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EPOKA UNIVERSITY

FACULTY OF ARCHITECTURE AND ENGINEERING
Computer Engineering
CEN 302 - Software Engineering

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1. Executive Summary

1.1 Project Overview

Coffee shop chains are becoming more ubiquitous in Albania, with at least three of them being fairly prominent and well-known to the average coffee consumer. In light of this, we can consider the possibility that a management system for this group of businesses may be in fact in demand.

Creating such a management system would require a division between the individual administration of single stores, as well as the 'back end' of the system, regarding management of the whole chain. Another divide is between the service portion (which will involve the above two sides) as well as the supply and storage portion, dealing with the storing and delivery of materials and supplies needed for each store.

Coordinating each individual portion of the management system would be the greatest challenge of the management system, not to mention the need to research legislation, economics and general business management, in order to properly create the system. Beyond that, a number of schematics and diagrams will be needed to properly create an idea of the system.

1.2 Purpose and Scope of this Specification

In Scope of these requirements:

- Taking into consideration various uses of the project by three categories of system users (Workers and Managers, Financial workers and General Administrators).

- Dealing with supply and distribution of needed materials for the business that is served by the application, to conduct itself properly.

- Keeping with legislation and other articles of law which mainly concern:

 - Automatic calculation of tax payments

 - Data protection of individual users, which involve employees of the company.

- Managing the flow of work and presenting a clear canvas of information and statistics regarding the service, in assistance of making better informed executive decisions

Out of the scope of these requirements:

- Handling the management of the supply and storage, as well as delivery. This would require it's own, separate magazine management system.

- Handling equipment and their distribution: Purchase of computers, electronic registers as well as machinery that aids daily work (e.g coffee machines) is an administrative decision, that the system cannot be made responsible for.

- Handling the hiring of new employees, as well as their firing. The system cannot and will not be able to automatically hire or fire employees.

2. Product/Service Description

2.1 Product Context

Being a web-application, the product is well-capable of interfacing with the web as a whole. Therefore, the possibility for integration into a system that is beyond the scope of the product itself, is in fact present.

With the above consideration, it must still be noted that the product is intended for somewhat isolated use, and no unconcerned users should be allowed to take part in it. It is dedicated to specific employees of the coffee shop chain service that employs it (whether it be one or many, and with modifications per case).

2.2 User Characteristics

User profiles, are listed as below. There is a total of four, although for administrative purposes, the first two will be under the same group of functional requirements (Note: This does NOT mean they will operate in the same way)

User Profile: Shop Worker

Typically not too involved in the larger organizational processes, but will probably be the type to peruse the product the most. Little expertise requires, barring the use of a simple online interface, as well as general adequacy as a shop worker and waiter. Little technical expertise needed, however familiarity with the functionalities of the system is needed, so as not to cause problems.

- The Shop Worker has access to the shop worker interface:

 - The Shop Worker can log in, log out, and change their own password.

 - Create orders, and mark their completion

 - Mark the amount of money acquired, via payment for orders completed.

 - Note any amount of supplies used in the process, and potentially ask for emergency supplies.

User Profile: Shop Manager

Greater responsibility in the bigger picture of the system, as they need to manage payment for individual workers, as well as periodically check for supplies. Supply requests may be made by the system, or the shop workers, however reports are filed by the manager, and they also possess the ability to do so.

Thus, while much like the shop worker, little technical expertise is needed, bar that required to use a simple web-application, understanding of the workings of the company and system as a whole, are a requirement.

-The Shop Manager has their own interface:

- Logging in, logging out, registering and deleting local employees, change their own password.
- Checking on present store supplies
- Checking on status of workers (but NOT on personal worker data)
- Checking employee reports, that are automatically generated, monthly.

User Profile: Economist

Handles most of the financial situation of the system. Familiarity with the system as a whole is a must. Familiarity with the workings of the company, as well as handling every portion of the system, not to mention being able to foresee potential problems coming from other sectors and the need for some technical expertise regarding potential problematic cases with their own (financial) section of the product, are much preferred.

-The Economist has an interface regarding the whole system:

- They can log in, log out and change their own password.
- They can check the economic status of every shop in their spread of influence.
- They can generate reports, and approve or disapprove budgets and supplies for individual shops.

User Profile: System Administrator

The requirements for this type of user are the steepest. Their duty is to manage the system as a whole. Technical knowledge of managing the system and potential errors is required, seeing that the system

administrator can often be the company's IT as well. They should be familiar with the structure of the system database, as well as the functionalities provided by the system.

Beyond that, some financial knowledge should be needed, to be able to properly interact with the economical section of the product. Awareness of most user duties and functions, as well as access to the system.

-The System Administrator has a fairly large access to the system:

- His interface allows for logging in, and registering new users of any level in the organisation.

- It allows the administrator to access the balance and status of every individual shop and the general status of the system

- It allows them to read monthly reports from individual branches and the economist

- It allows them to remove or add new users, as well as add new products

- Check the supply status, and communicate with the storage (might not be implemented in the system, depending on business details)

2.3 Assumptions

It is assumed that the product users have a persistent network connection, otherwise the product will be unavailable. Following this, it is also assumed that the company can provide electronic registers, computers and other platforms that are required of the system. Following this, it is assumed still that the browsers are sufficiently updated. While the product will try to cover for all possibilities, a more modern browser is preferred for work to be smoother.

2.4 Constraints

The product might require:

- Log file keeping. This is for purposes of an electrical outage, or other system errors.

- Security. Being a web application, difficulties with keeping the program secure may arise.

- There are few limits on disk space or memory, however an internet connection is required.

- Maintaining the database will also be required of the database administrator of the system, most often the IT specialist.

- Frameworks and programming languages associated with the product, will have to be web-based.

2.5 Dependencies

- A front-end/interface needs to be constructed first and foremost, possibly in parallel with the database.

- Following that, a diagrammatic view of the system needs to be constructed, in line with the database format. The back end of the product will thus be defined.

- The system needs to be online, and generate automatic reports, regarding financial status, which are calculated via the related algorithms.

- Individual shop modules need to be defined properly, and distributed to each shop. They must all connect to a central module.

- These can be built in parallel, however the individual shop modules are more fit for building first.

- A form of connection must be established between the administrative section and the daily work section of the product.

- A form of separation must also be put in place, so that each module is independent.

- Security must be added to the collective modules of the product.

3.1 Functional Requirements

CS_GR(Coffee Shop_General Requirements) - Requirements relating to
CS_IS (Coffee Shop_Individual Store) - Requirements relating to individual
coffee stores

CS_F (Coffee Shop_Finance) - Requirements pertaining to finance

CS_SA (Coffee Shop_System Administration) - Requirements pertaining to
the administration.

Req#	Requirements	Comments	Priority	Date Rvvd	SME Review/Approved
CS_GR #1	There should be separate views for separate user levels	*Specifically, four have been outlines	1	3/29/2019	
CS_GR #2	Every user should be able to log in and out		1	3/31/2019	
CS_GR #3	Every user should be able to access their own part of the system		1	3/31/2019	
CS_IS #1	The system should have profiles for each worker		1	3/29/2019	
CS_IS #2	The system should be able to generate reports for each worker		2	3/29/2019	

CS_I S #3	Worker profiles should be private.	*Data protection	1	3/29/2019	
CS_I S #4	Managers should be able to read all worker reports		2	3/29/2019	
CS_I S #5	Managers should be able to register new employees		2	3/29/2019	
CS_I S#6	Managers should be able to file a supply balance report, and request for supplies at the end of the day.		2	3/29/2019	
CS_I S #7	Workers should be able to make an emergency request		2	3/29/2019	
CS_I S #8	A statistical monthly report, generated weekly	It would help improve the product supply, adjusting it as per preferences.	3	3/29/2019	
CS_ SA #1	The admin should be able to view all other users		1	31/3/2019	
CS_ SA #2	The admin should be prohibited from viewing user private information		1	31/3/2019	
CS_ SA #3	The admin should have access to all product tables		1	31/3/2019	
CS_ #4	The admin should be able to view all product tables		2	31/3/2019	

SA #4	able to register or remove users, of any lower level				
CS_SA #5	The admin should be able to edit, add or delete new products		2	31/3/2019	
CS_SA #6	The admin should be able to view all reports, from all users		1	31/3/2019	
CS_SA #7	The admin should be able to view the economic report/balance delivered at the end of the month		1	31/3/2019	
CS_SA #8	The admin should be able to view a statistical overview of the system		3	31/3/2019	
CS_F #1	There should be a daily report for each shop	*Variable report time, depending on implementation or individual store.	1	1/4/2019	
CS_F #2	There should be an automatic tax calculation procedure, monthly.		1	1/4/2019	
CS_F #3	An economical report should be auto-generated	Note that this is different from audit tracing	2	1/4/2019	

	monthly				
CS_ F #4	There should be a file that tracks every finished transaction. Files are preserved up to a certain period.		1	1/4/2019	
CS_ F #5	There should be a calculation of business expenditure, concerning supplies		1	1/4/2019	
CS_ F #6	The system should have a calculation of total monthly earnings, done automatically		1	1/4/2019	

3.2 Non-functional Requirements

3.2.1 Product Requirements

3.2.1.1 Placeholder

There will be four separate interfaces.

- Shop Employee Interface:
 - It should primarily contain a log-in window, with the option to change password. The exact password implementation details can change over time.
 - It should then contain an user profile, with the option to view the following:

- Orders: A list of orders pending, and one of orders completed
- Report: A daily or weekly (adjustable) report, which is
- Log Out: The option to log out of the site.
- Emergency Supply Request: Send a notification to the main HQ to send supplies of a certain product that is needed.
- Shop Manager Interface:
 - It should allow for logging in and registering new workers, locally
 - It should be able to allow one to authorize password changes, if available.
 - It should allow the manager to check:
 - His own profile
 - User reports, either daily or monthly
 - Product supply status, and a balance for the day (financially speaking)
 - Log out of the site.
 - Request supplies, as per the entry in Shop Worker interface.
- Economist Interface:
 - It should allow for logging in.
 - It should allow for viewing of monthly balance report, of the local shops.
 - It should however, restrict this to the ones they have on their area.
 - Able to compile (automatically, or with adjustments) a general report.
 - Able to make requests and send notifications to individual shops or administrator.
- Administrator Interface:
 - Can keep track and observe all reports.
 - Can add new users, and promote users to managers. Can also remove users from the system.

- Can manage requests and notifications from individual shops and economist.
- Can log in, and log out.

3.2.1.1 Usability Requirements

- There should be an extensive document that provides instruction on all of the potential uses of the system.
- This document should be used to instruct users on all methods of accessing the system.
- The product should be fairly easy to utilize.
- The documentation should be split in modules, concerning each type of user of the system.
- The application should be secure, to users, and they should be confined to their areas of interest only.
- The application should possess clearly visible functionalities, and allow for easy access.

3.2.1.2 Efficiency Requirements

3.2.1.2.1 Performance

Being a web application, a lot of the performance depends on the assumption about Internet connection, specifically pertaining to what the ISP offers in terms of speed and quality of connection. This is a primary concern regarding the product.

3.2.1.2.2 Space

The maximum number of users is variable, and it is doubtful that the company will have more than the system can support. It is predicted, that at most, several hundred (no more than 500 employees) will have to interface with the application, as several functions of the company will be separate from the system.

3.2.2 Dependability Requirements

- The product should be available at all times, online.
- The product should be available only to the concerned parties.
- If external parties are concerned, an informational page can be created, to interface with them.
- There should be little issue with geographical spread, seeing that it is a web-app.
- Downtime impact varies, depending on when the downtime occurs. Downtime outside of working shifts is acceptable, and can be repaired. Downtime at a critical time that serving is required, can be more problematic.
- Scheduled maintenance can be left for times when the store itself is closed, or alternatively times with as little traffic as possible. Off note is the fact that scheduled maintenance should be restricted to a certain time-frame as not to cause too many issues.
- There should be as little downtime as possible during working hours. At most one occasion per hour is acceptable, even if highly undesirable.

3.2.1.3 Security

Considering the structure of the system database, there will be difficulties arising with the product menu and the expenditure of individual components of the products, regarding automatic calculation of resource consumption, and supply requesting, as well as potentially statistics. It is unlikely that the total combination of ingredients per drink, taken individually (per each product they are part of) will exceed 20,000, which is a tested value regarding system performance (regarding queries).

3.2.1.3.1 Protection

The system will undergo several layers of protection:

- Activity logging, as well as error logging
- Security encryption, for passwords.
- User input filtering, in any case an user enters undesirable data
- SQL filtering, in case of SQL Injections.
- Usage of prepared statements, for the same reason as above.
- Usage of proper methods of cross-site data transfer.
- Session refreshing, for Session ID hijacking attempts.

3.2.1.3.2 Authorization and authentication

-Only users who are members of the company/employed under the company should be able to view the system.

-Users of a certain tier should only be able to view the concerned architecture.

-Every user logs in with a company provided username, and a random password, which they can change using a company provided private code.

3.2.3.3 Latency

-The interface linking and the placement within the collective of the application of individual pages, should be as optimal as possible, with as few jumps as possible between two pages, to avoid latency.

-Queries should be optimized, as should be algorithms that generate values (often for calculation of taxes and even for report generation) and documents for the system.

-Connection based latency is not covered by the system.

