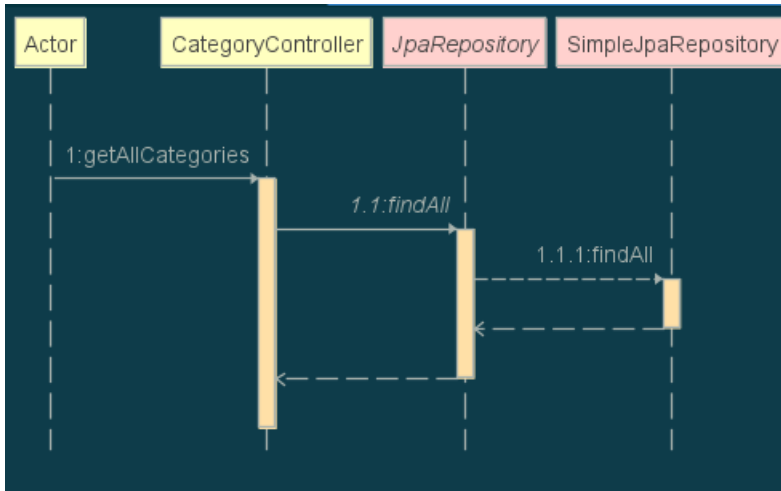
[BOO] Requirements Specification



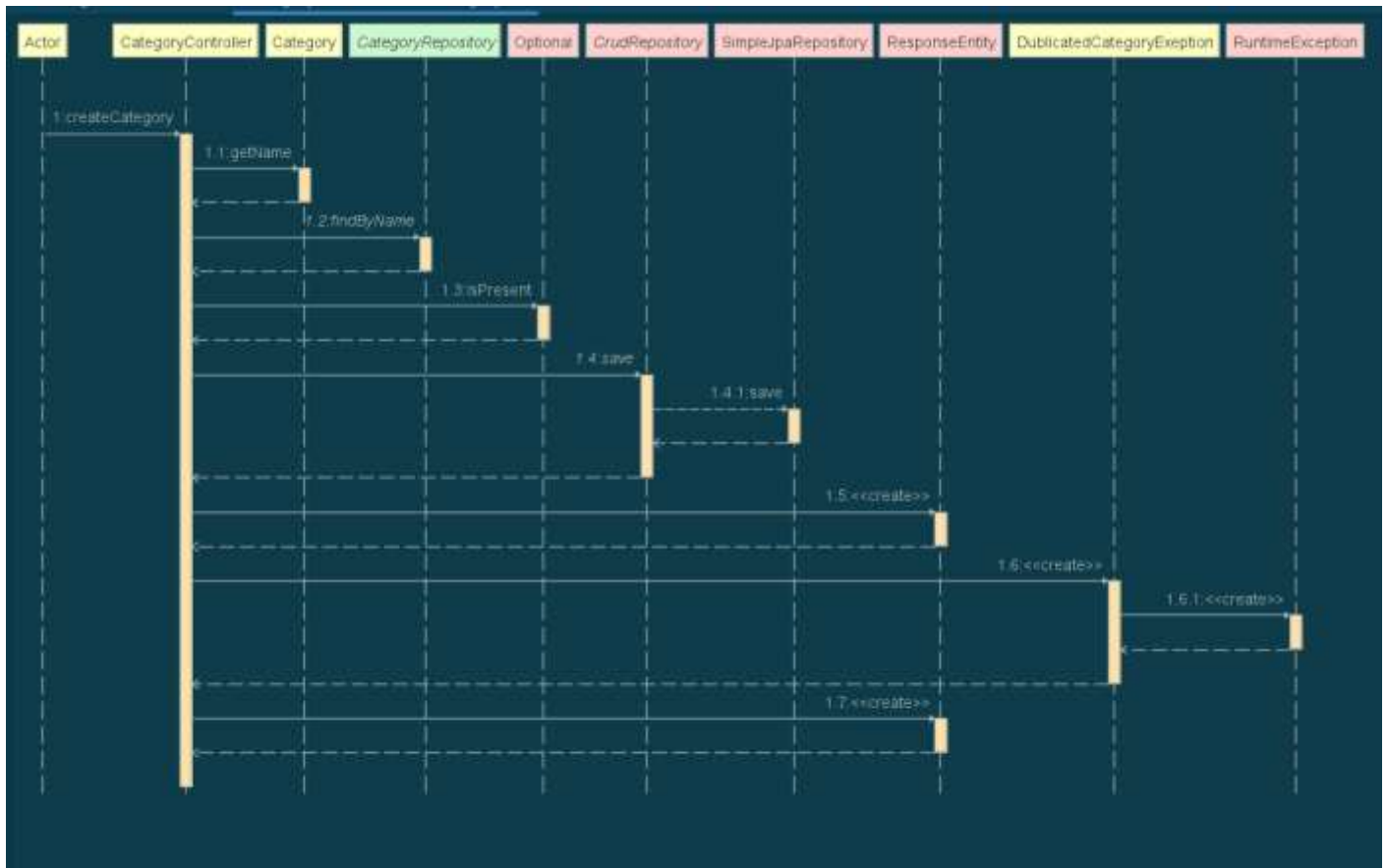
BillProductController Class



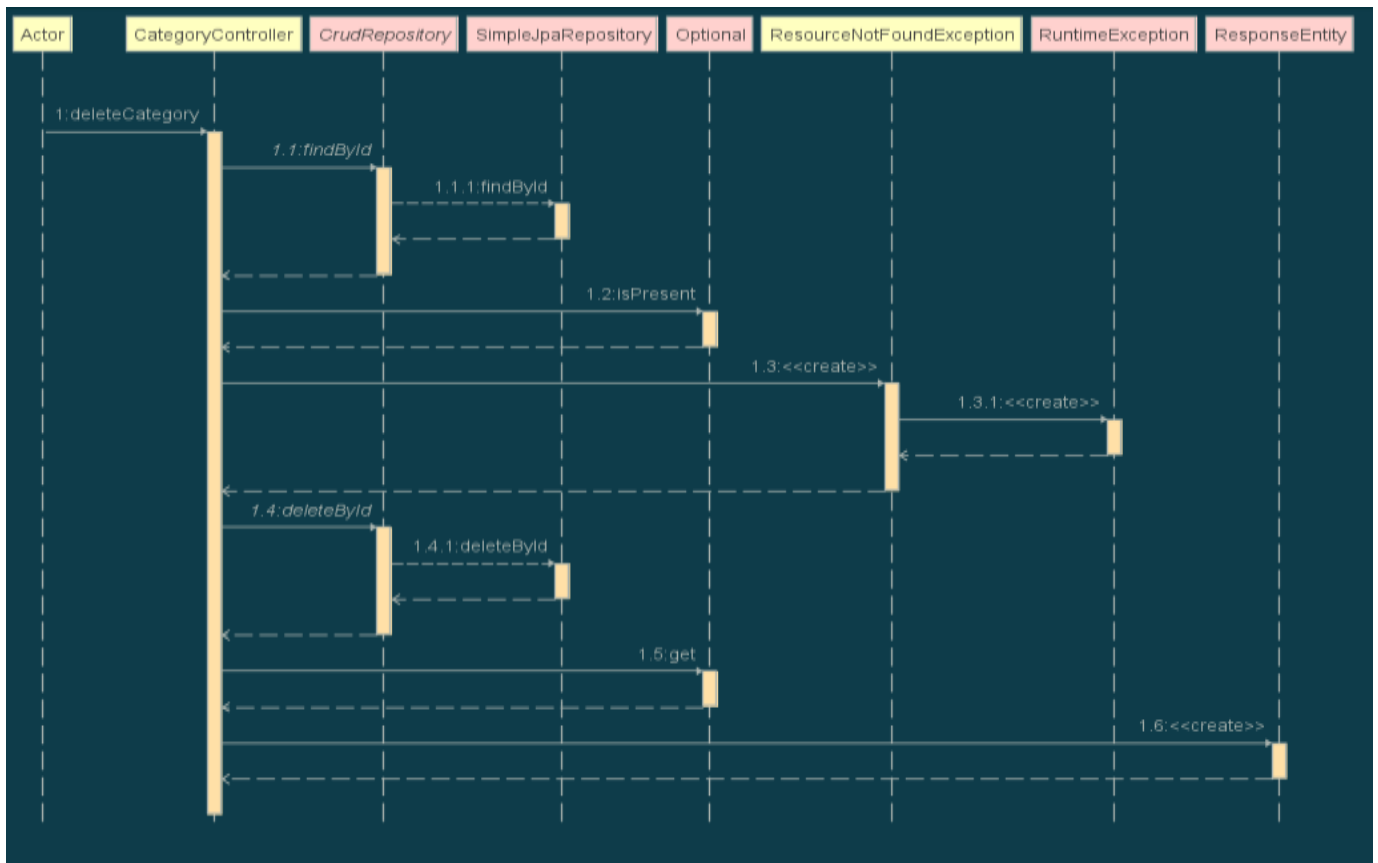
CategoryController Class



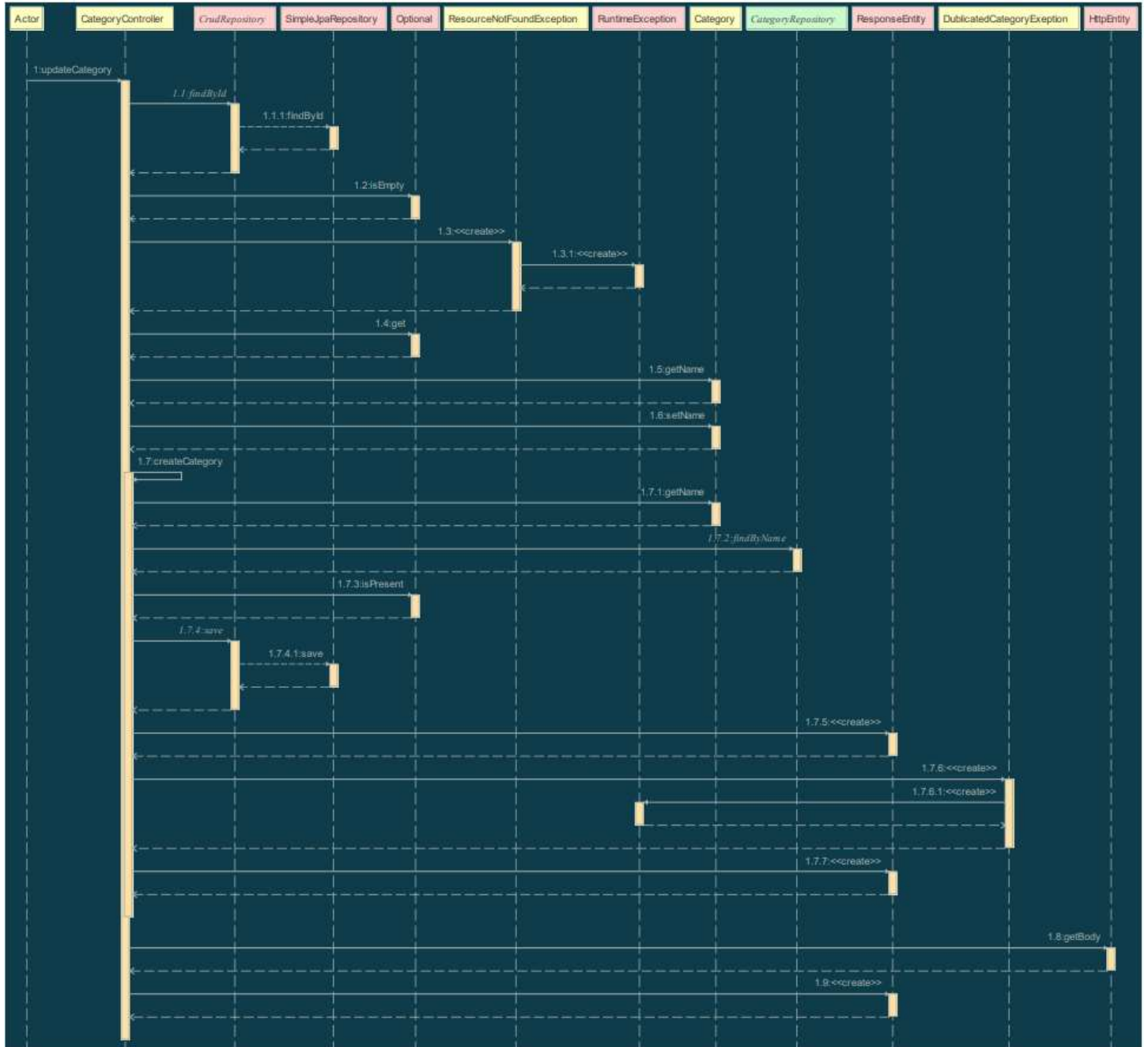