3.2.2 Organizational Requirements

3.2.2.1 Environmental Requirements

The users should first and foremost have internet access. They should be able to access the app, securely.

Users should be able to operate properly, both by accessing the system itself, to view the menu and select proper products, viewing their own orders, or using the database (not directly!) to view the whole list of products.

The users implicitly affect the database, via completing orders, which reduce a standard amount out of the total available at the beginning of the day.

The users have their reports automatically sent to higher-tier users.

3.2.2.2 Operational Requirements

The only users that are allowed by managers or the system administrator are capable of using the product.

Users must first authenticate themselves via logging-in. Following that, they can change the password only via a personal, randomly generated code, given at the beginning..

Users should be able to notify different tiers of the administrator, the economist receives monthly reports generated automatically. Shop managers receive

3.2.2.3 Development Requirements

Creation of the database is what comes first in the development process.

Communication with the customer, should be handled at every stage. Once a step of the development has been completed, the communication should be restored.

The development follows the spiral model in this regard. Front end and back end as well as individual interfaces are handled as time goes on. Following that, until the product is improved, the spiral model cycles through.

Each interface has a different customer base to communicate with, normal workers, management positions, economists and the administrator of the system. The later holds onto the whole of the system, and is more involved with it's creation, as well as far more specialized, regarding the functionalities associated with the product.

Testing phase is where the product is presented to a group of users, and communication is finalized, final touches are made and the product is launched. The product can be updated however, and launched once again as long as the structure of the database is not altered.

This stems from the consideration that while new technologies and optimizations are bound to occur, changes in the business model are highly unlikely, and therefore the structure of the company reflected in the database system is too, unlikely to undergo alterations.

3.2.3 External Requirements

3.2.3.1 Regulatory Requirements

System Interface/Integration

The system should be capable of running on most Web-Browsers. While technologies accommodate for most modern browsers, such as Mozilla or Chrome, some owners may opt for Internet Explorer, in which case alterations may need to be made.

Alternatively if the user can be communicated, and the decision to use only the advanced browsers is agreed upon, work can continue far more simply.

Typically, specifications depending on the computers (and therefore Operating Systems) available to the company, which are not the responsibility of this product development team, but of the company itself, would help tremendously.

Communication is continuous and the conclusions drawn by it are replenished with each step of development.

3.2.3.1.1 Network and Hardware Interfaces

Persistent TCP connection required, for connecting the various sites of the app.

Operating System is of little relevance, as long as it supports browsers such as Google Chrome or Mozilla.

Typically, company-approved devices are the only ones with proper access to the system. Network card is a necessity for the application to function.

A server should be up at all times, to host the system, as should a connection to the database. These need almost full uptime, and should be down only in the event of maintenance.

Access and error logs should be created and maintained, for everyone who accesses the site, these will exist within the server.

Connection to an electronic register optional, and the implementation exceeds the scope of the project. Orders will be preserved by the application.

Receipt printer will however, need to be implemented. This is in accordance with the laws of the state of Albania, detailing the receiving of a tax coupon upon the completion of a monetary transaction.

3.2.3.1.2 Systems Interface

The Worker Interface will send a weekly report to the Manager Interface. The report will contain the following data, arrangement at the discretion of the programmer and of the party requesting the product, following basic tenets for clarity and readability:

- Worker id, name and surname.
- Date of report compilation.
- Number of orders completed.
- Number of days present at work, with working hours for each day, collected upon log-in and log-out.
- Sum of money produced via the above orders. Automatically calculated.

The Manager Interface produces a monthly report, which is sent to the Economist Interface. It contains the following, abiding by the above point:

- Shop id, Manager id, name, surname of manager, as well as address of shop.
- Date compiled, month it belongs to.
- Total earnings per month.
- Total resource expenditure.

-Total tax associated with the monthly balance.

The administrator has the right to read all of the above reports. He receives notifications whenever a report is produced, and has them separated into managerial and financial reports. They are the same as the above.

The manager can also view a total list of products, available at his store. The administrator has access to all products available at every shop as well.

Assignment of pay is done from the managerial interface, for workers, and they can view it from their own interface.

Assignment of pay for economists, and managers is handled by the administrator.

3.2.3.2 Ethical Requirements

The product cannot make decisions or act on it's own regarding any of the following:

- Adding or removing a worker from the system.
- Making changes to payroll database.
- Making supply calls on it's own, without user approval.

Children's Privacy

The software and its services are not directed to anyone under the age of 13 or 18 (work age). The Site does not knowingly collect or solicit information from anyone under the age of 13 or in some cases under 18, or allow anyone under the age of 13 to use the software services. And in any case if that information of persons under necessary age is collected, then

this information will be automatically deleted from server, database and so on where we will delete that information as soon as possible.

3.2.3.3 Legislative Requirements

3.2.3.3.1 Data Protection

The state of Albania has passed law no.9887, “On the protection of personal data” in 2018, which allows for an independent institution to oversee the protection of personal data. This affects the users of the product as well, not to mention it’s structure: no user of whichever tier may be able to view any sensitive information, or seek to acquire it by any means.

This is made sure of by the system. It should be noted, that names, surnames and other information that is provided by the employer, upon hiring does not count for these purposes, as it is common sense for it to be known. Passwords and private profiles, should however be as the term suggests, private.

3.2.3.3.2 Taxation Laws.

As of 2014, Albania makes use of a three-bracket progressive income tax. It is likely that the subjects interested in the product, will be of the third bracket, and thus be taxed 23% of their earnings.

Following that, the VAT (Value Added Tax) or as it is known in Albania, TVSH, will also have to be taken into account. It’s value is 20%.

Social Security tax, which includes health insurance contributions has to be taken into account as well. Social security and health insurance contributions are paid on employment, civil and management income. Contributions is paid on a monthly income, from a minimum of 22,000 to a

maximum amount of 95,130. The employees contribution is 9.5% while the employer pays 15%. Health insurance is levied at 1.7% for both employee and employer. The self-employed pay 23% for social security and 7% for health insurance.

Transactions concerning the payroll should be properly audited as well, a trace log should include a description of all the transactions, as well as a timestamp, to make sure nothing is lost in the event of system errors.

3.2.4 Other Requirements

3.2.4.1 Data Management

The database will contain a number of tables, and the following information, which will also be depicted in an ER diagram:

3.2.4.2 Portability

The system should be highly portable by virtue of it being a web-application. Barring the server, distribution of the system on a per-shop basis, containing the Shop Worker and Shop Manager modules, which have been outlined previously.

The main headquarters of the business concerned, should be where the Economist and Administrator modules are seen, and distributed in, as well as where data is stored.

It is prudent to communicate with the company and observe the specifics of their system, should they possess more modern browsers, portability is

less of an issue, as special coding arrangements have to be made for older browsers.

3.3 Domain Requirements

-The database should accommodate for the following concepts related to the nature of the product:

- User profiles, where users are defined as employees
- Reports of two different fashions on work and economic progress.
- A menu of products, which can be modified for fuller automation.
- Continuing off the above, a link between products and their constituents.

-The tax payment calculation algorithm should be adjusted to the specifics of the business, as outlined in section 3.2.9, part 2.

-The online nature of the application should be fitted with security measures, as it is one of the less safe choices concerning attacks.

-Further still, the online nature of the application will require appropriate means of connecting various modules of the whole system.

4. Use Cases/Scenarios

Business Scenario #1:

Order placing.

Actors: Shop Worker, Customer (not part of the system).

Start state:

Shop worker is logged into the system and has received an order (not part of the system yet).

Scenario flow:

- An order is created out of one or more menu items.
- Menu items are then taken apart into their constituents, of standard quantity.
- Order is then added to the interface (but not the database) automatically by the system. (Work may not begin in completing it, however this is outside the system scope)

End State:

Order has been added to the interface

Business Scenario #2

Order completion

Start state: User is logged in, at least one order exists in the interface.

Scenario flow:

- Order is processed, and is deemed complete when delivered to the customer.
- The individual quantity of products is subtracted from the amount present at the shop.
- The order cost is added to shop earnings and written in the day log.
- The order is removed from the interface, after all concerned attributes have been updated.

End State: Particular order is deleted from system

Business Scenario #3:

Report Creation.

Actors: System, Shop Manager

Start state: The due time set by the employer, for the report to be generated is reached.

Scenario Flow:

- The daily report for all order proceedings (in total of products used and income) is produced.
- It is sent to the manager to review it.
- It is further sent to the administrator, as an aside, to review at one's leisure if needed.

End state: Report is created and printed, and it can further be transmitted to other users.

Business Scenario #4:

User Registration.

Actors: User of any level barring Admin, Admin, Manager.

Start State: An administrator is logged in the system, either of the HQ or individual shop.

Scenario flow:

- A new user enters the system.

- If it is a shop worker, they are registered by the manager under their name, surname and an username conforming to the company standards.
- A shop manager or economist is added to the system by the system administrator, through the same procedure
- User is given a randomly generated or standard password, and a personal code

End state: A new user is added, with all the required information, or addition is denied.

Business Scenario #5

Password Change

Actors: Any user of any level

Start state: User is logged in, using his original password.

Scenario Flow:

- User accesses the password change interface, with their other login details (username)
- User inserts their fixed, immutable personal code.
- User changes password (reconfirming it a second time), upon confirmation of personal code
- Upon failure of confirmation, user is re-prompted
- Upon failing several re-prompts, user is locked out of password-resetting for increasingly longer intervals of times.

End state: Password is successfully or unsuccessfully changed. In either case, the interface is left.

Business Scenario #6

Log In

Actors: Any user of any level

Start State: User enters the system

Scenario flow:

- User accesses the system, finding the log-in interface.
- User inserts their credentials, username and password.
- Upon confirmation user is allowed to access their concerned part of the system.
- Upon failure of confirmation user is re-prompted
- Upon failing several re-prompts, user is locked out of the system for increasingly longer periods of time.

End State: User is logged in, or alternatively forced out of the system due to failing the log-in check.

Business Scenario #7

Requesting Supplies

Actors: Shop Manager, System Administrator

Start State: Individual shop manager or administrator is logged in, and accessing the unique supply request option.

Scenario Flow:

- Upon the manager's discretion, which can be at any given time or alternatively, upon receiving a warning from the system, a request is sent to the company headquarters
- The Administrator receives the request, and authorizes it.

- Supplies are sent to the store.
- The notification is deleted

End state: After both sides acknowledge the request and transaction, action is taken.

Business Scenario #8

Creating Monthly Report (Economic)

Actors: System, Economist

Start State: Economist is logged in and on the report interface

Scenario flow:

- At the end of each month, the system generates a report
- It contains total earnings, total spendings per shop, and is sent to the economist
- It is then added with total taxes to be paid, calculated automatically
- It is further supplied with wages, to each worker
- The total is written at the end of the report

End state: The report is printed out and appears on the screen

Business Scenario #10

Logging Out

Actors: Any user

Start State: User has to be logged in

Scenario flow:

- The user selects the Log Out option
- The user then logs out

End state: User is logged out

Business Scenario #11

Removing an user from the system

Actors: Administrator, User of any level

Start State: Administrator is logged in and viewing the user list.

Scenario flow:

- An user leaves company employment
- The user is removed from the system by the admin
- The admin does this by accessing the interface allowing for user removal, and deleting the user from the database

End State: User is confirmed to be deleted from the system.

Business Scenario #12

Adding a product to the menu

Actors: Administrator

Start state: Administrator is logged in and on the proper interface.

Scenario flow:

- The administrator opens up the item list
- The administrator inserts all the attributes required to form a new item in the appropriate fields.

- The administrator confirms the addition of the new item
- Attributes are extracted from the fields, and item is added to the database

End State: Product addition confirmed.

Business Scenario #13

Adding a new product category

Actors: Administrator

Start state: Administrator is present at the proper interface

Scenario flow:

- Administrator creates new category via proper window
- Administrator then adds the category id to the products that fit in it, or updates it properly
- Administrator can potentially automate this process if attributes of the products belonging to the new category have something in common, relating them to said category

End state: Product category addition confirmed.

Business Scenario #14

Deleting a product

Actors: Administrator

Start state: Administrator is logged in and is using the interface that allows him to delete the product

Scenario flow:

- Should the need arise, the administrator can delete a product that is no longer being offered
- Simply entering the id should be enough to delete the product from the database

End state: Product is confirmed to be deleted

Business Scenario #15

Deleting a category

Actors: Administrator

Start state: Administrator is logged in:

Scenario flow:

- Should the need arise, the administrator can remove a category
- Upon removal (via id insertion), the items belonging to the category have their category id set to 0
- Care should be taken to properly re-distribute them to a new category.

End state: Deletion is confirmed.

Business Scenario #16

Security Violation

Actors: Any low-level user or admin

Start state: Security violation detected.

Scenario Flow:

-If detected by low-level user, user contacts admin, admin then tries to resolve the security measure by himself and current security applications in disposal. If he cannot do so by himself and the system is still compromised, admin contacts cyber-security professionals to resolve the problem.

-if detected by admin he tries to resolve the security measure by himself and current security applications in disposal. If he cannot do so and the system is still compromised, admin contacts cyber-security professionals to resolve the problem.

-Admin may also choose to report the violation to respective police authorities.

End State: Security violation is dealt with and system is safe and running, no data is compromised.