[BOO] Requirements Specification



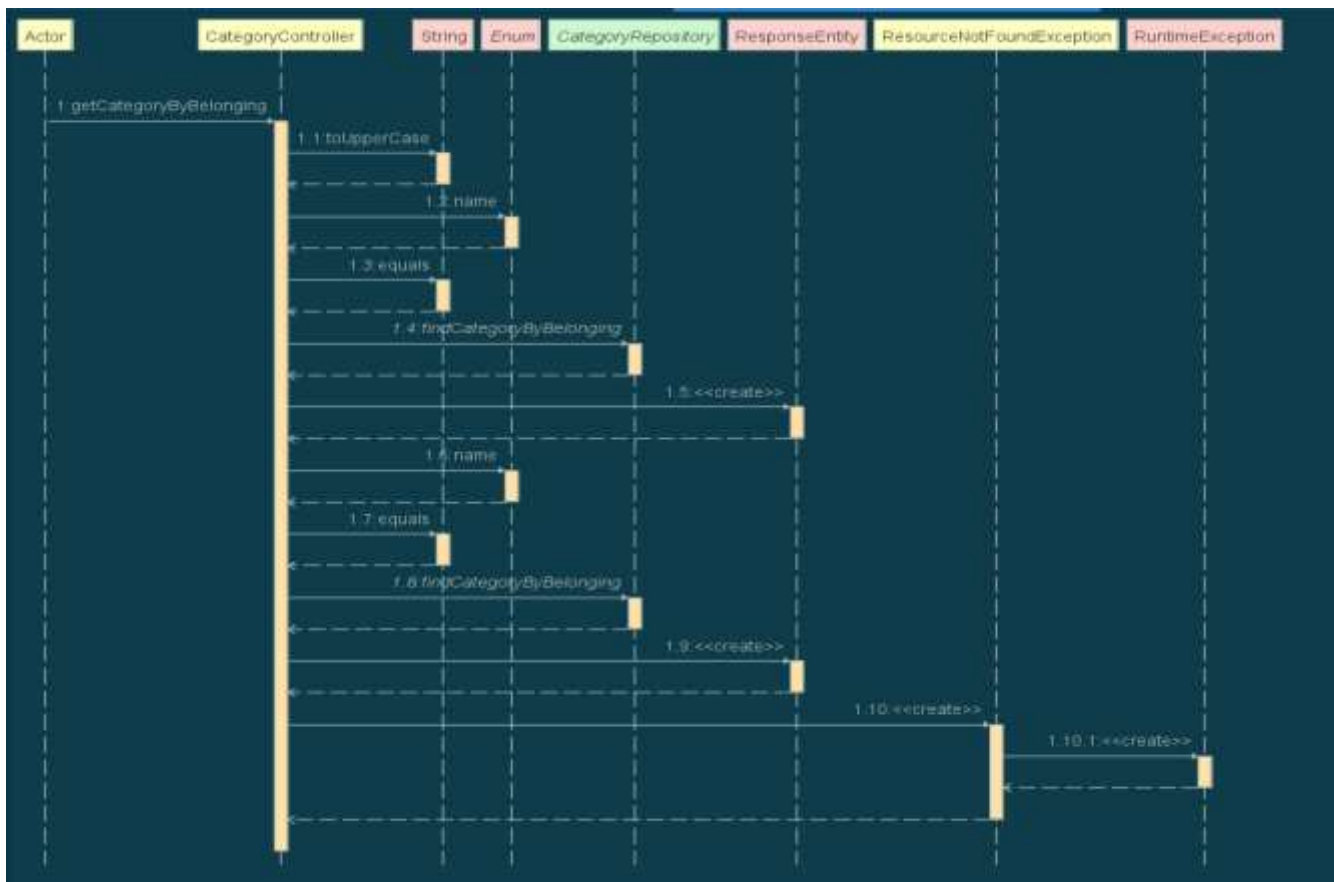
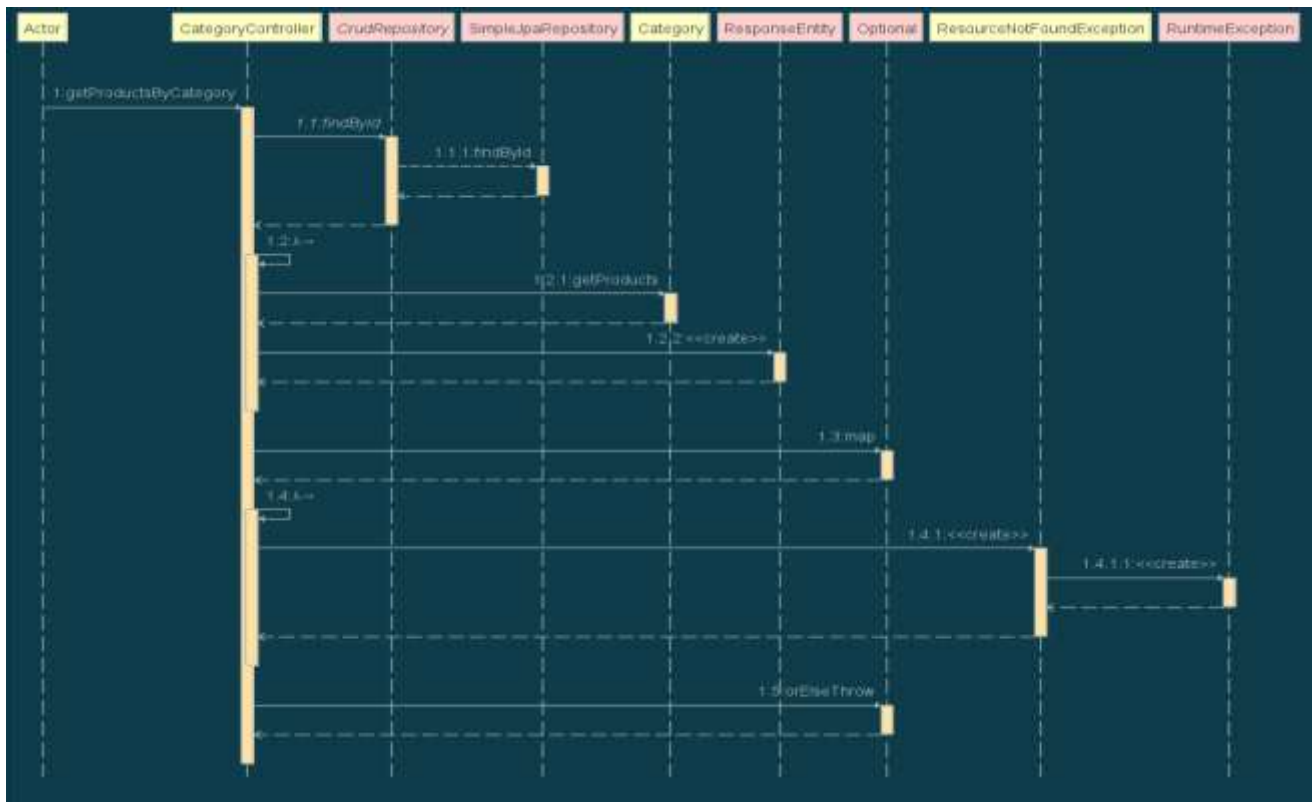
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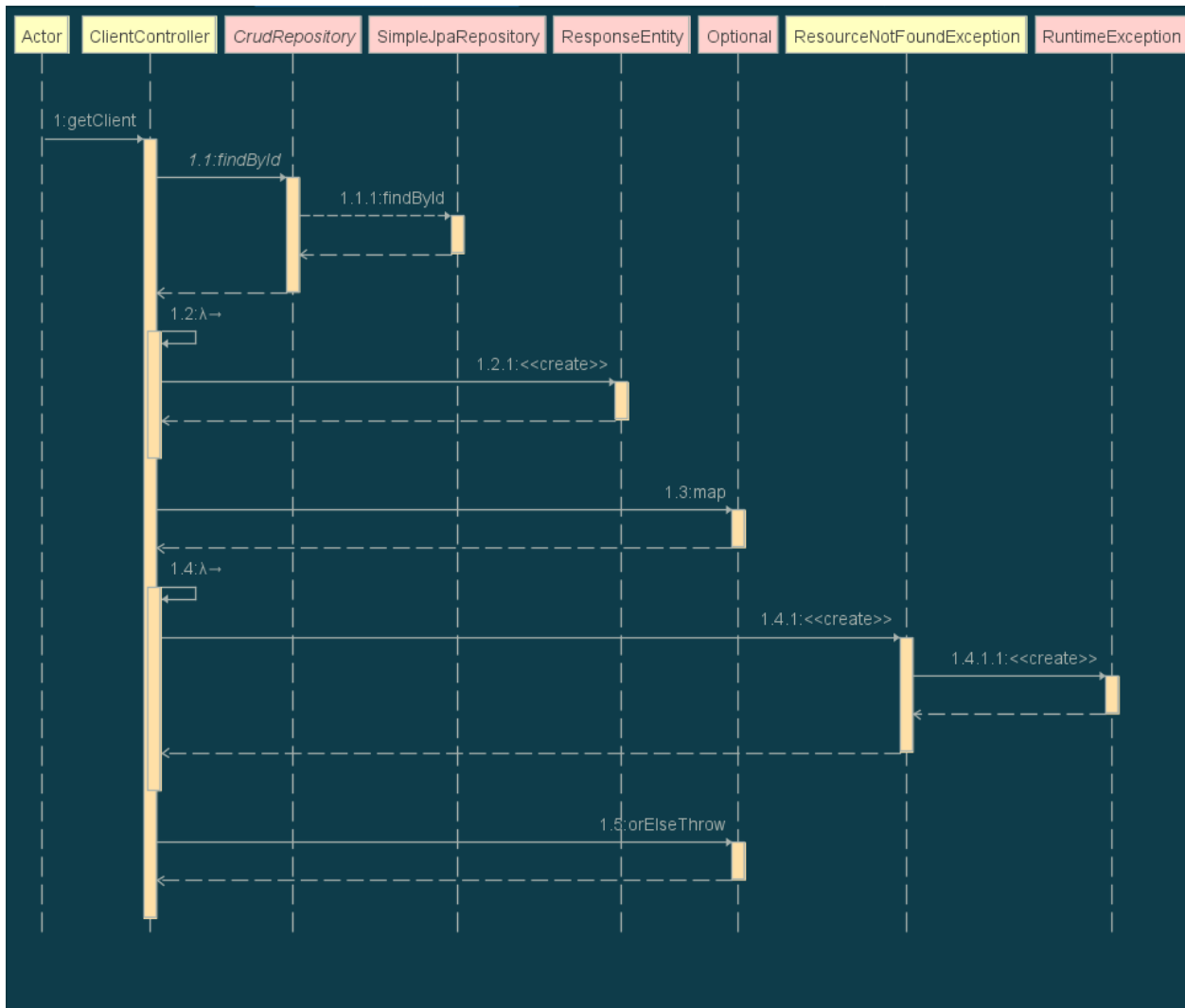
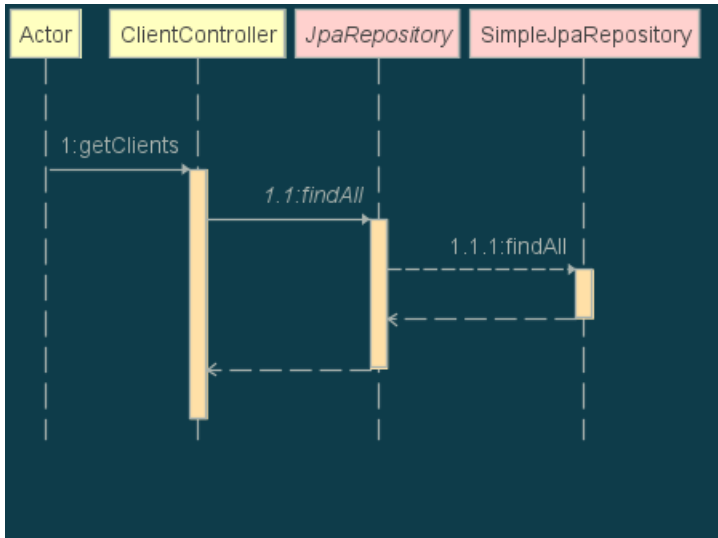
[BOO] Requirements Specification