Business Scenario #17

Privacy Violation

Actors: Any low-level user or admin

Start state: Privacy Violation detected

Scenario Flow:

-If detected by low-level user, user contacts the admin, admin in response tries to determine the level of privacy breach and tries any response measure he has in disposal in the current event. He then contacts the cyber-security professionals in order to restore any lost data from servers and prevent the privacy attack from doing any more damage to the system.

- if detected by admin , he tries to determine the level of privacy breach and tries any response measure he has in disposal in the current event. He then contacts the cyber-security professionals in order to restore any lost data from servers and prevent the privacy attack from doing any more damage to the system.

-Admin may also choose to report the violation to respective police authorities.

End State: Privacy violation is dealt with and system is safe and running , any data loss is recovered.

Business Scenario #18

Recovery/Maintenance break

Actors: Admin

Start state: System is under maintenance or under recovery from attack.

Scenario flow:

-The system will be regularly tested and updated by professionals which states in itself that the system will be offline during the period. Maintenance breaks will occur during pre-discussed time intervals between admin and system testers or developers. No one can access the system during this time period which is known amongst all users.

-If system has been under attack and as a result was offline, it needs recovery time in order to come back online and running. During this time period no one can access the system and should only do so when system comes back online.

End State: System is back online and users may continue their work as normal.

APPENDIX

Appendix A. Definitions, Acronyms and Abbreviations.

Management System: The product itself is defined as a management system, it facilitates the overall management of the business concerned to purchase it.

Schematics/diagrams: Visual representations of the workings of the system, displaying parts of it's function.

Web-application: A product or application, of the client-server model, which the client runs on his own browser, and the server is run remotely.

Log-in: The ability to access the product, via a given identification. Program functionality is locked behind logging in.

Log-out: Leaving the product, via the opposite action of letting out.

Register: Make someone a part of the system, by adding their records into the system database.

Database: A collection of structured data, related to the system, involving a list of workers, products etc.

Module: Each of a set of standardized parts or independent units that can be used to construct a more complex structure, such as an item of furniture or a building.

Network: Two or more connected computers.

Appendix B

-The Privacy Policy document, regarding the product, compiled by Baftjar Tabaku, contains the legal and regulatory requirements as well as clarification on other cases.

-Law No. 9887 for data protection, approved in 2018.

-Albanian taxation laws and regulations, regarding:

- Income tax
- VAT
- Social security tax

-Wikipedia and dictionaries, concerning Appendix A, for definition of terms.

-Documentation of Web programming languages, such as php and JavaScript, concerning adaptability to various browsers (prime example being Internet Explorer)

-Various projects of the earlier years, concerning structure

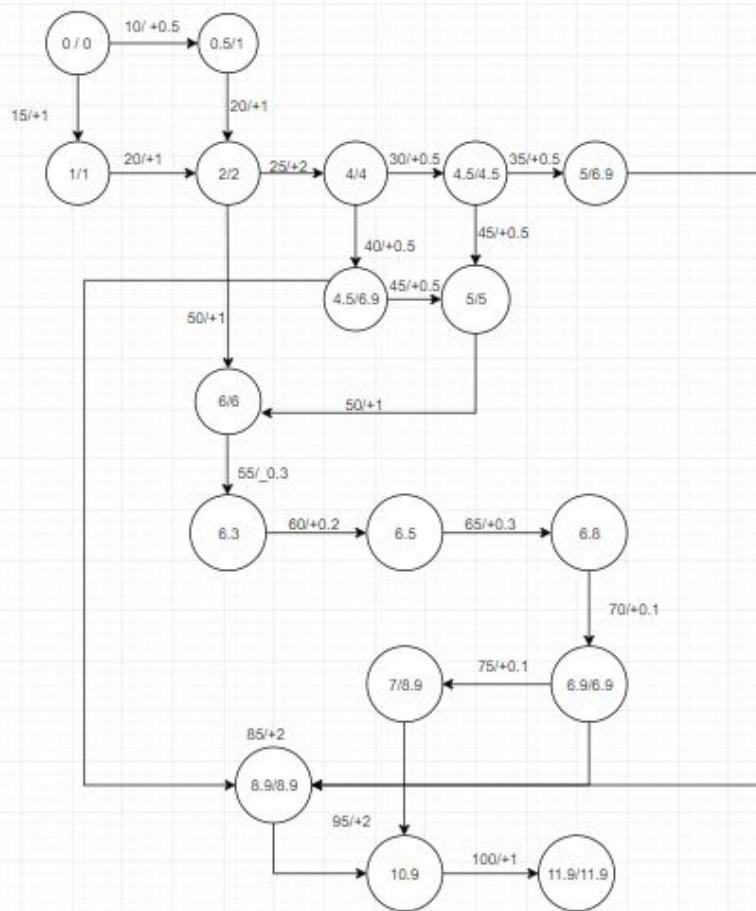
-Document that explains the Requirements Specification, which this work follows after.

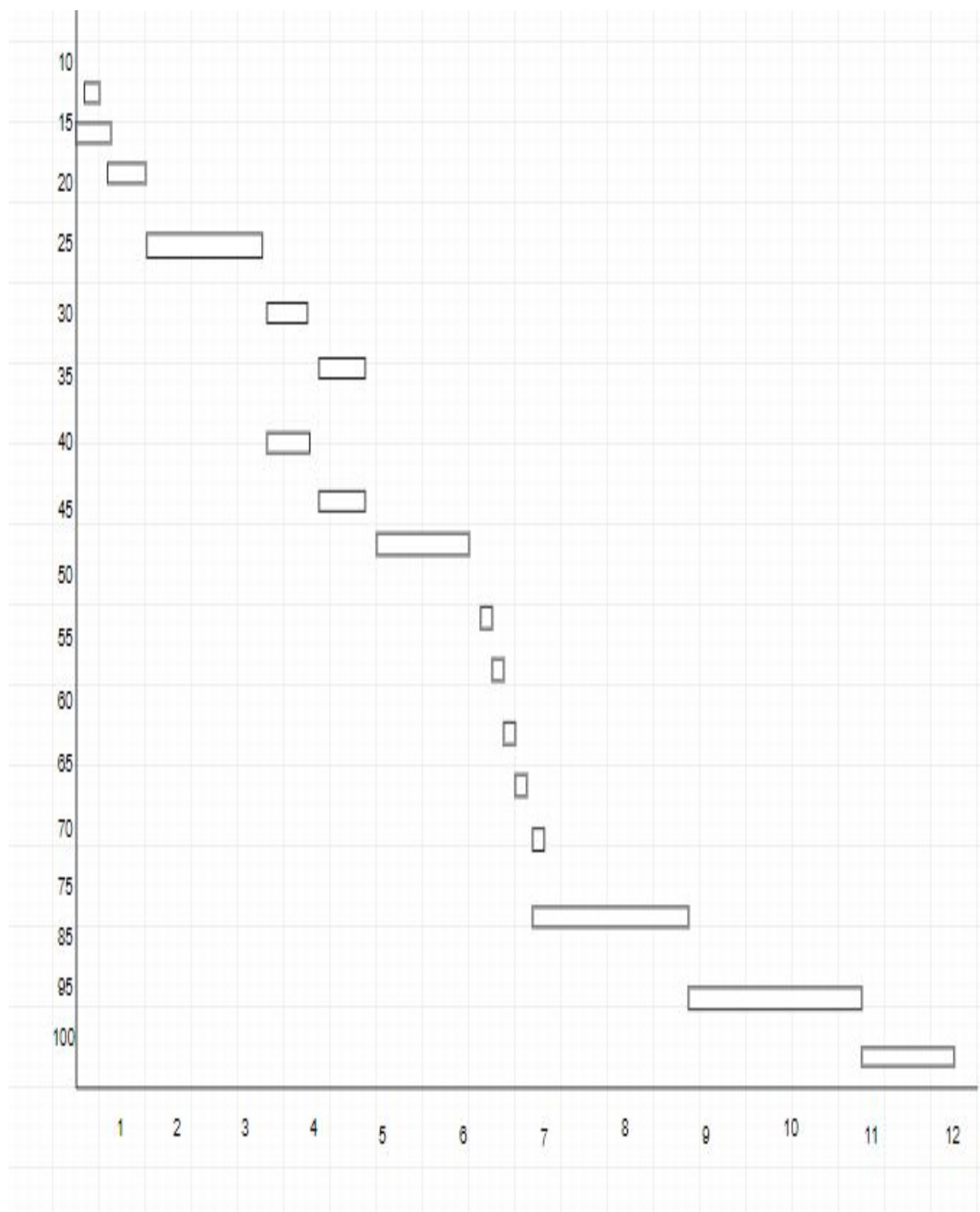
Appendix C

Network Analysis

	Activity	Duration	Depends On
10	Project Analysis	0.5 week	-
15	Project Research	1 week	-
20	Requirements analysis	1 week	10,15
25	Requirements engineering	2 weeks	20
30	Use Case Diagram	0.5 weeks	25
35	Activity Diagram	0.5 weeks	30
40	State Diagram	0.5 weeks	25
45	Data Flow Diagram	0.5 weeks	40,25,30
50	ER Diagram	1 weeks	20,45
55	Object Diagram	0.3 weeks	50

60	Class Diagram	0.2 weeks	55
65	Collaboration Diagram	0.3	60
70	Component Diagram	0.1 weeks	65
75	Deployment Diagram	0.1 weeks	70
85	Front End Coding	2 weeks	35,40,70
95	Back End Coding	2 weeks	75,85
100	Testing	1 week	85,95





Appendix D

Privacy Policy

CAPUCCINO PRIVACY POLICY

Cappuccino is a web based software that is committed to maintaining robust privacy

protections for its users. Our Privacy Policy (“Privacy Policy”) is designed to help you

understand how we collect, use and safeguard the information you provide to us and

to assist you in making informed decisions when using our Service.

For purposes of this Agreement, “Site” refers to the Company’s website, which can be

accessed at website URL (*not optional at the moment*).

“Service” refers to the Company’s services accessed via the Site, in which users can

login and each user has its own account depending on the position at work that may be

a shop worker, manager, economist and system administrator, which will give them

access to their respective accounts.

The terms

According Albanian law no.9887, "On the protection of personal data" in 2018, which

allows for an independent institution to oversee the protection of personal data.

We guarantee the personal information of the registered employee to be safe as

Cappuccino is a web based software.

You as a user should know that the names and surnames and other information

provided by employer, upon hiring does not count for these purposes as it is no sense

for it not to be known, as a user also you have your own responsibilities according to

your personal info when you are logged (password, etc.) in on your

account or share

the account information to unauthorized persons or using the collected data without

authorization.
n.

By accessing our Site or our Service, you accept our Privacy Policy and Terms of Use

(found here: [\[terms of use link\]](#)), and you consent to our collection, storage, use and

disclosure of your Personal Information as described in this Privacy Policy.

I. INFORMATION WE COLLECT

We collect “Non-Personal Information” and “Personal Information.”

Non-Personal

Information includes information that cannot be used to personally identify you, such

as anonymous usage data, general information we may collect about the clients, it

won't be personal information, it will collect information about the products of the

business, about the costumers, what they like most to use or order by personalizing

the general information not related with any personal info as name,

surname, id card,

account or something else. **Personal Information** will not be related with costumers

but only with the employee personal information as employee id, name, surname,

password, bank .No, and an username for the system and so on needed to be valid

and be added as a worker on the current position that is described on the upper

pages, and this information as username or password may be needed for you to

submit to us through the software to start the daily work activity.

1. Information collected via Technology

To activate the Service you do not need to submit any Personal Information like

username and password to enter and finish the tasks according to your position in the

system. To use the Service thereafter, you do not need to submit further Personal

Information. However, in an effort to improve the quality of the Service, we track

information provided by the user activity according to their positions, the time and

date of access, and other information that does not personally identify you

(employee).

We track this information the software database, or small text files which include an

anonymous unique identifier. Cookies are sent to a user's browser from our servers

and are stored on the user's computer hard drive. Using sessions enables us to collect

Non-Personal information about that user and keep a record of the user's activity

when using the software service. We track when the user try to edit, update or

remove elements from the shops quantity in any case related with the condition and

situation of the current task.

2. Information you provide us by registering for an account

In addition to the information as soon as you finish the juridical

process and the

contract signing, the administrator will create an account for you related with

the current work that you applied for, your will be able to access it by web

browser when you visit the site, the information collected will be the

information provided by you before, like personal information as employee id,

name, surname, password, bank .No, and an username for the system, for

further more details are described in the “**Information collected via**

Technology”

By registering, you are authorizing us to collect, store and archive the details of

personal information which will not be shared, used for the current employee

identification and type of position, and also using your daily activity details for

management purpose.

3. Children's

Privacy

The software and its services are not directed to anyone under the age of 13 or 18

(work age). The Site does not knowingly collect or solicit information from anyone

under the age of 13 or in some cases under 18, or allow anyone under the age of 13 to

use the software services. And in any case if that information of persons under

necessary age is collected, then this information will be automatically deleted from

server, database and so on where we will delete that information as soon as possible.

If you believe we have collected such information, please contact us at us on

info@cappuccino.com

II. HOW WE USE AND SHARE INFORMATION

Personal Information:

Except as otherwise stated in this Privacy Policy, we do not sell,

trade, rent or

otherwise share for marketing purposes your Personal Information with third parties.

We do share Personal Information only with administrator that is completely clear

about his responsibilities with usage of your personal information on creating

members accounts to their employee position. The administrator use your Personal

Information only at our direction and in accordance with our Privacy Policy.