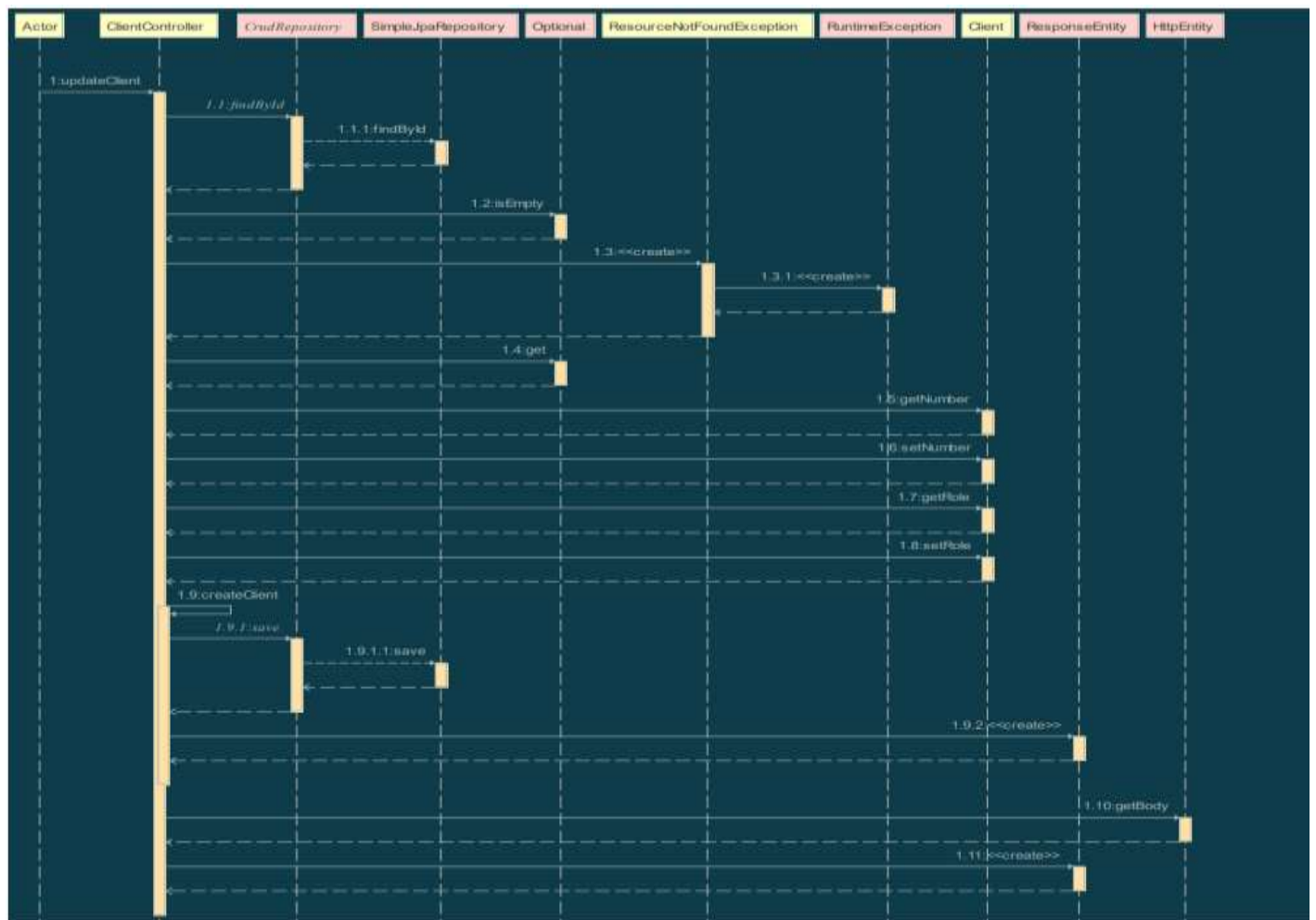
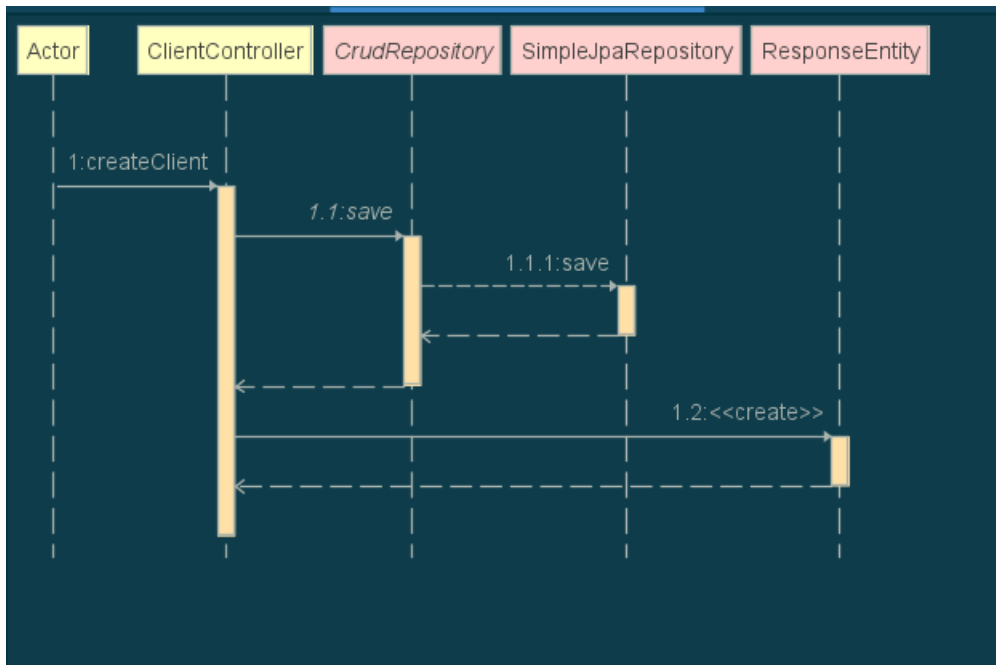
[BOO] Requirements Specification



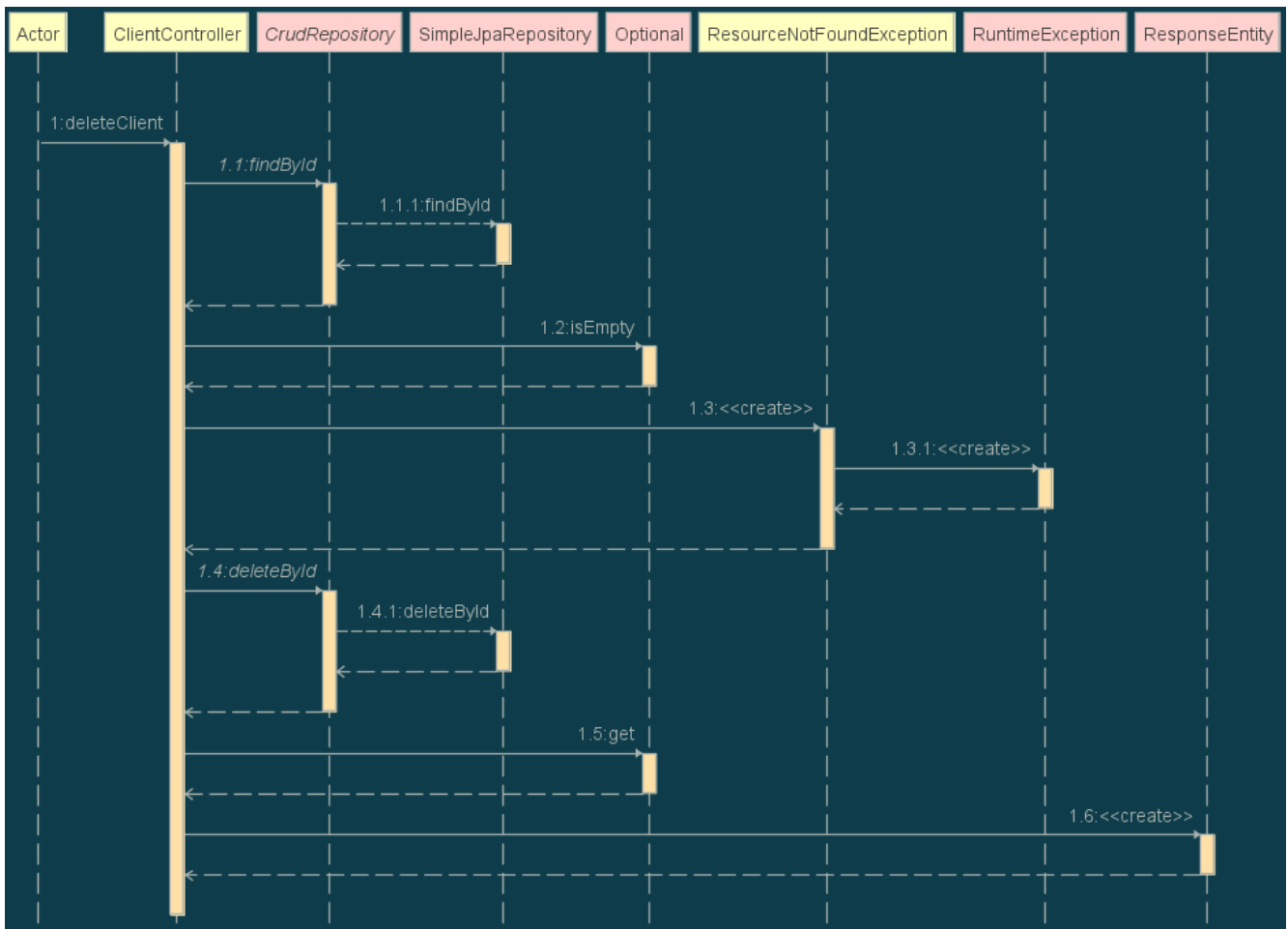
ClientController Class



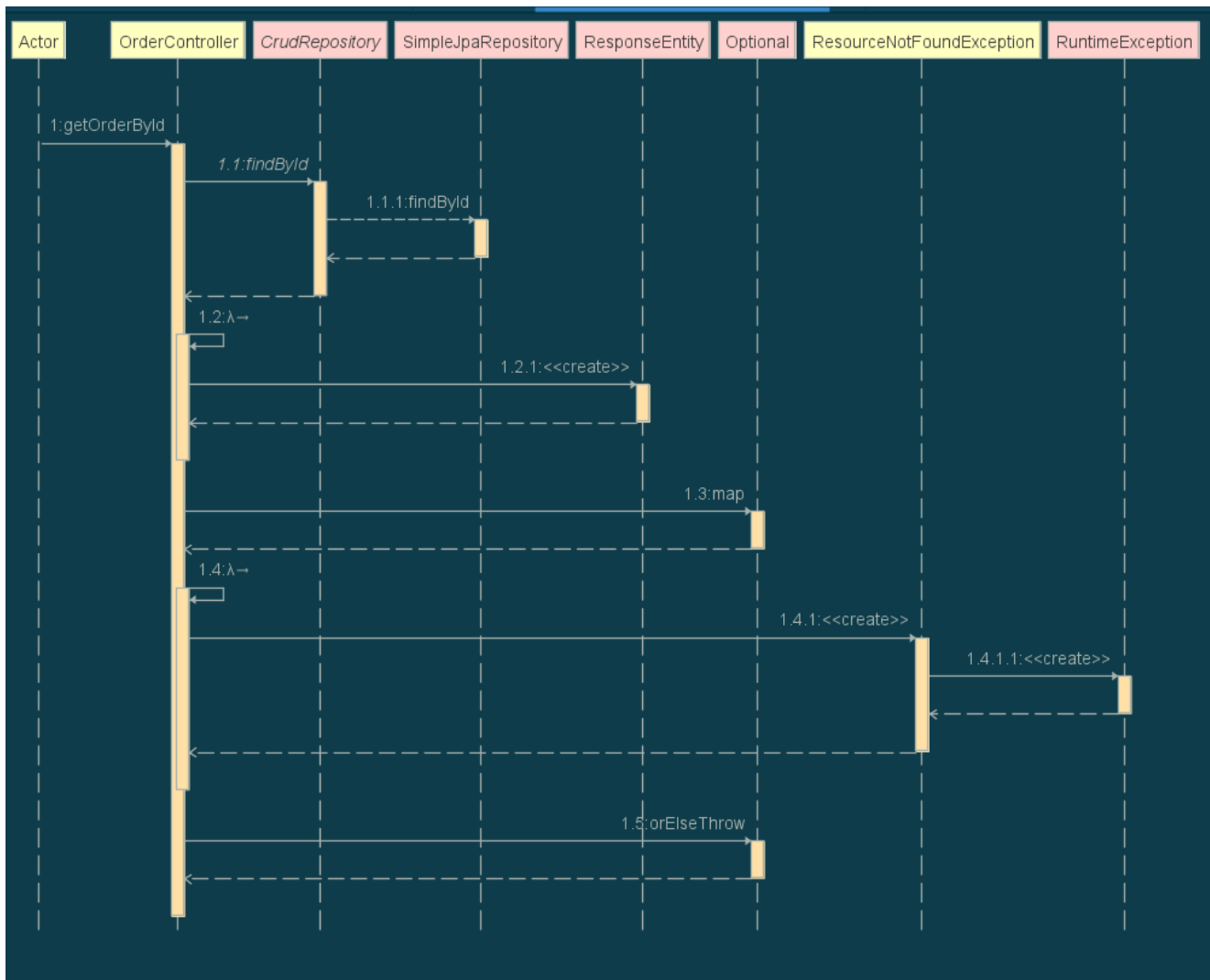
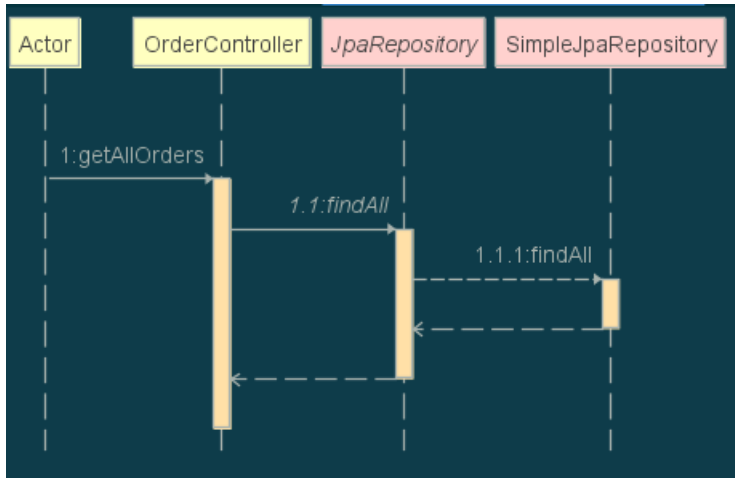
[BOO] Requirements Specification



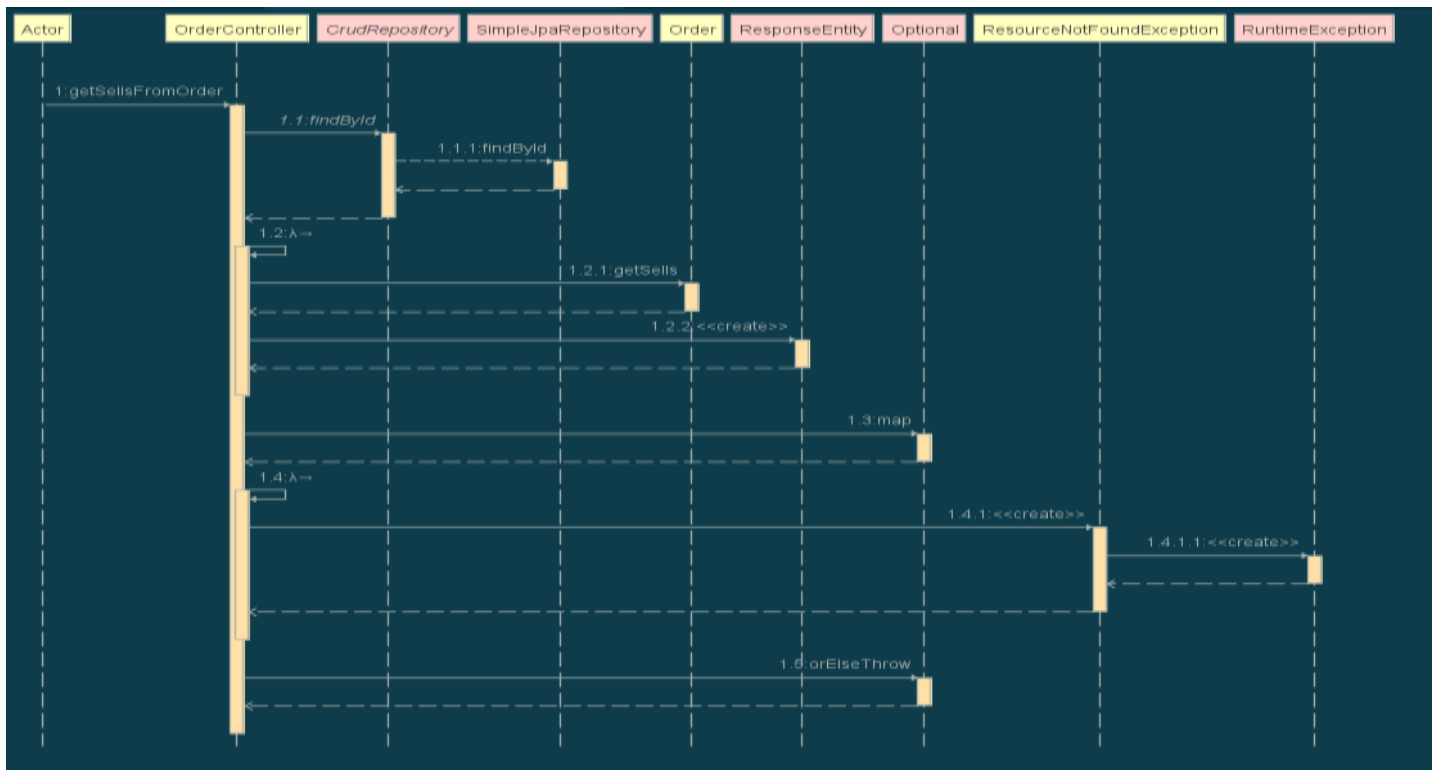
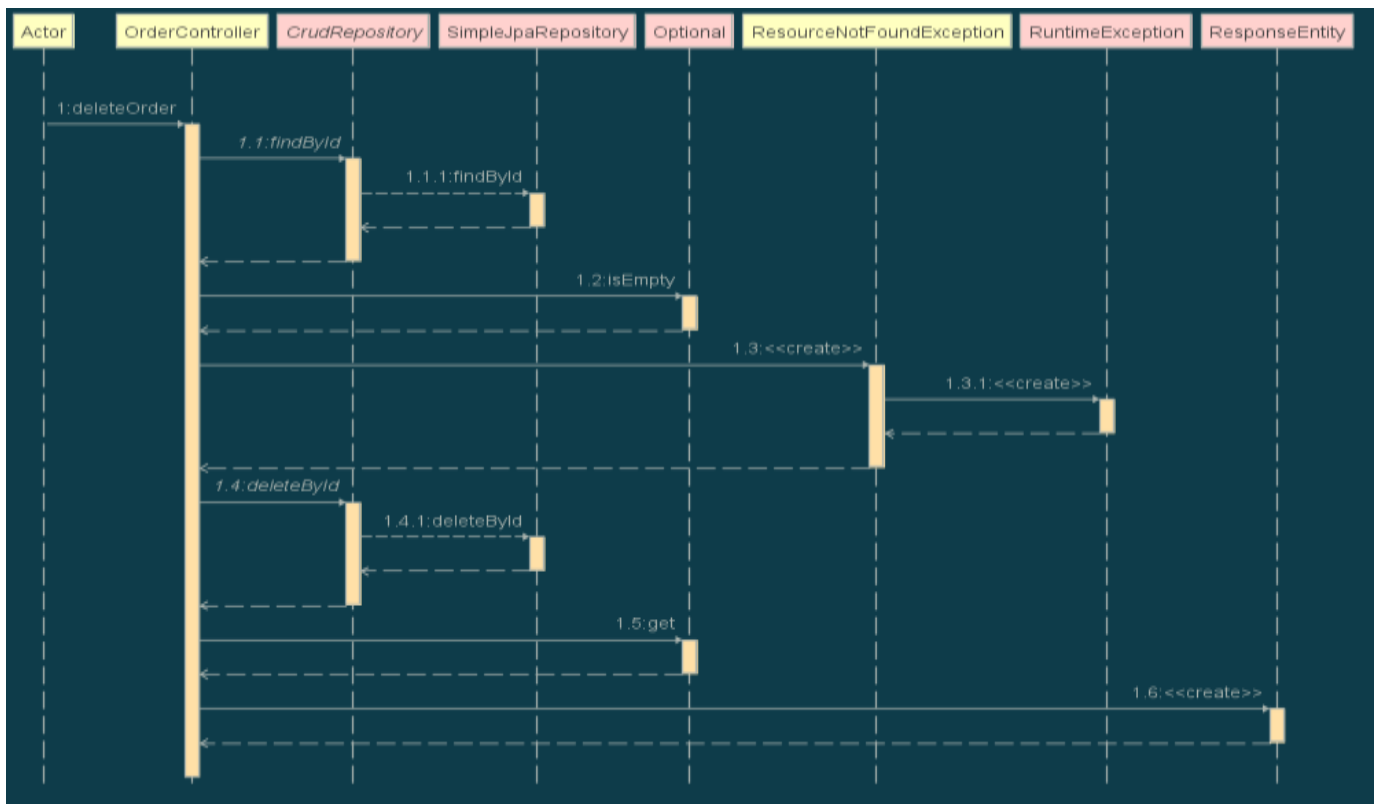
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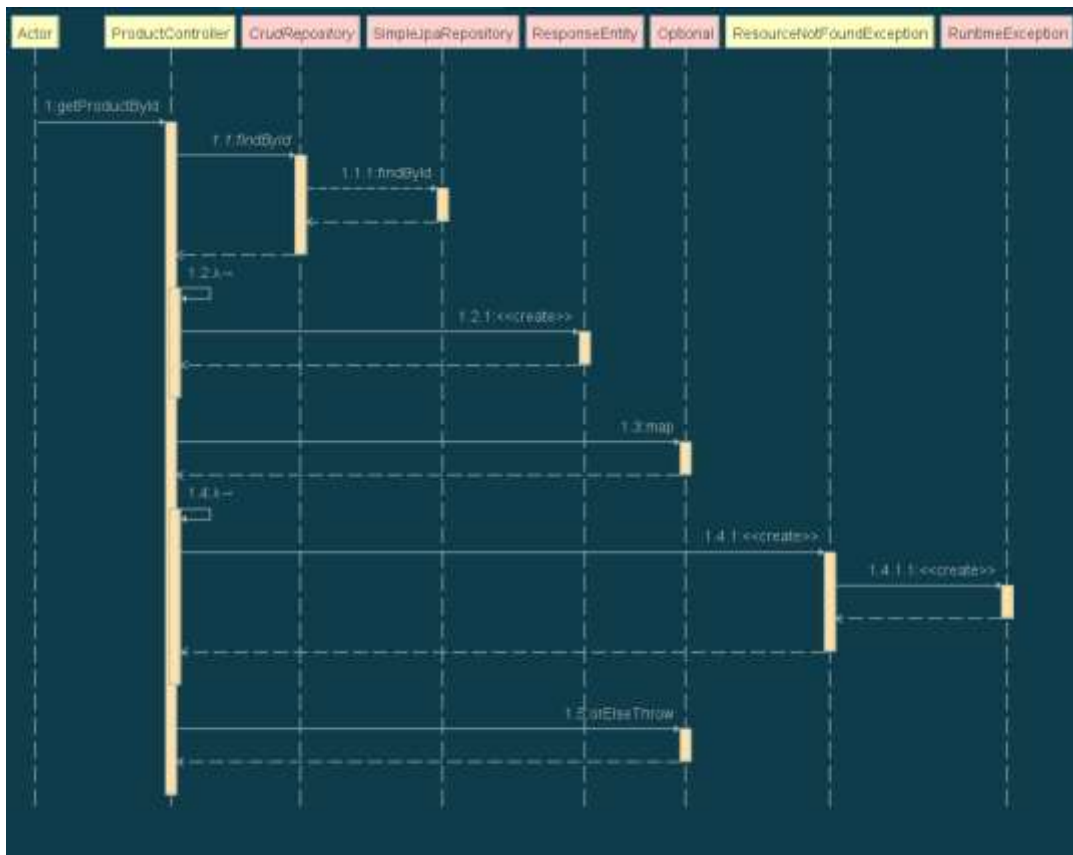
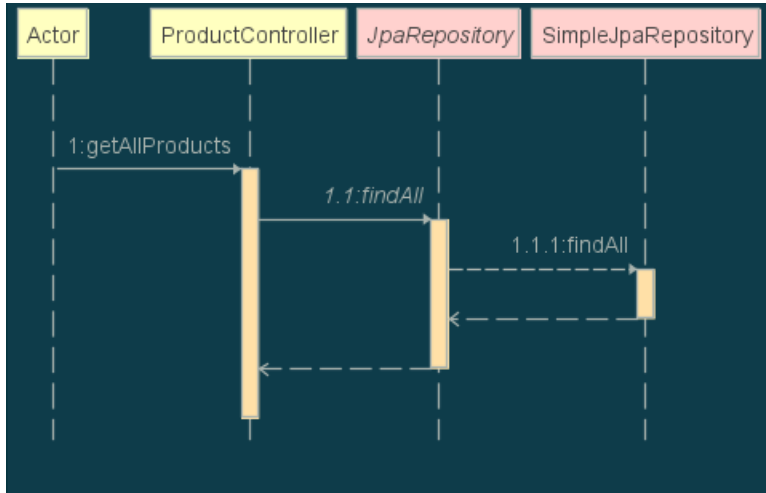
OrderController Class