In general, the Personal Information you provide to us is used to help us communicate

with you. For example, we use Personal Information to contact users (employers) in

response to questions, feedback about the software, providing technical support.

Non-Personal Information

In general, we use Non-Personal Information to help us improve the Service and

customize the costumer's experience. We also aggregate Non-Personal Information in

order to track trends and analyze use patterns on the software and making changes in

the real time in the environment of the coffee shops. This Privacy Policy does not limit

in any way our use or disclosure of Non-Personal Information and we reserve the right

to use and disclose such Non-Personal Information to our partners, advertisers and

other third parties at our discretion.

In the event we undergo a business transaction such as a merger, acquisition by

another company, or sale of all or a portion of our assets, your Personal Information

may be among the assets transferred. You acknowledge and consent that such

transfers may occur and are permitted by this Privacy Policy, and that any acquirer of

our assets may continue to process your Personal Information as set forth in this

Privacy Policy. If our information practices change at any time in the future, we will

post the policy changes to the Site so that you may opt out of the new information

practices. We suggest that you check the Site periodically if you are concerned about

how your information is used.

III. HOW WE PROTECT INFORMATION

We implement security measures designed to protect your information from

unauthorized access. Your account is protected by your account password and we

urge you to take steps to keep your personal information safe by not disclosing your

password and by logging out of your account after each use. We further protect your

information from potential security breaches by implementing certain technological

security measures including encryption, firewalls and secure socket layer technology.

However, these measures do not guarantee that your information will not be

accessed, disclosed, altered or destroyed by breach of such firewalls and secure

server software. By using our Service, you acknowledge that you

understand and

agree to assume these risks. Also displayed more certainly:

- Activity logging, as well as error logging
- Security encryption, for passwords.
- User input filtering, in any case an user enters undesirable data
- SQL filtering, in case of SQL Injections.
- Usage of prepared statements, for the same reason as above.
- Usage of proper methods of cross-site data transfer.
- Session refreshing, for Session ID hijacking attempts.
- Activity logging, as well as error logging
- Security encryption, for passwords.
- User input filtering, in any case an user enters undesirable data
- SQL filtering, in case of SQL Injections.

- Usage of prepared statements, for the same reason as above.
- Usage of proper methods of cross-site data transfer.
- Session refreshing, for Session ID hijacking attempts.

IV. YOUR RIGHTS REGARDING THE USE OF YOUR PERSONAL INFORMATION

According to the Albanian law No. 9887 about “**Protection of the personal**

informatio
n”

1. You have the right to access that without any extra payment and a written request and get from us your personal info, to know their source and the information will be replied back to you in the format and condition of the day that they were at the day when you requested them within 30 days from the day of getting the request. (**Neni 12, the right to access**)
2. The right to request the determination, correction or delete of your

personal

information without any payment when you are informed or see that your

personal information is not correct, true, fully completed or are collected and

processed in a way different from these that this law provides, if the controller

(administrator) doesn't make the determination, correction or deletion of

personal information within 30 days, you have the right to complain to the

commissioner. **(Neni 13, the right to block, correct or delete)**

3. You have the right to oppose the personal information processing, stopping it

and ask the processing part to inform him before its personal information to be

used **(Neni 15, the right of the information subject to oppose)**

4. You have the right to complain in court if you find that your right have been

violated. **(Neni 16, the right to complain)**

5. The right of compensation if you find out that your personal information is used

and has made you and damage from result of not proper personal information

processing. (**Neni 17, the right of compensation**)

V. LINKS TO OTHER WEBSITES

As part of the Service, we may provide links to or compatibility with other websites or

applications. However, we are not responsible for the privacy practices employed by

those websites or the information or content they contain. This Privacy Policy applies

solely to information collected by us through the Site and the Service. Therefore, this

Privacy Policy does not apply to your use of a third party website accessed by

selecting a link on our Site or via our Service. To the extent that you access or use the

Service through or on another website or application, then the privacy policy of that

other website or application will apply to your access or use of that site or application.

We encourage our users to read the privacy statements of other

websites before

proceeding to use
them.

VI. CHANGES TO OUR PRIVACY POLICY

The software reserves the right to change this policy and our Terms of Service at any

time. We will notify you of significant changes to our Privacy Policy by sending a

notice by placing a prominent notice on our site. Significant changes will go into effect

30 days following such notification. Non-material changes or clarifications will take

effect immediately. You should periodically check the Site and this privacy page for

update
s.

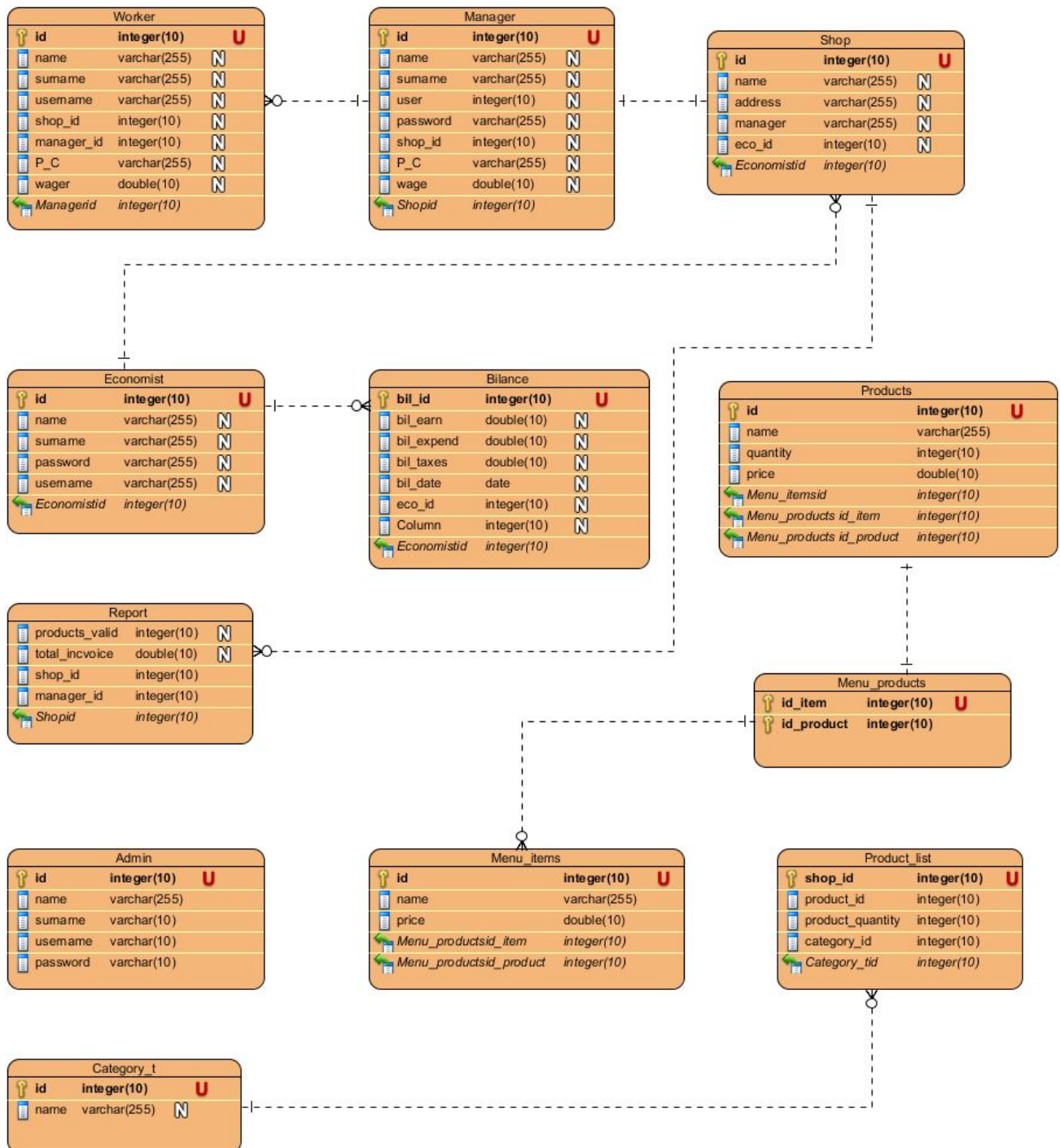
VII. CONTACT US

If you have any questions regarding this Privacy Policy or the practices of this Site,

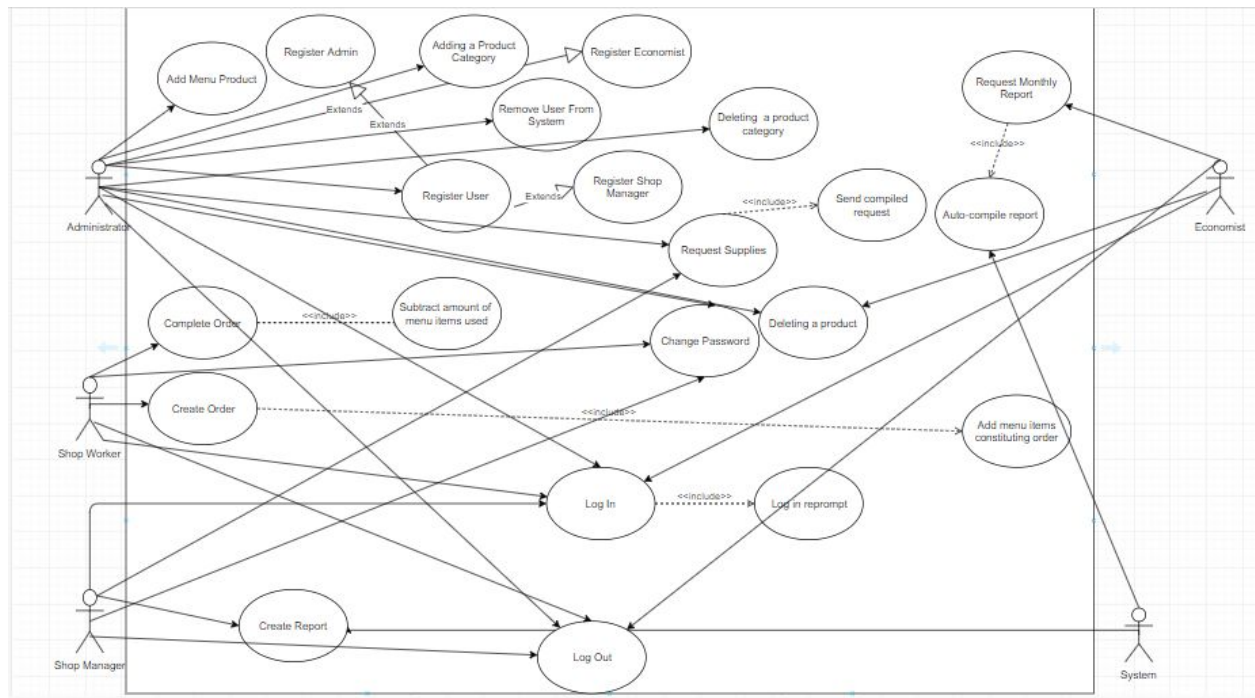
please contact us by sending an email to
info@cappuccino.com

Last Updated: This Privacy Policy was last updated on
3/31/2019

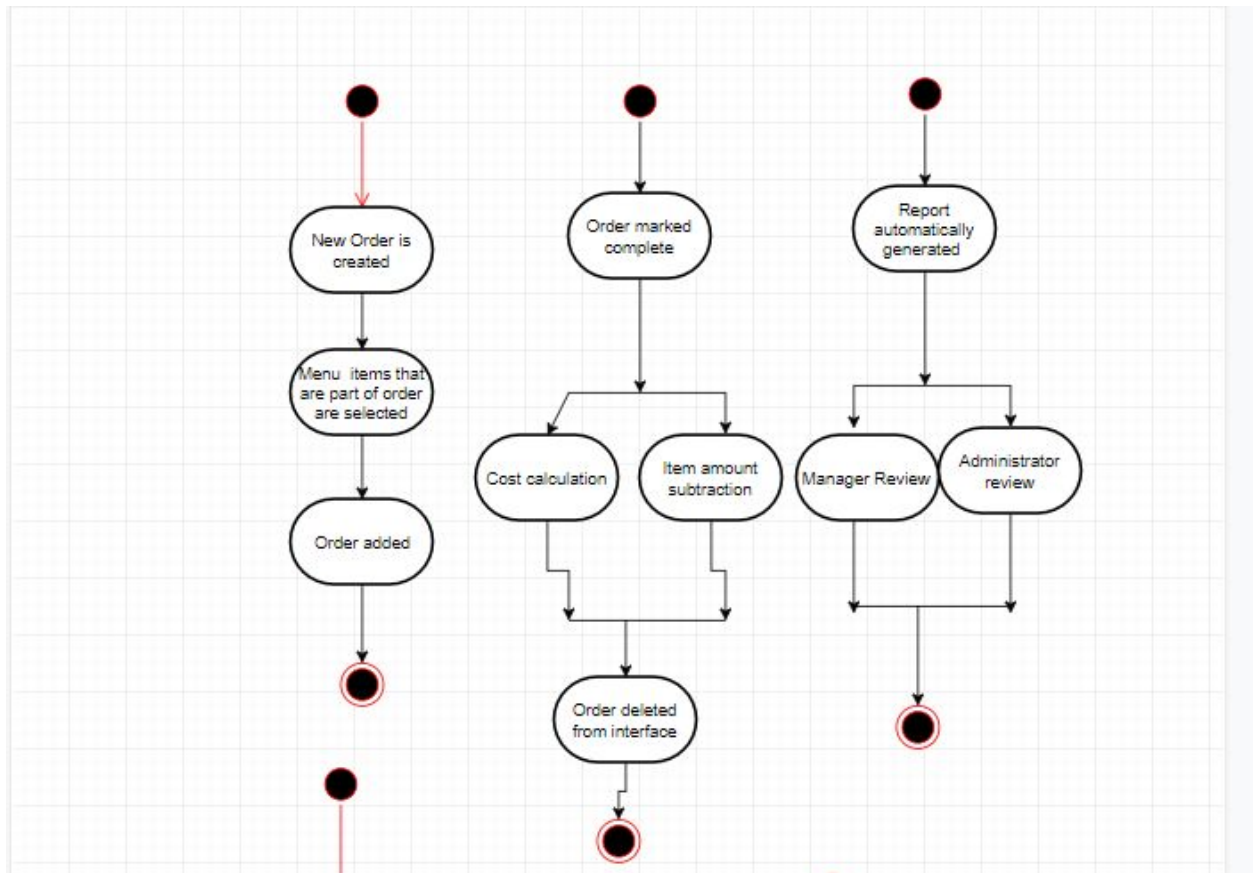
Cappuccino Database ER model



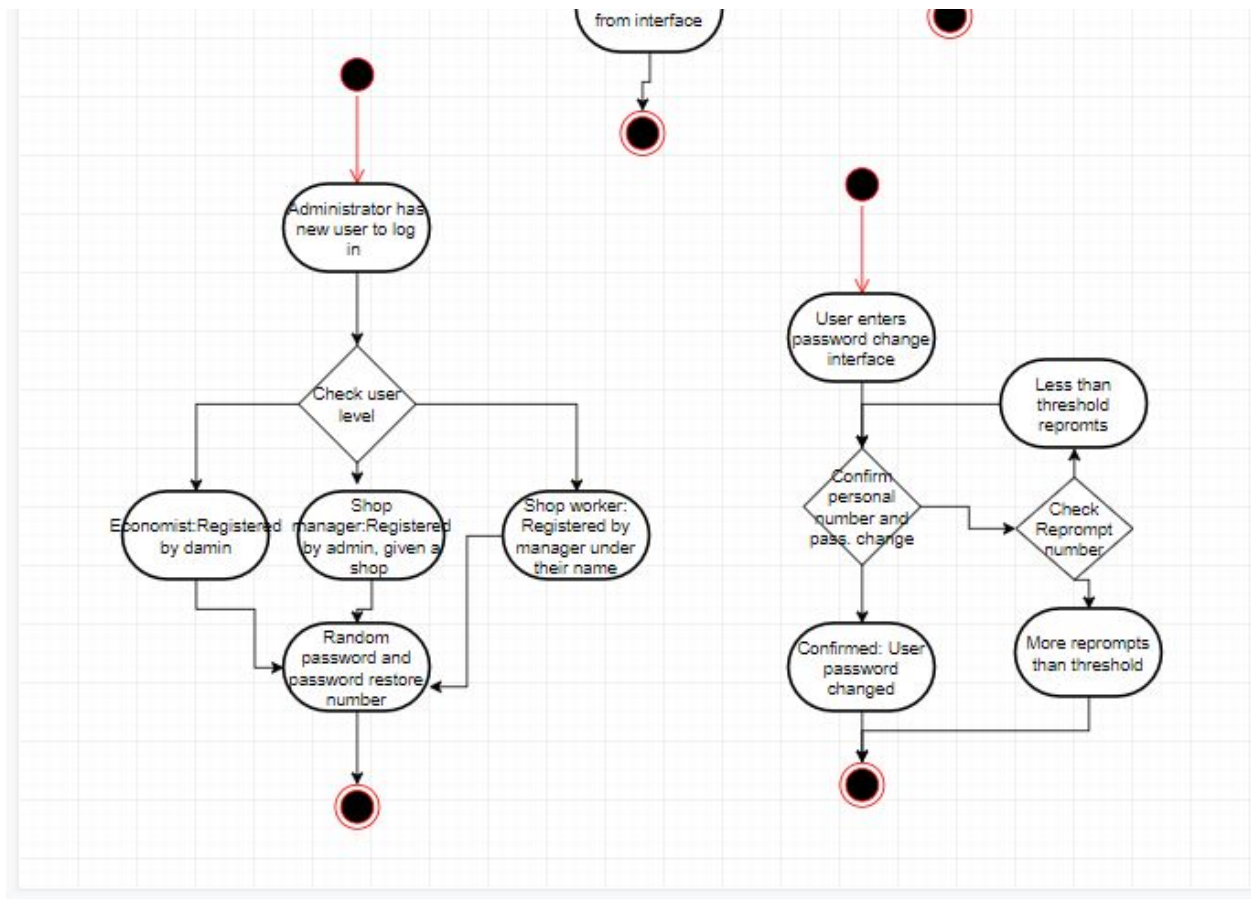
Cappuccino Use Case Diagram



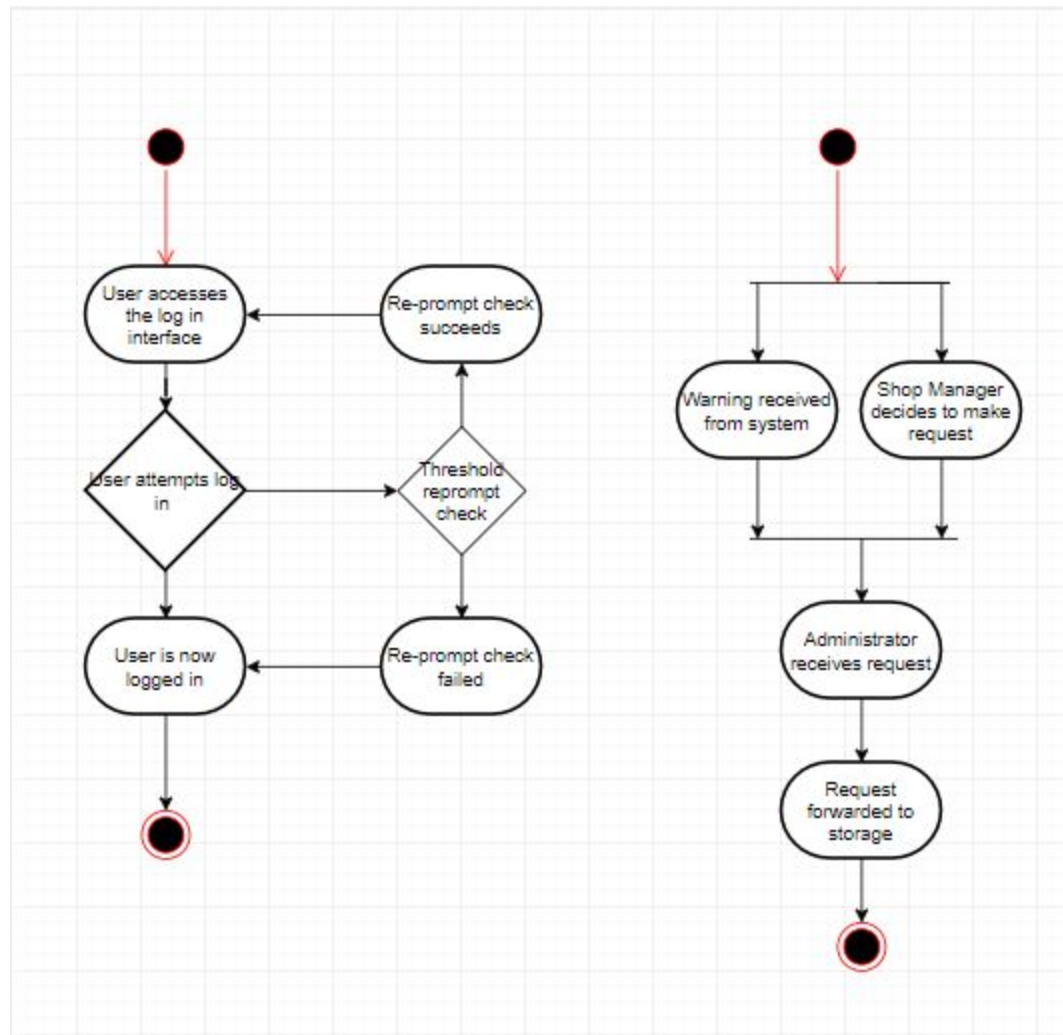
Cappuccino: Activity Diagrams



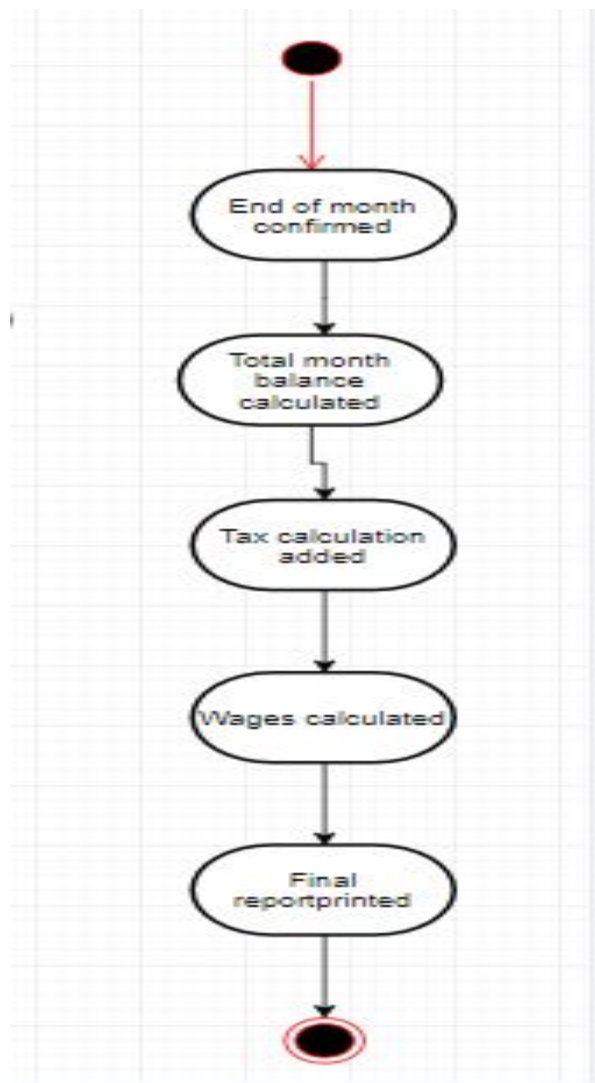
AC-01, AC-02, AC-03



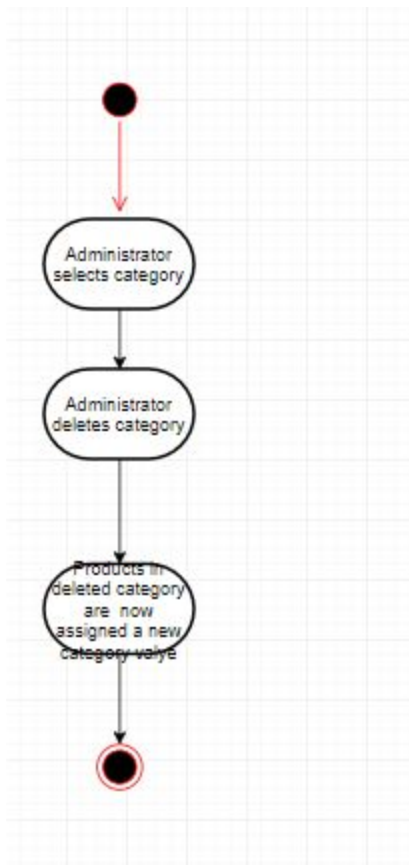
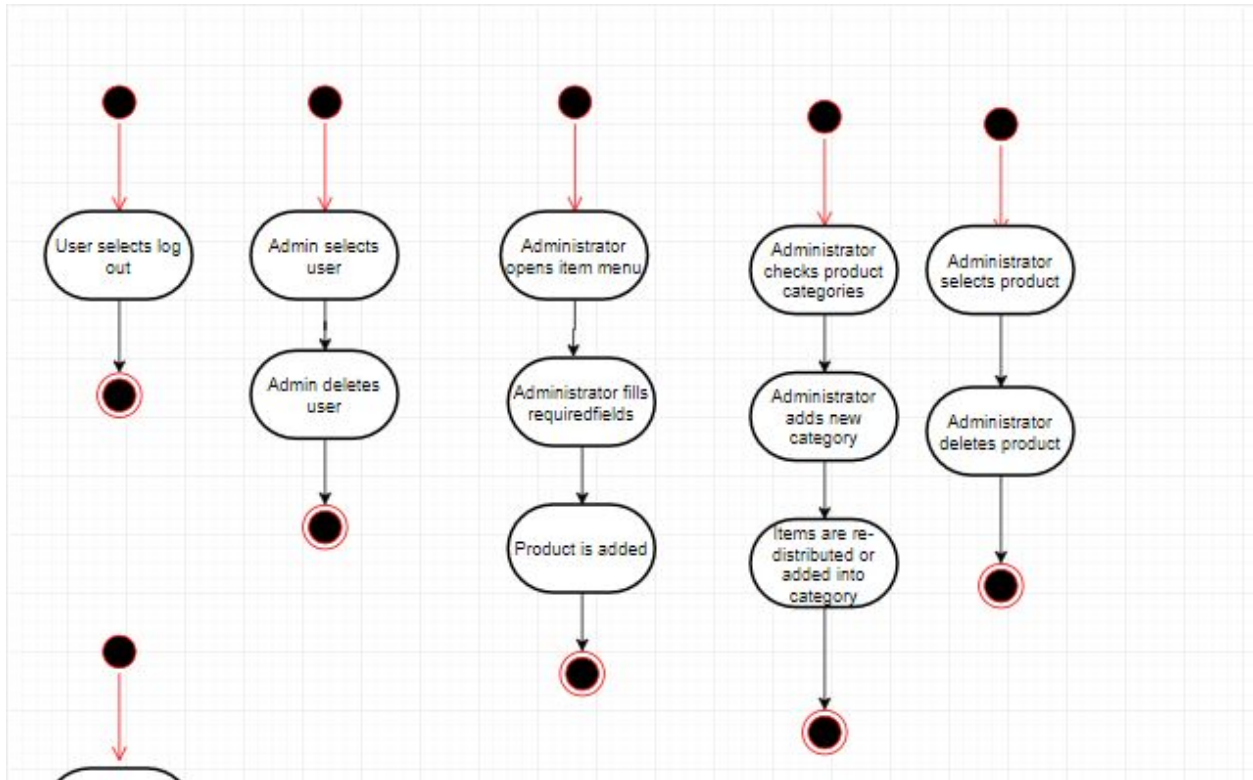
AC-04, AC-05