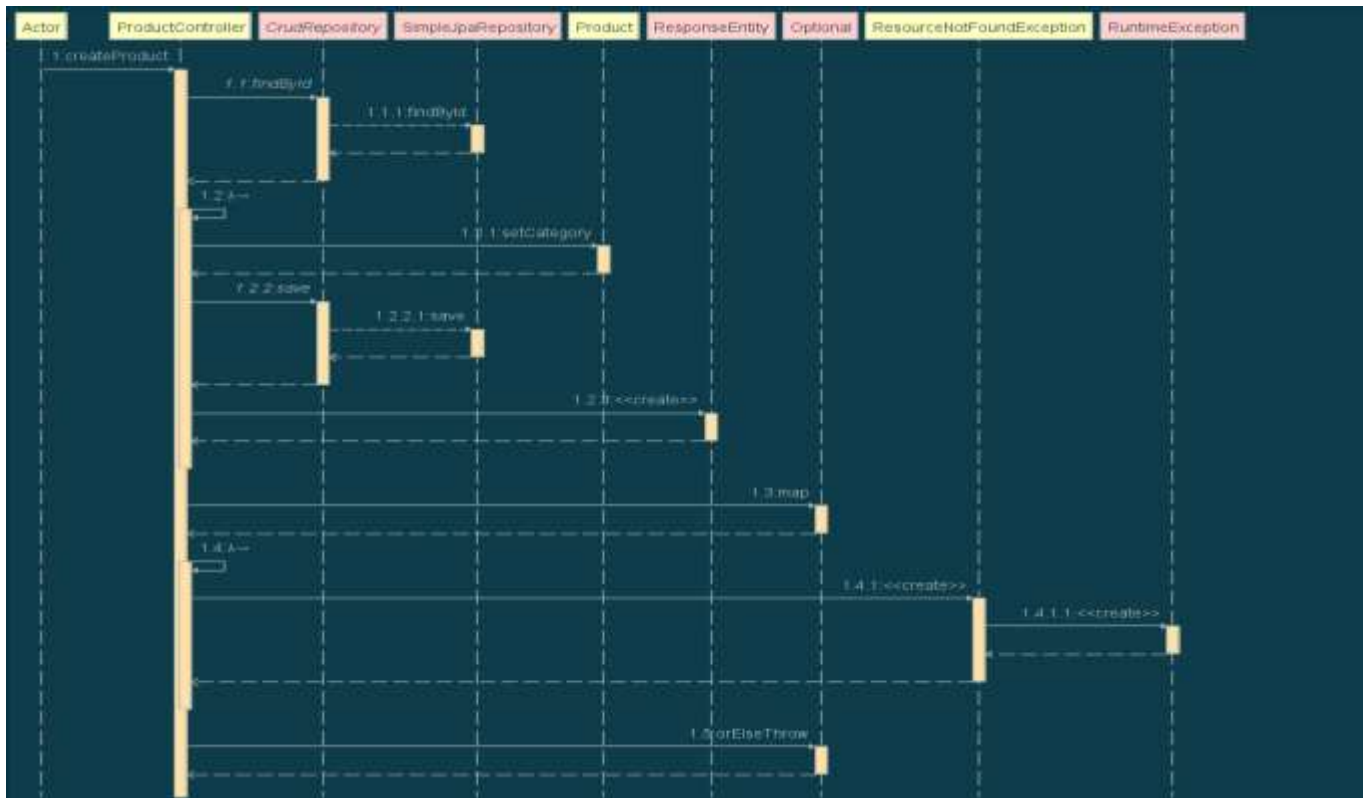
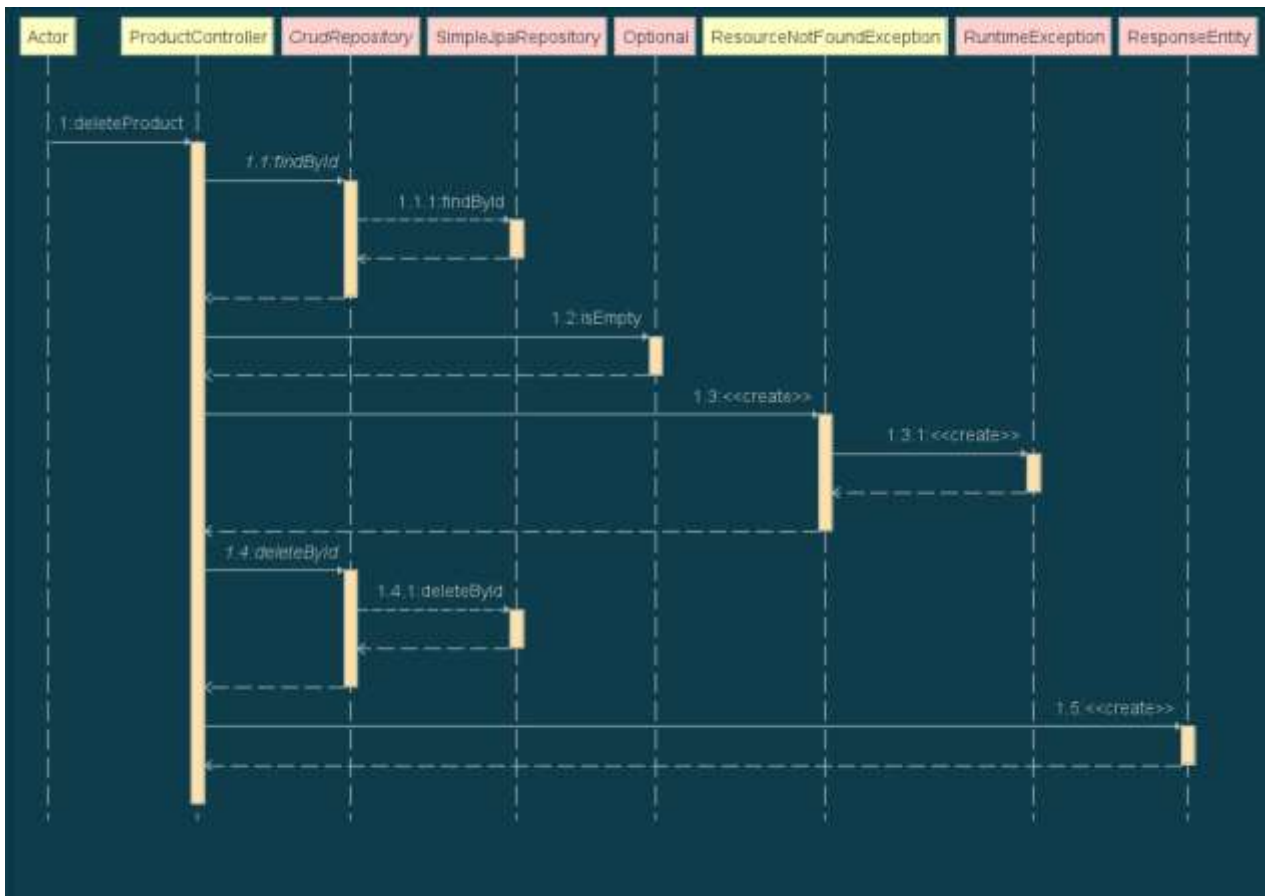


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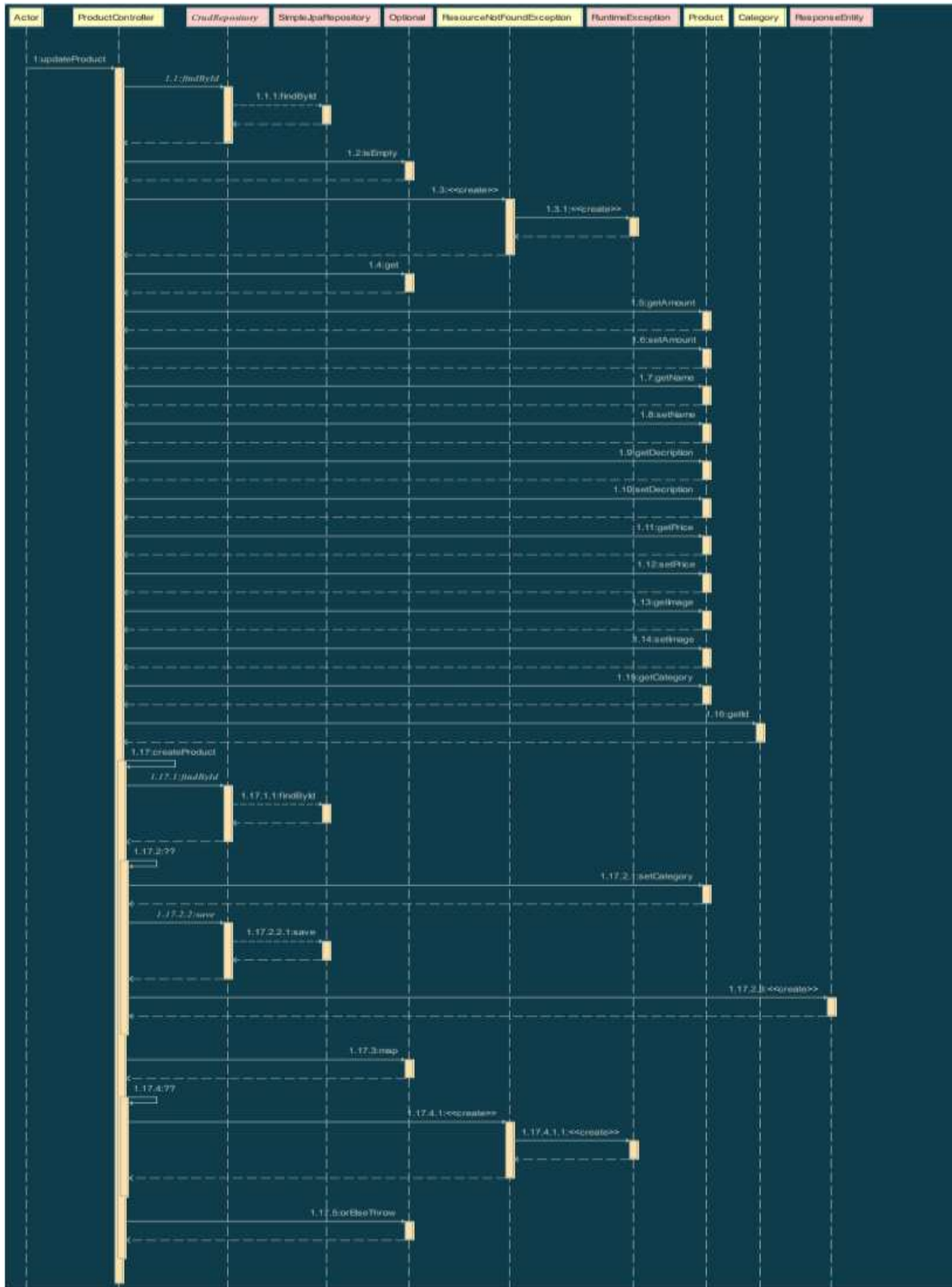