AC-06, AC-07

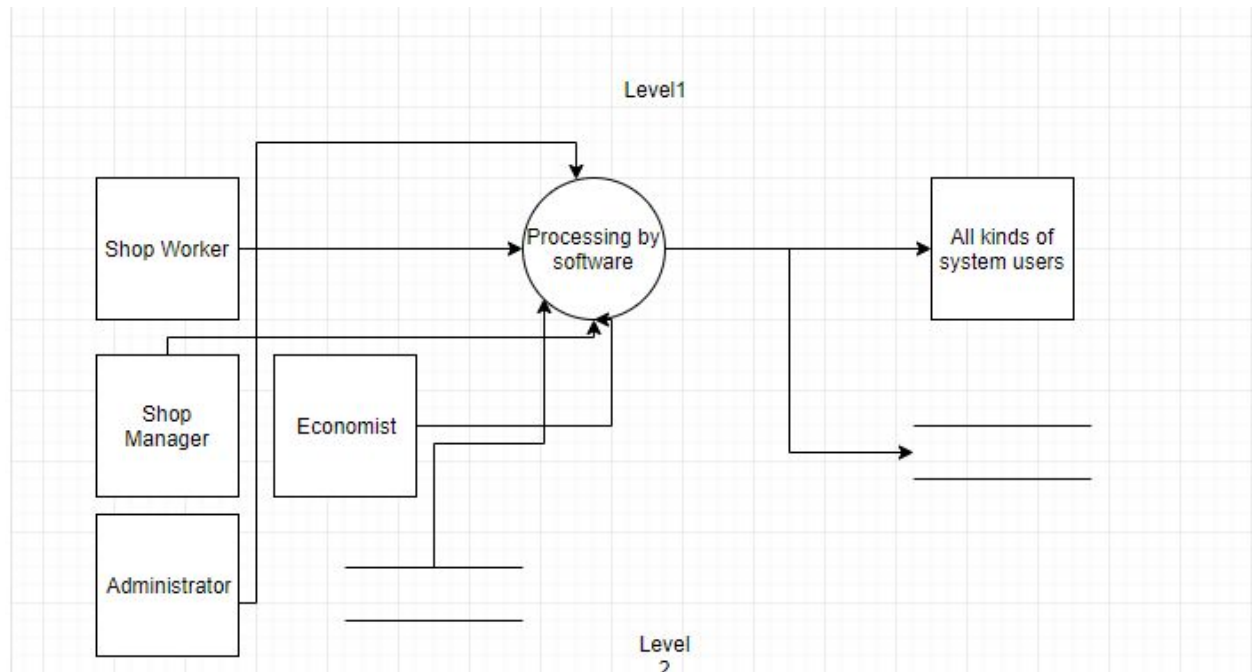


AC-08

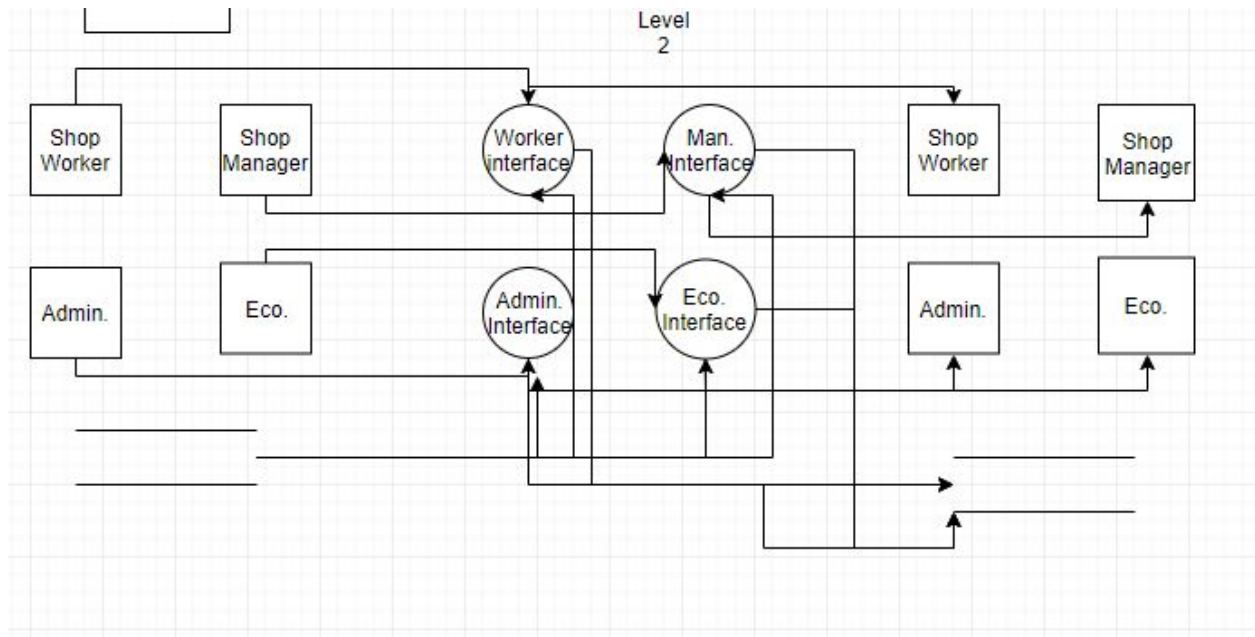


AC 09-14, AC-15 below

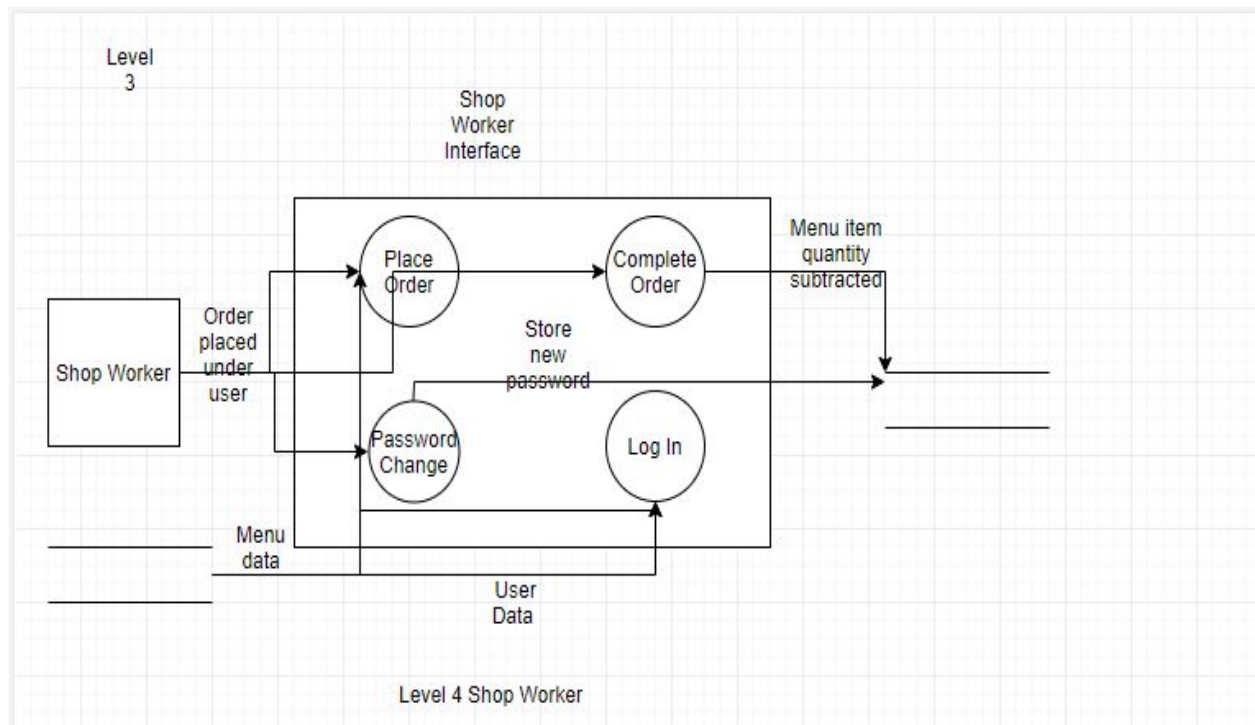
Cappuccino: DFD



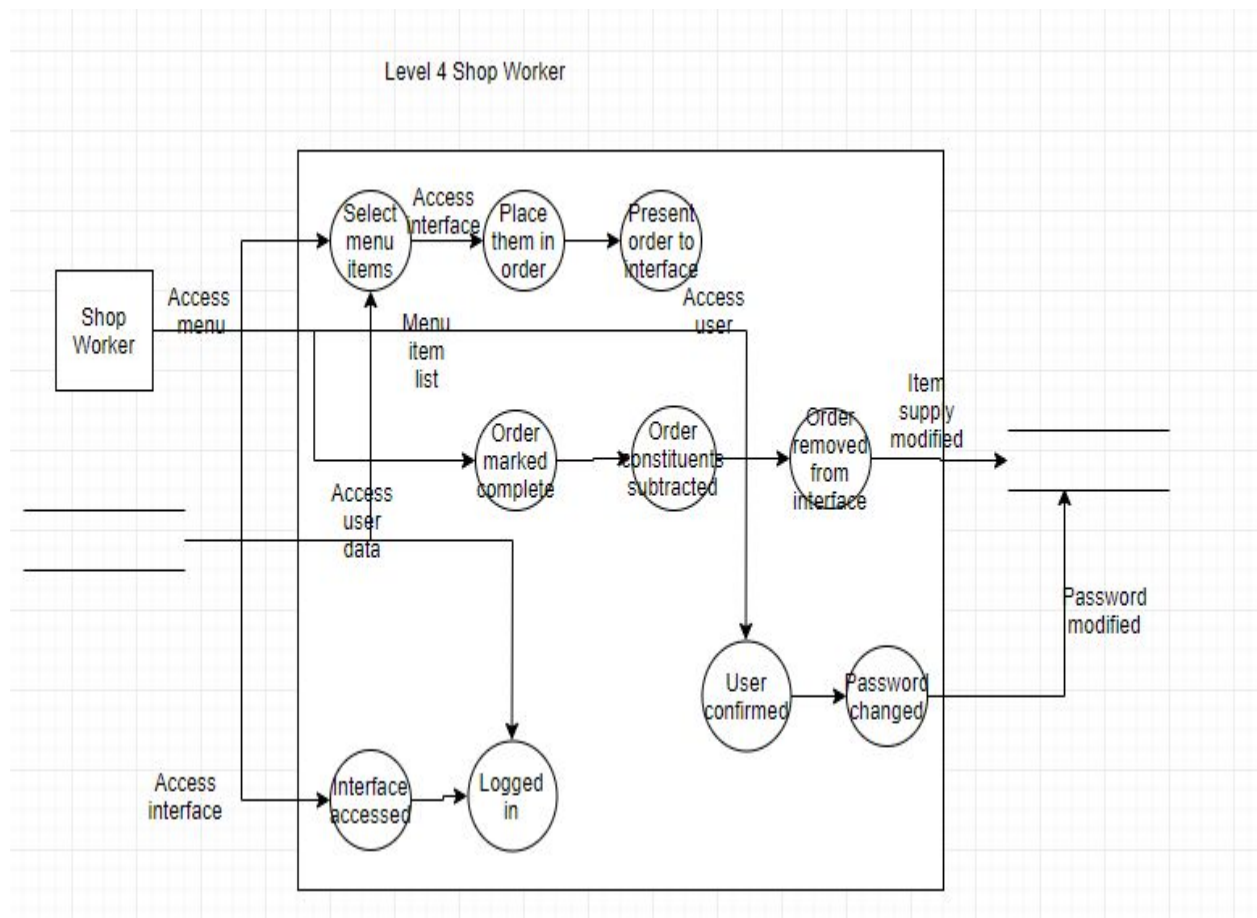
LEVEL 0 CAPPUCCINO DFD



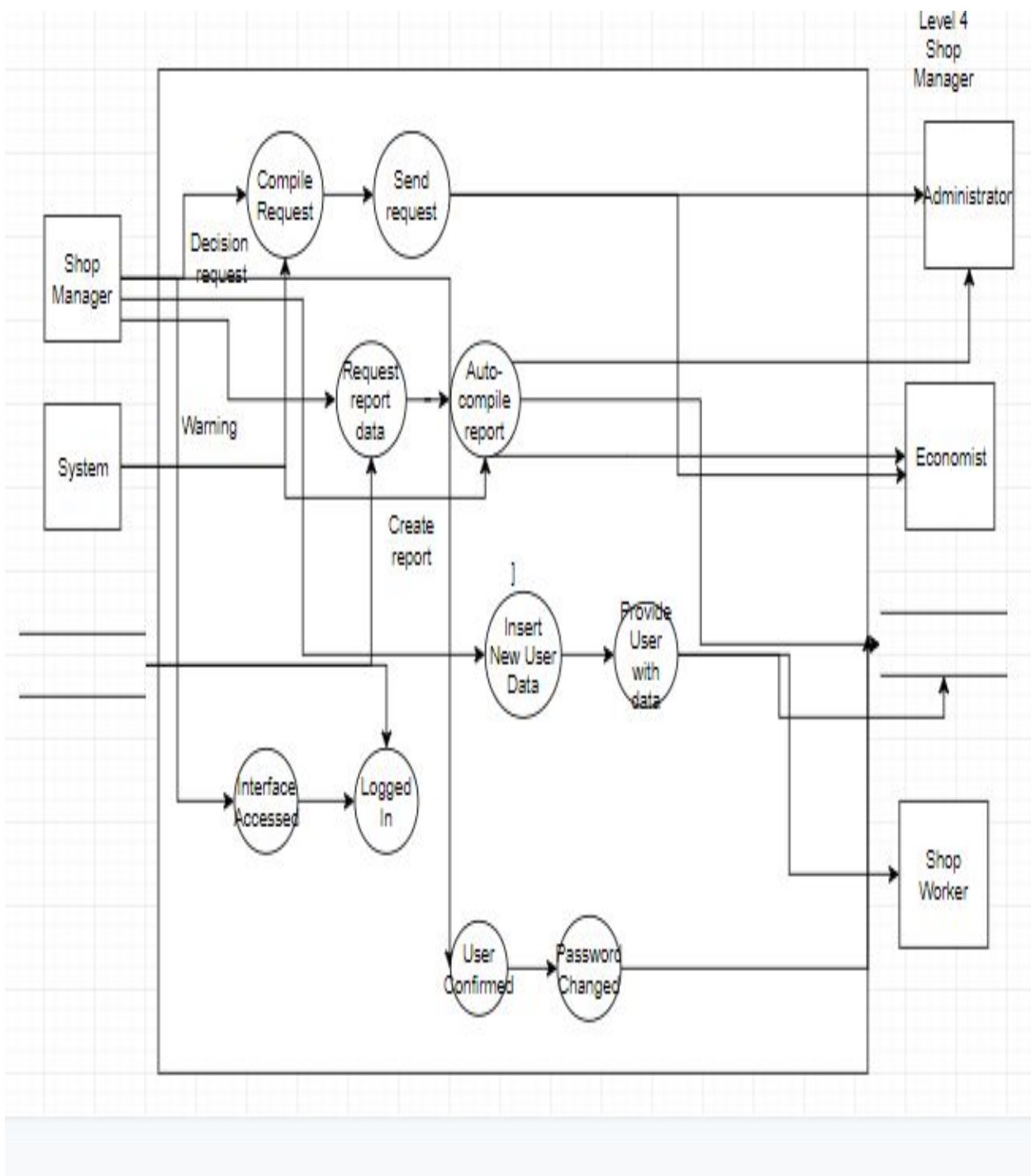
LEVEL 1 CAPPUCCINO DFD



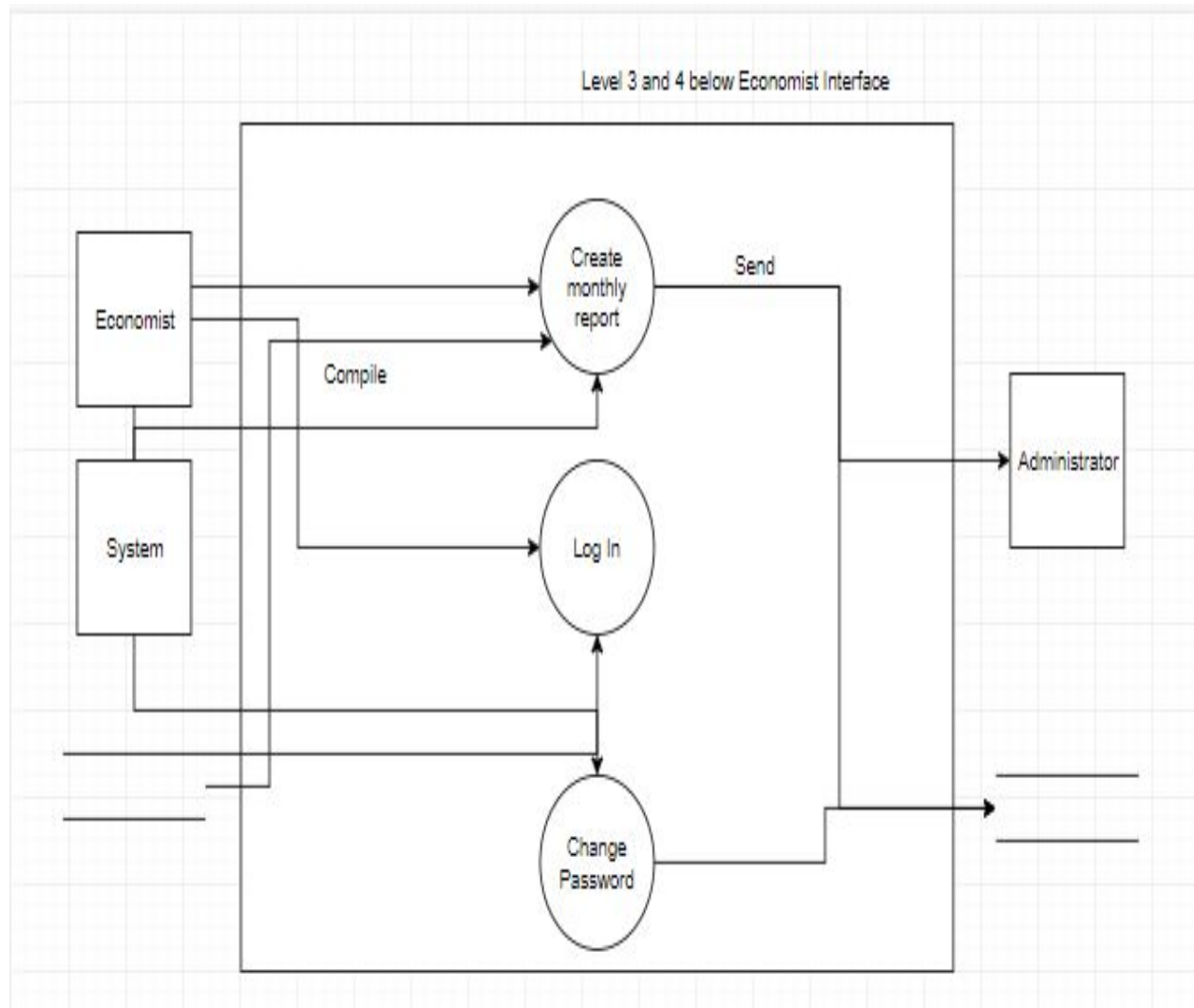
LEVEL 2 CAPPUCCINO DFD, SHOP WORKER



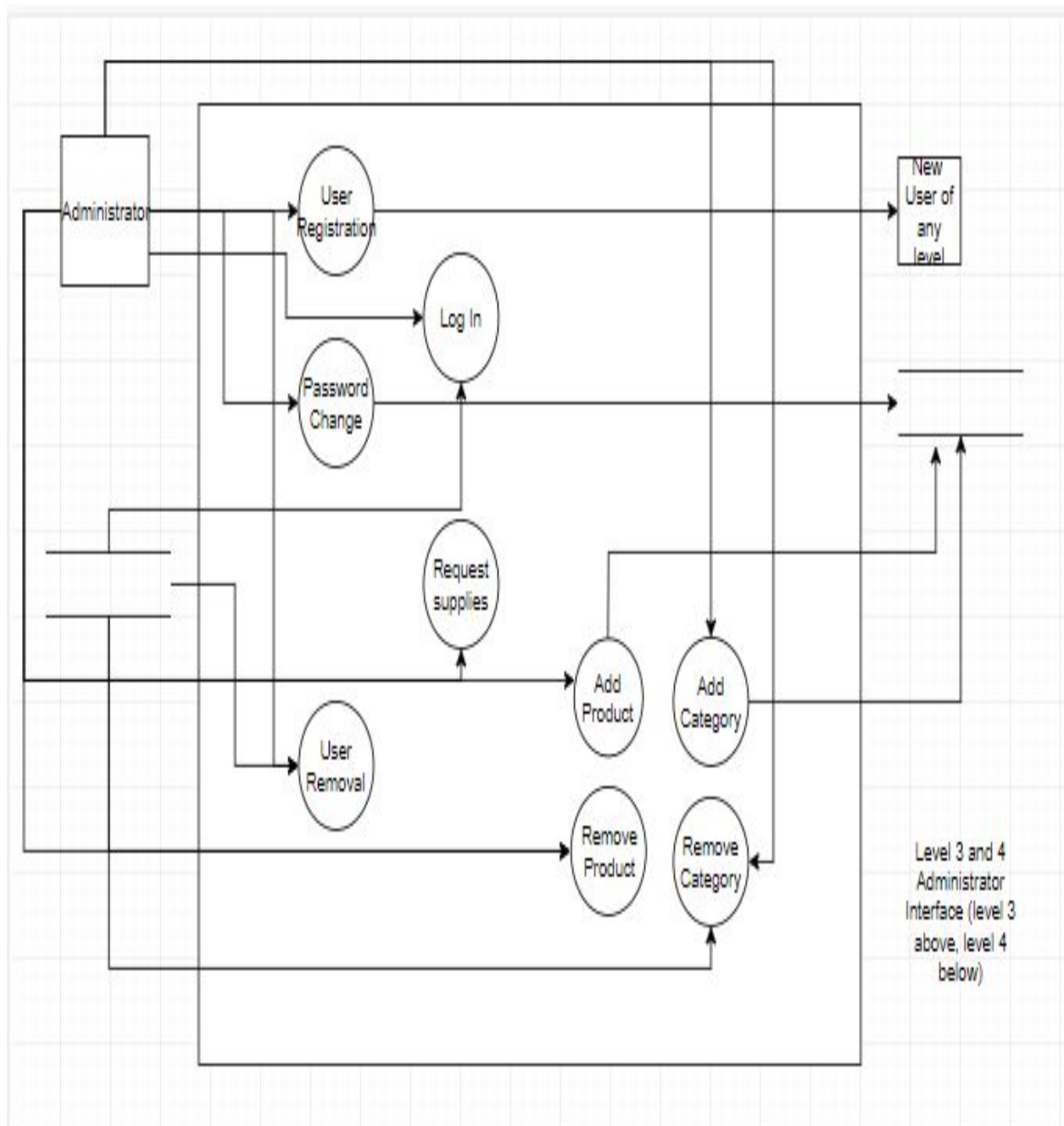
LEVEL 4 CAPPUCCINO DFD -SHOP WORKER



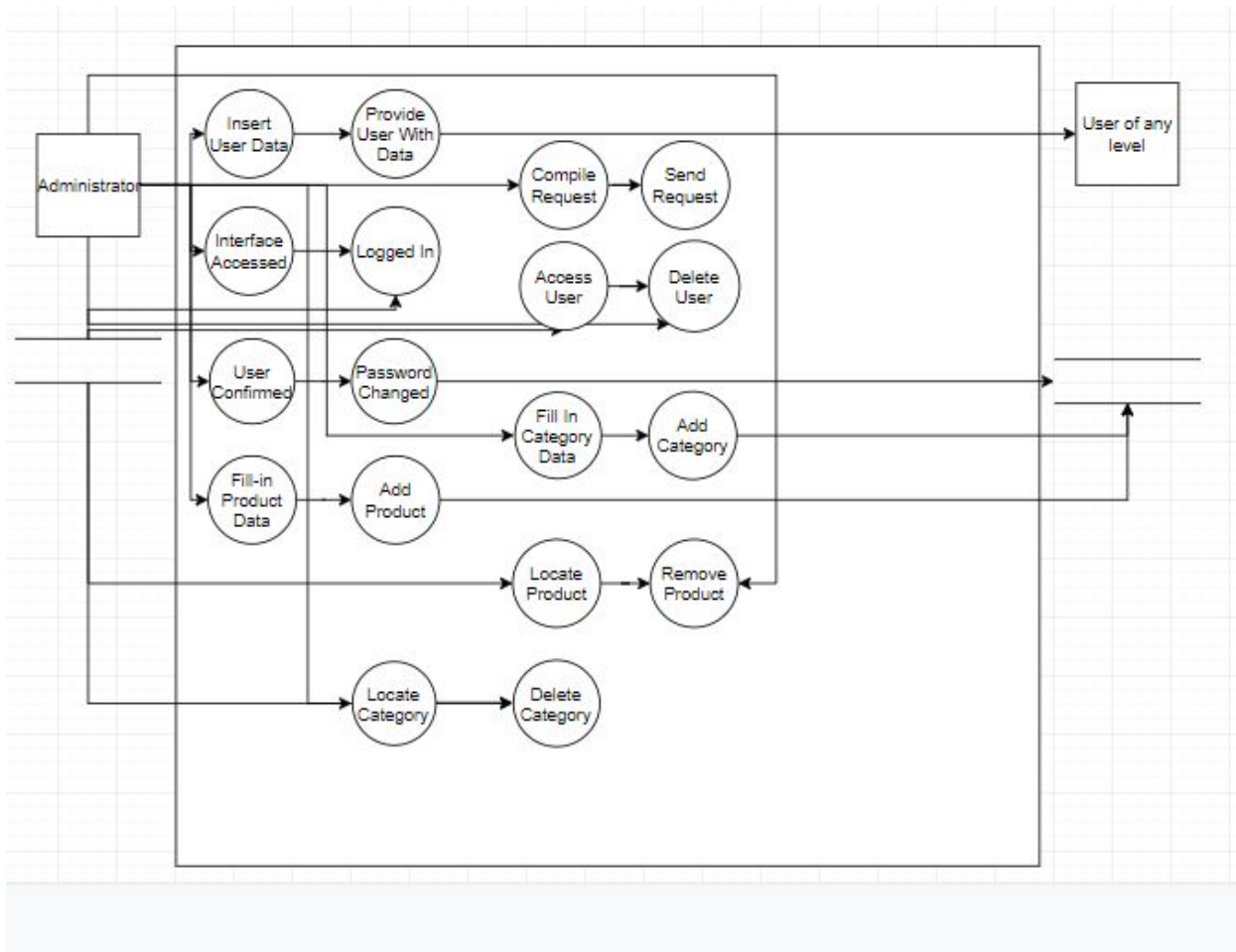
LEVEL 3 CAPPUCCINO DFD - SHOP MANAGER