ProductController Class

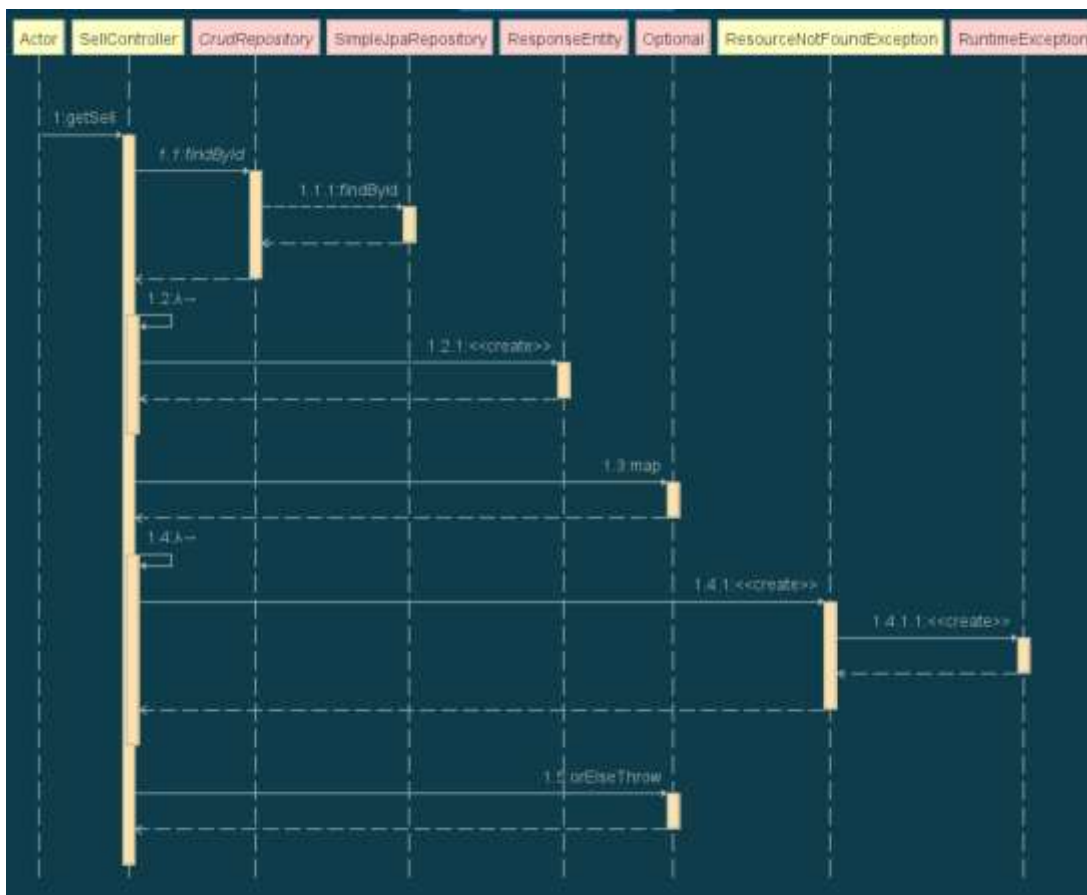
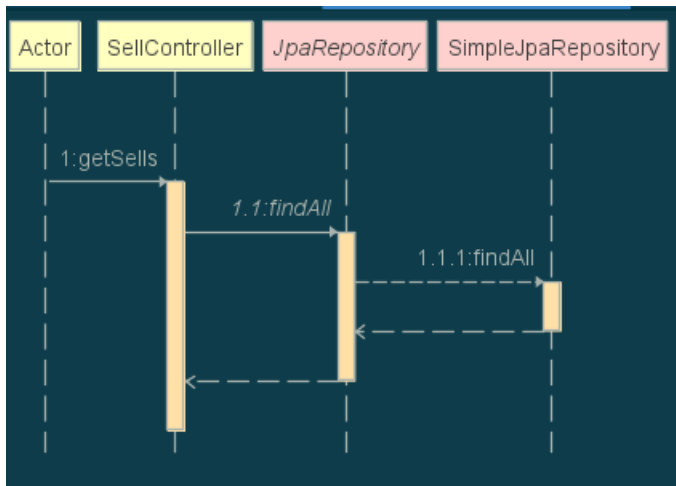




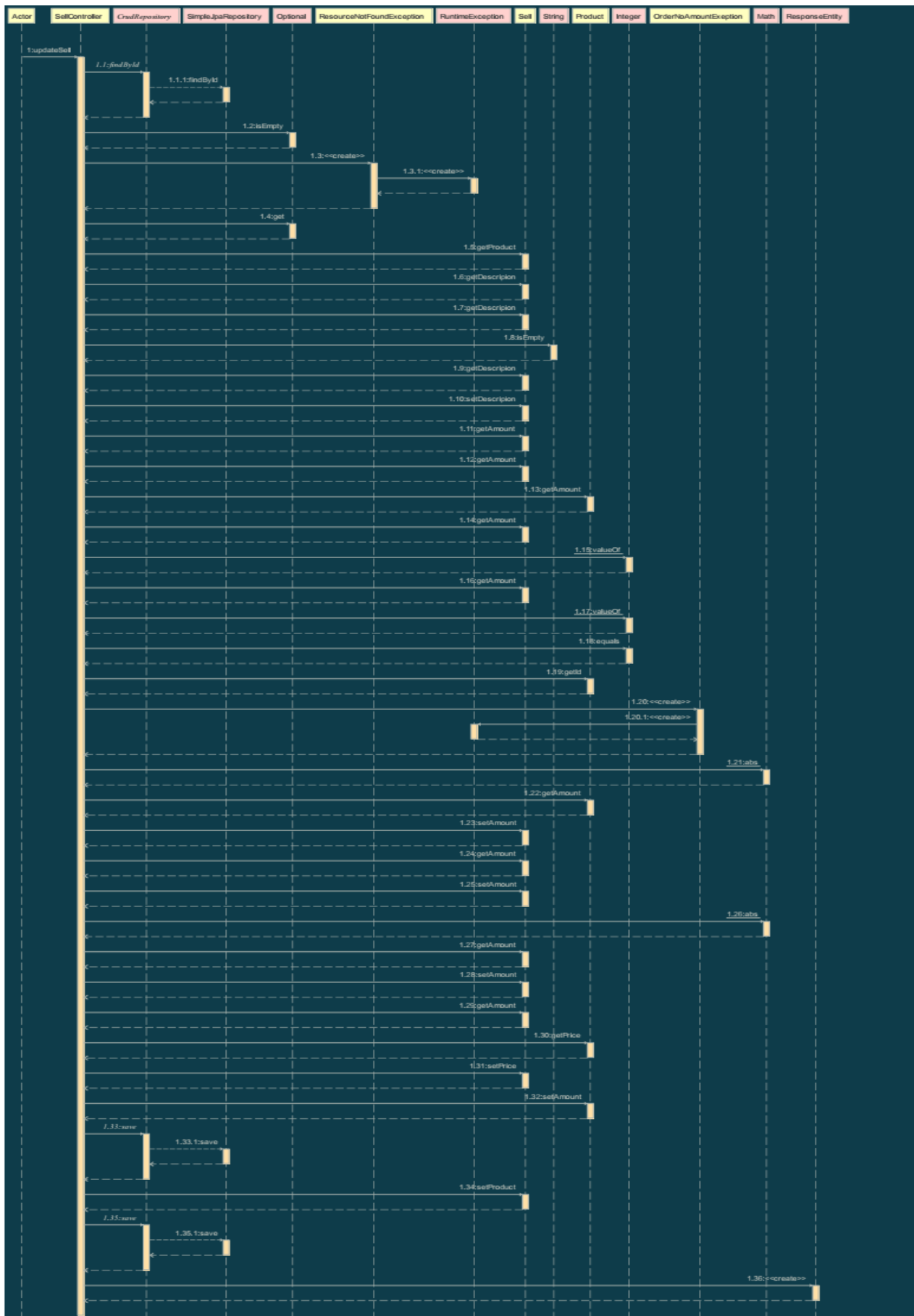
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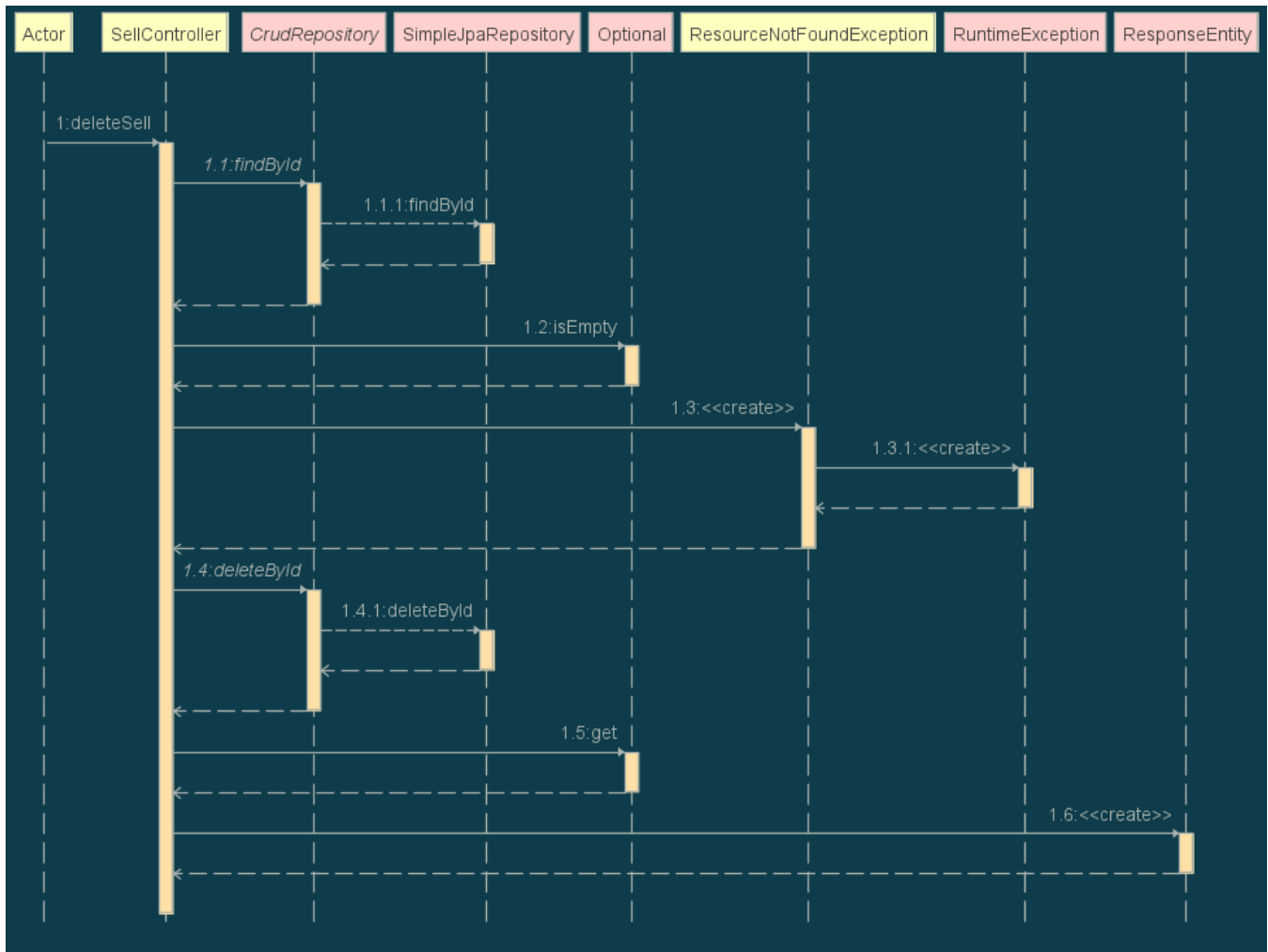
SellController Class



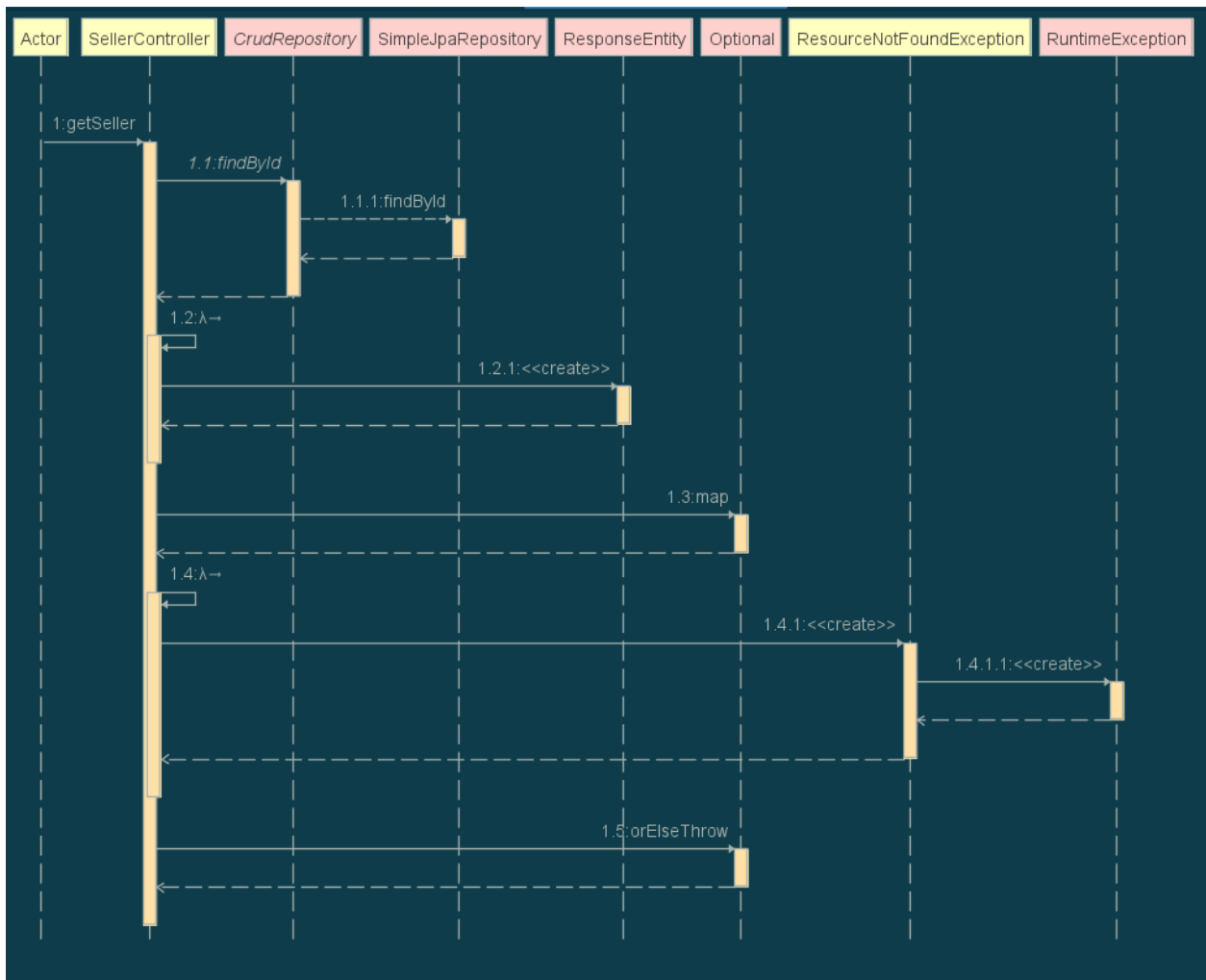
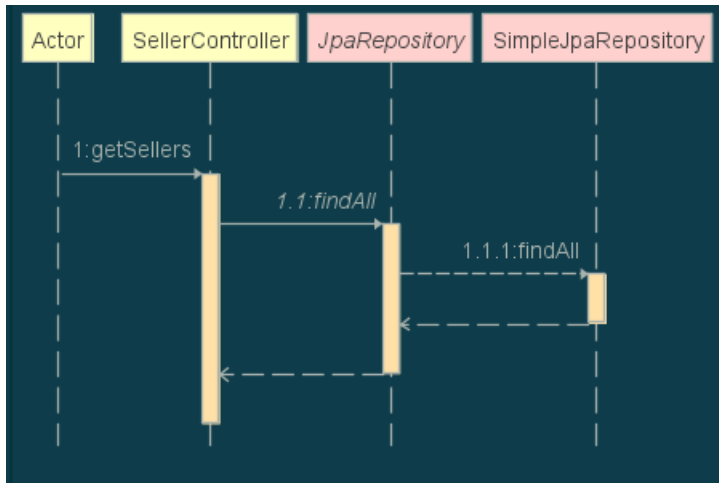
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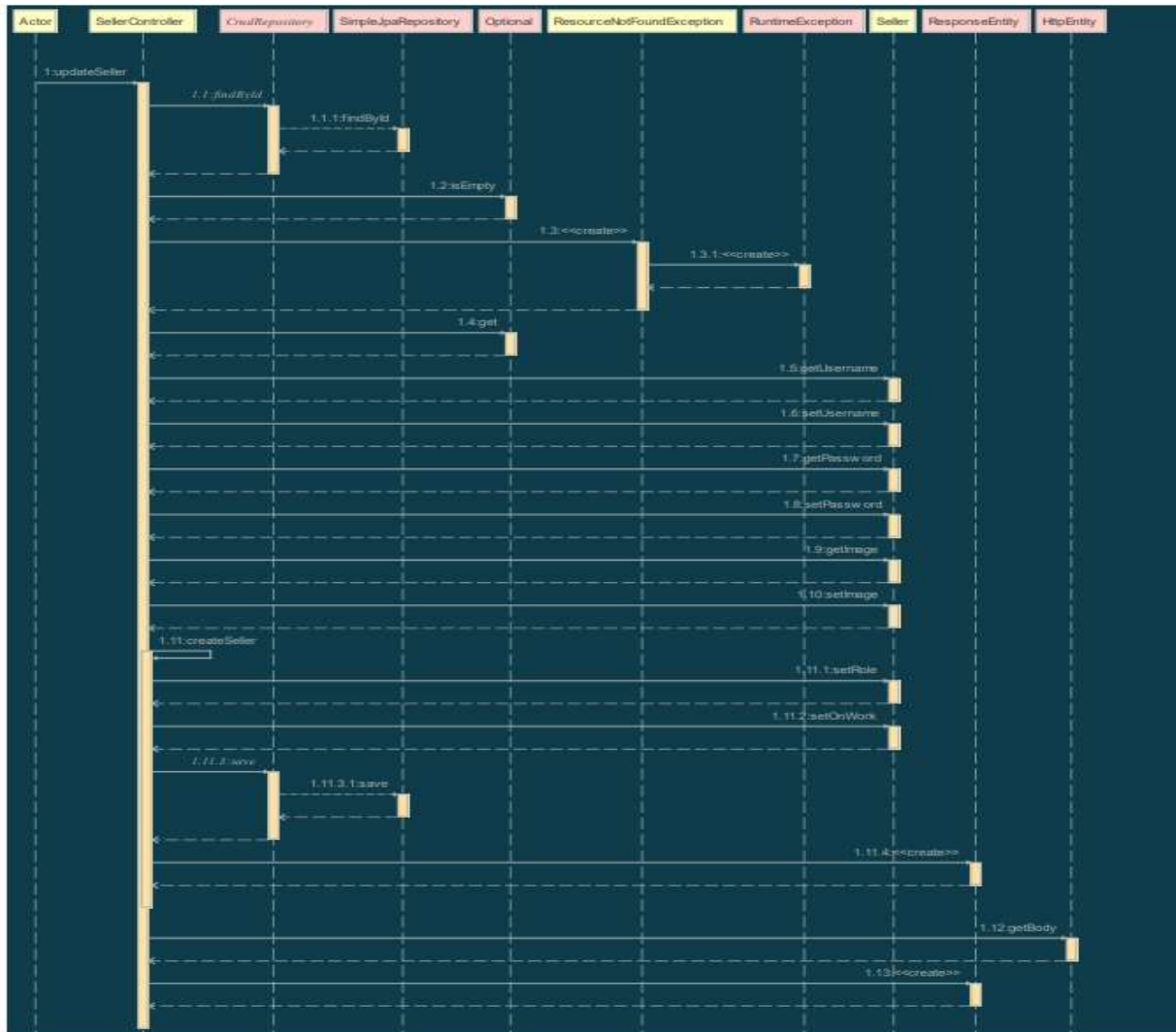
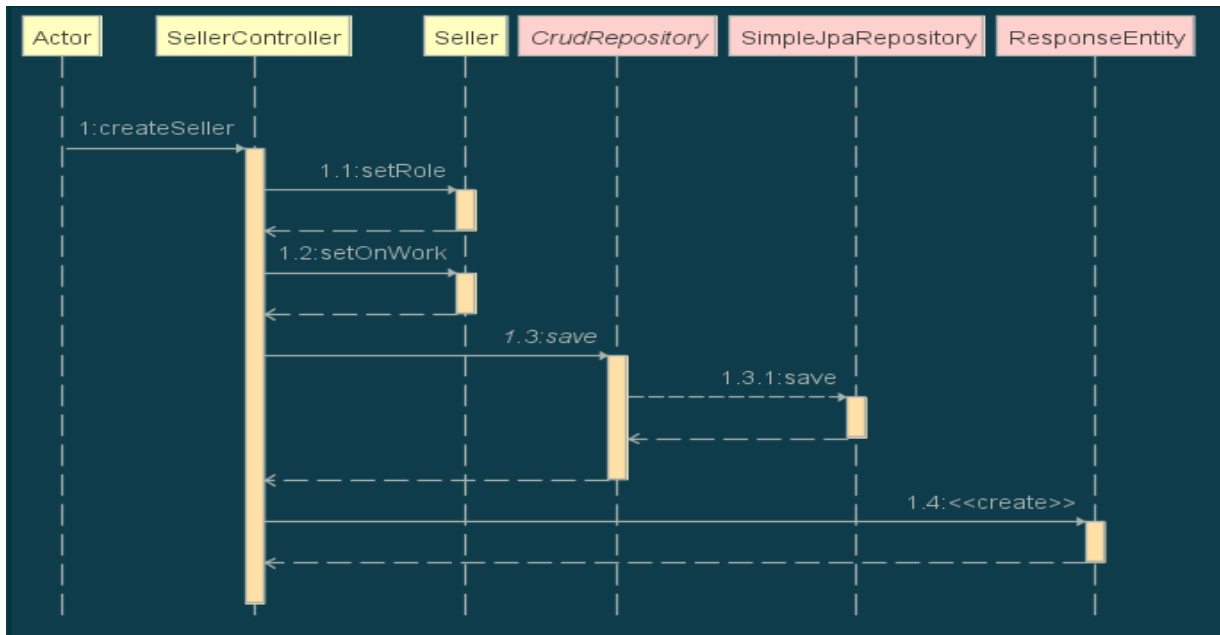
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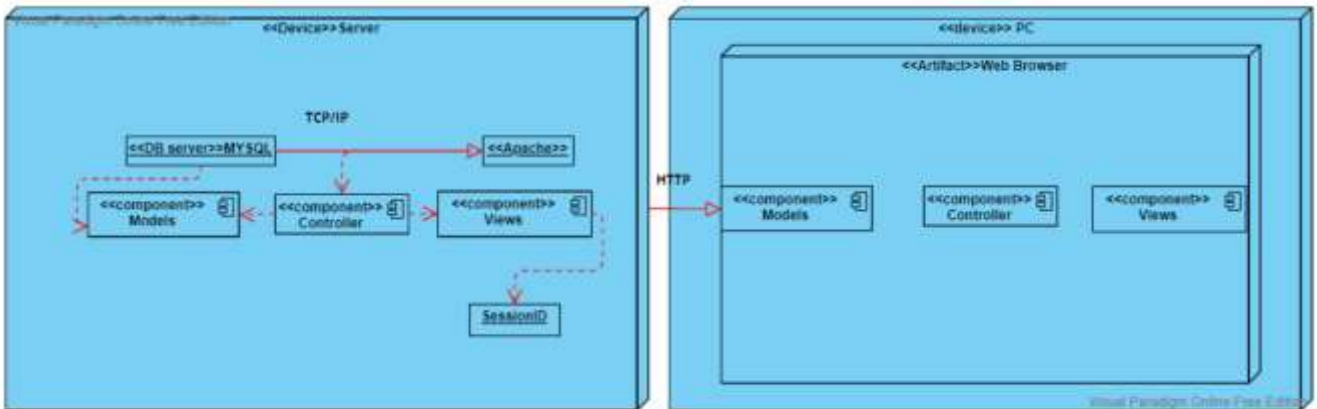
SellerController Class



[BOO] Requirements Specification

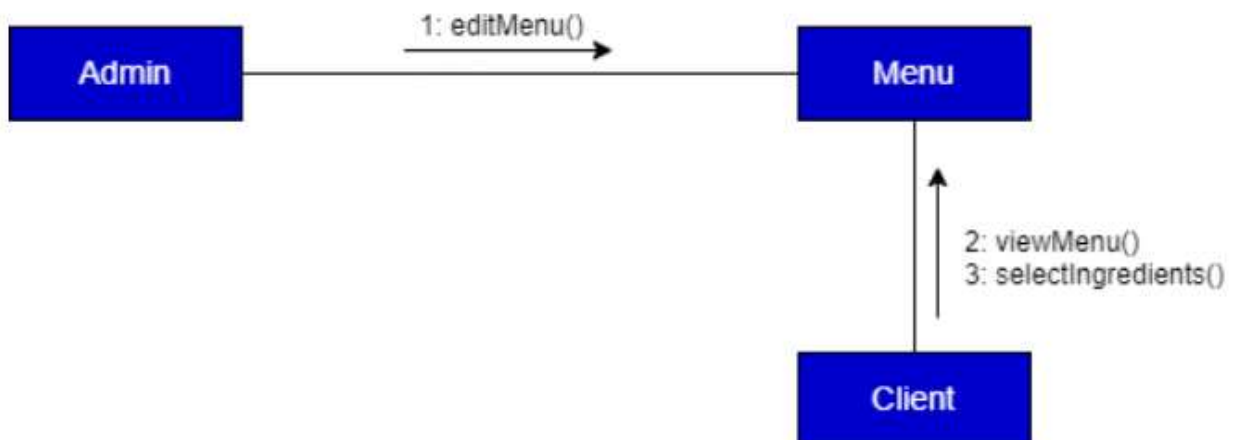


5.9. Deployment Diagram

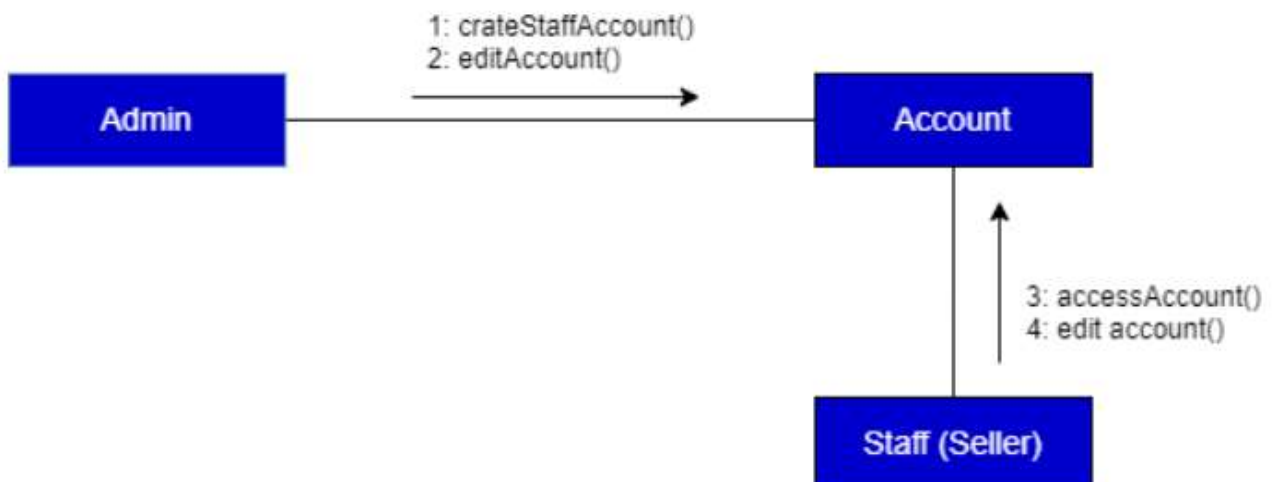


5.10. Collaboration Diagram

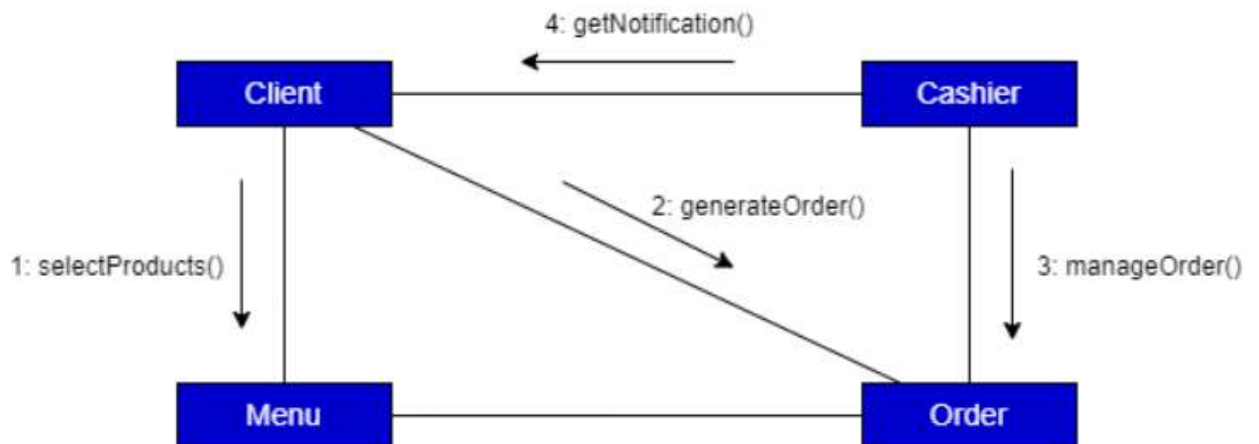
Admin-Menu-Client Diagram



Admin-Seller Diagram



Client-Seller Diagram



APPENDIX

The appendixes are not always considered part of the actual Requirements Specification and are not always necessary. They may include

[BOO] Requirements Specification

- Sample input/output formats, descriptions of cost analysis studies, or results of user surveys;
- Supporting or background information that can help the readers of the Requirements Specification;
- A description of the problems to be solved by the system;
- Special packaging instructions for the code and the media to meet security, export, initial loading, or other requirements.

When appendixes are included, the Requirements Specification should explicitly state whether or not the appendixes are to be considered part of the requirements.

Appendix A. Definitions, Acronyms, and Abbreviations

Define all terms, acronyms, and abbreviations used in this document.

Appendix B. References

List all the documents and other materials referenced in this document.

Appendix C. Requirements Traceability Matrix

The following trace matrix examples show one possible use of naming standards for deliverables (Functional Area-DocType-NN). The number has no other meaning than to keep the documents unique. For example, the Bargaining Unit Assignment Process Flow would be BUA-PF-01.

For example (1):

Business Requirement	Area	Deliverables	Status
BR_LR_01 The system should validate the relationship between Bargaining Unit/Location and Job Class.---Comments: Business Process = "Assigning a Bargaining Unit to an Appointment" (Priority 1)	BUA	BUA-CD-01 Assign BU Conceptual Design	Accepted
		BUA-PF-01 Derive Bargaining Unit-Process Flow Diagram	Accepted
		BUA-PF-01 Derive Bargaining Unit-Process Flow Diagram	Accepted
BR_LR_09 The system should provide the capability for the Labor Relations Office to maintain the job class/union relationship.---Comments: Business Process = "Maintenance" (Priority 1)	BUA	BUA-CD-01 Assign BU Conceptual Design	Accepted
		BUA-PF-02 BU Assignment Rules Maint Process Flow Diagram	ReadyForReview

For example (2):

BizReqID	Pri	Major Area	DevTstItems DelivID	Deliv Name	Status
BR_LR_01	1	BUA	BUA-CD-01	Assign BU Conceptual Design	Accepted
BR_LR_01	1	BUA	BUA-DS-02	Bargaining Unit Assignment DB Modification Description	Accepted
BR_LR_01	1	BUA	BUA-PF-01	Derive Bargaining Unit-Process Flow Diagram	Accepted
BR_LR_01	1	BUA	BUA-UCD-01	BU Assign LR UseCase Diagram	ReadyForReview
BR_LR_01	1	BUA	BUA-UCT-001	BU Assignment by PC UseCase - Add Appointment and Derive UBU	Reviewed
BR_LR_01	1	BUA	BUA-UCT-002	BU Assignment by PC UseCase - Add	Reviewed

[BOO] Requirements Specification

BizReqID	Pri	Major Area	DevTstItems DelivID	Deliv Name	Status
				Appointment (UBU Not Found)	
BR_LR_01	1	BUA	BUA-UCT-006	BU Assignment by PC UseCase - Modify Appointment (Removed UBU)	Reviewed
BR_LR_09	1	BUA	BUA-CD-01	Assign BU Conceptual Design	Accepted
BR_LR_09	1	BUA	BUA-DS-02	Bargaining Unit Assignment DB Modification Description	Accepted
BR_LR_09	1	BUA	BUA-PF-02	BU Assignment Rules Maint Process Flow Diagram	Accepted
BR_LR_09	1	BUA	BUA-UCD-03	BU Assign Rules Maint UseCase Diagram	Reviewed
BR_LR_09	1	BUA	BUA-UCT-045	BU Assignment Rules Maint: Successfully Add New Assignment Rule	Reviewed
BR_LR_09	1	BUA	BUA-UCT-051	BU Assignment Rules MaintUseCase: Modify Rule	Reviewed
BR_LR_09	1	BUA	BUA-UCT-053	BU Assignment Rules MaintUseCase - Review Assignment Rules	Reviewed
BR_LR_09	1	BUA	BUA-UCT-057	BU Assignment Rules MaintUseCase: Inactivate Last Rule for a BU	Reviewed
BR_LR_09	1	BUA	BUA-UI-02	BU AssignRules Maint UI Mockups	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-021	BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Success	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-027	BU Assignment Rules Maint TestCase: Modify Rule - Success	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-035	BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Error Condition	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-049	BU Assignment Rules Maint TestCase: Modify Rule - Error Condition	ReadyForReview

For example (3):

BizReqID	CD01	CD02	CD03	CD04	UI01	UI02	UCT01	UCT02	UCT03	TC01	TC02	TC03	TC04
BR_LR_01			X		X		X			X		X	
BR_LR_09	X			X		X			X		X		X
BR_LR_10	X			X					X		X		
BR_LR_11		X											

Appendix D. Organizing the Requirements

This section is for information only as an aid in preparing the requirements document.

Detailed requirements tend to be extensive. Give careful consideration to your organization scheme. Some examples of organization schemes are described below:

By System Mode

Some systems behave quite differently depending on the mode of operation. For example, a control system may have different sets of functions depending on its mode: training, normal, or emergency.

By User Class

Some systems provide different sets of functions to different classes of users. For example, an elevator control system presents different capabilities to passengers, maintenance workers, and fire fighters.

By Objects

Objects are real-world entities that have a counterpart within the system. For example, in a patient monitoring system, objects include patients, sensors, nurses, rooms, physicians, medicines, etc. Associated with each object is a set of attributes (of that object) and functions (performed by that object). These functions are also called services, methods, or processes. Note that sets of objects may share attributes and services. These are grouped together as classes.

By Feature

A feature is an externally desired service by the system that may require a sequence of inputs to affect the desired result. For example, in a telephone system, features include local call, call forwarding, and conference call. Each feature is generally described in a sequence of stimulus-response pairs, and may include validity checks on inputs, exact sequencing of operations, responses to abnormal situations, including error handling and recovery, effects of parameters, relationships of inputs to outputs, including input/output sequences and formulas for input to output.

By Stimulus

Some systems can be best organized by describing their functions in terms of stimuli. For example, the functions of an automatic aircraft landing system may be organized into sections for loss of power, wind shear, sudden change in roll, vertical velocity excessive, etc.

By Response

Some systems can be best organized by describing all the functions in support of the generation of a response. For example, the functions of a personnel system may be organized into sections corresponding to all functions associated with generating paychecks, all functions associated with generating a current list of employees, etc.

By Functional Hierarchy

When none of the above organizational schemes prove helpful, the overall functionality can be organized into a hierarchy of functions organized by common inputs, common outputs, or common internal data access. Data flow diagrams and data dictionaries can be used to show the relationships between and among the functions and data.

Additional Comments

Whenever a new Requirements Specification is contemplated, more than one of the organizational techniques given above may be appropriate. In such cases, organize the specific requirements for multiple hierarchies tailored to the specific needs of the system under specification.

There are many notations, methods, and automated support tools available to aid in the documentation of requirements. For the most part, their usefulness is a function of organization. For example, when organizing by mode, finite state machines or state charts may prove helpful; when organizing by object, object-oriented analysis may prove helpful; when organizing by feature, stimulus-response sequences may prove helpful; and when organizing by functional hierarchy, data flow diagrams and data dictionaries may prove helpful.