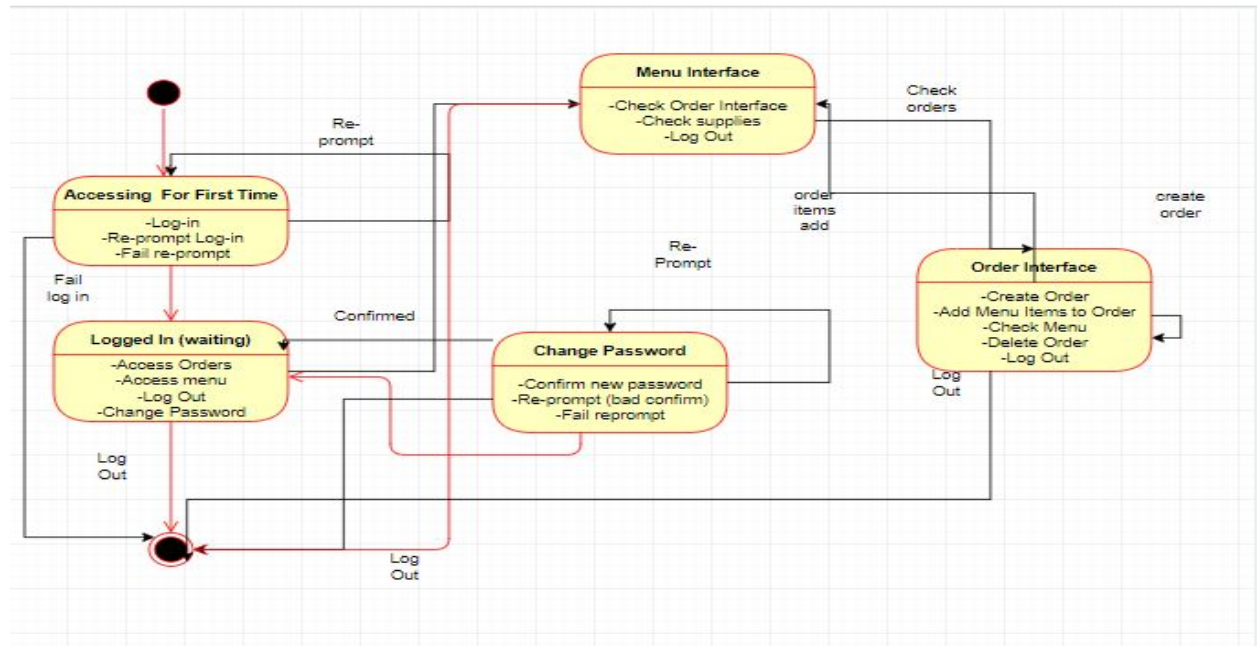
LEVEL 2 AND 3 DFD CAPPUCCINO, ECONOMIST



LEVEL 2 CAPPUCCINO DFD, ADMINISTRATOR



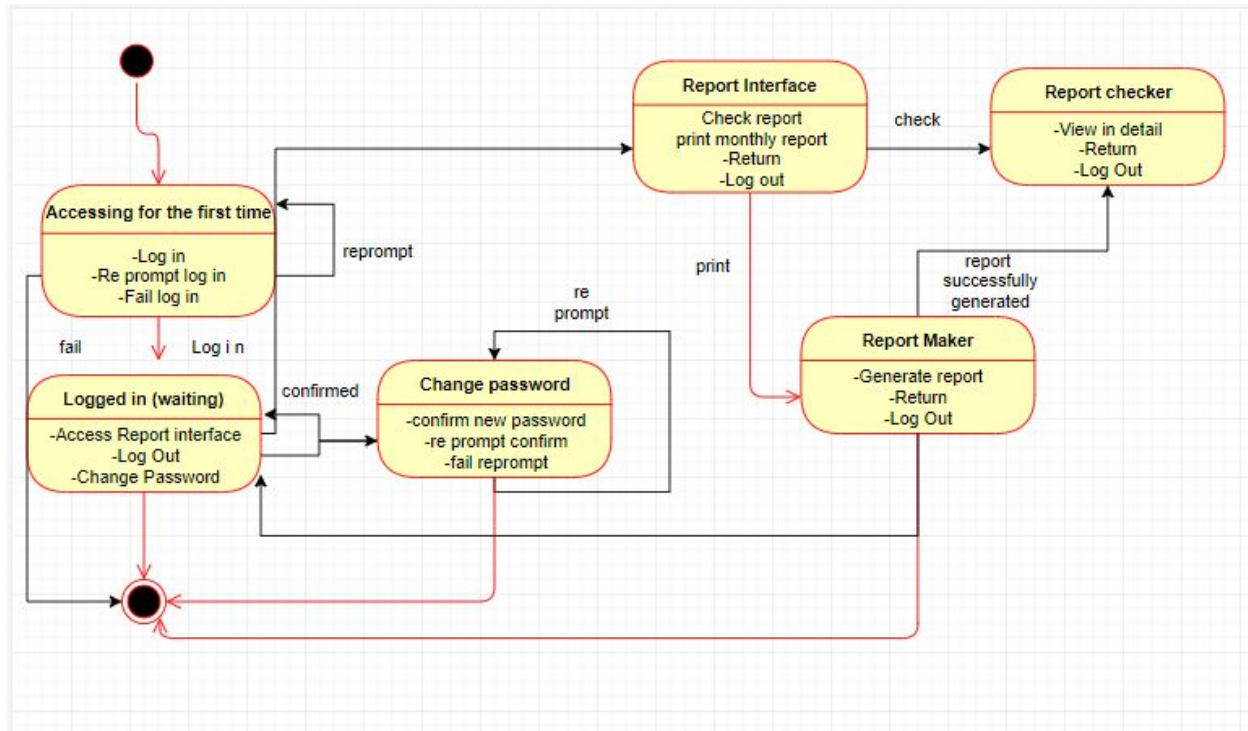
LEVEL 3 DFD CAPPUCCINO ADMINISTRATOR



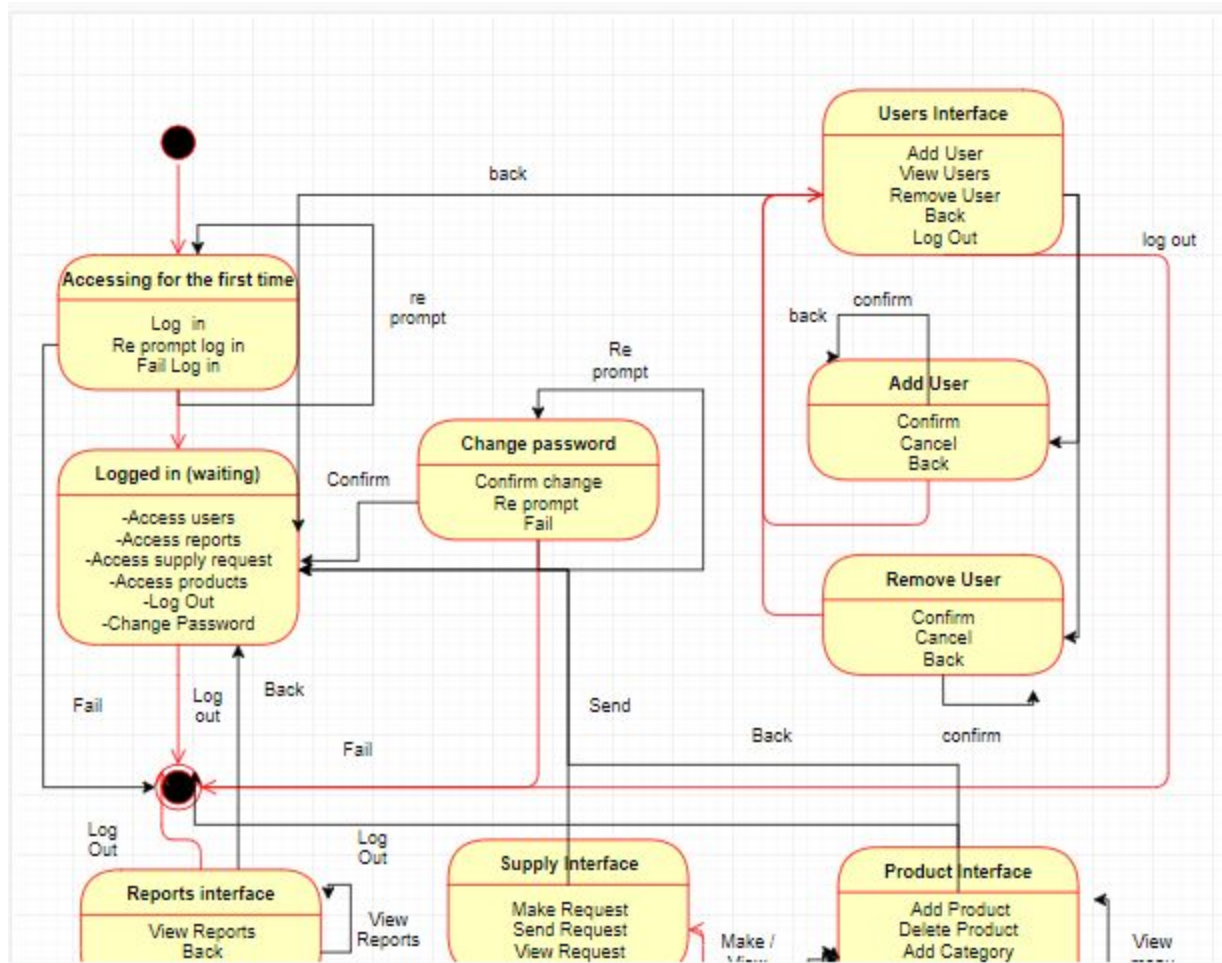
ST-01 - SHOP WORKER

```

    usecaseDiagram
        [*] --> UC1[Accessing for first time]
        UC1 --> UC2[Logged-in (waiting)] : log in
        UC1 --> UC1 : fail
        UC2 --> UC1 : fail
        UC2 --> UC3[Menu Interface] : Back
        UC3 --> UC2 : Return to main interface
        UC2 --> UC4[Order Interface] : Check
        UC4 --> UC2 : Check Orders
        UC2 --> UC5[Change Password] : confirm
        UC5 --> UC2 : re-prompt
        UC5 --> UC5 : re-prompt
        UC5 --> UC2 : cancel
        UC2 --> UC6[Request Report] : cancel
        UC6 --> UC2 : fail
        UC6 --> UC7[Report Sent] : Send report
        UC7 --> UC2 : Return
        UC2 --> UC8[Request Supplies] : cancel
        UC8 --> UC2 : fail
        UC8 --> UC9[Request sent] : send
        UC9 --> UC2 : Return
        UC2 --> UC10[Register New User] : cancel
        UC10 --> UC2 : fail
        UC10 --> UC1 : confirm
    
```

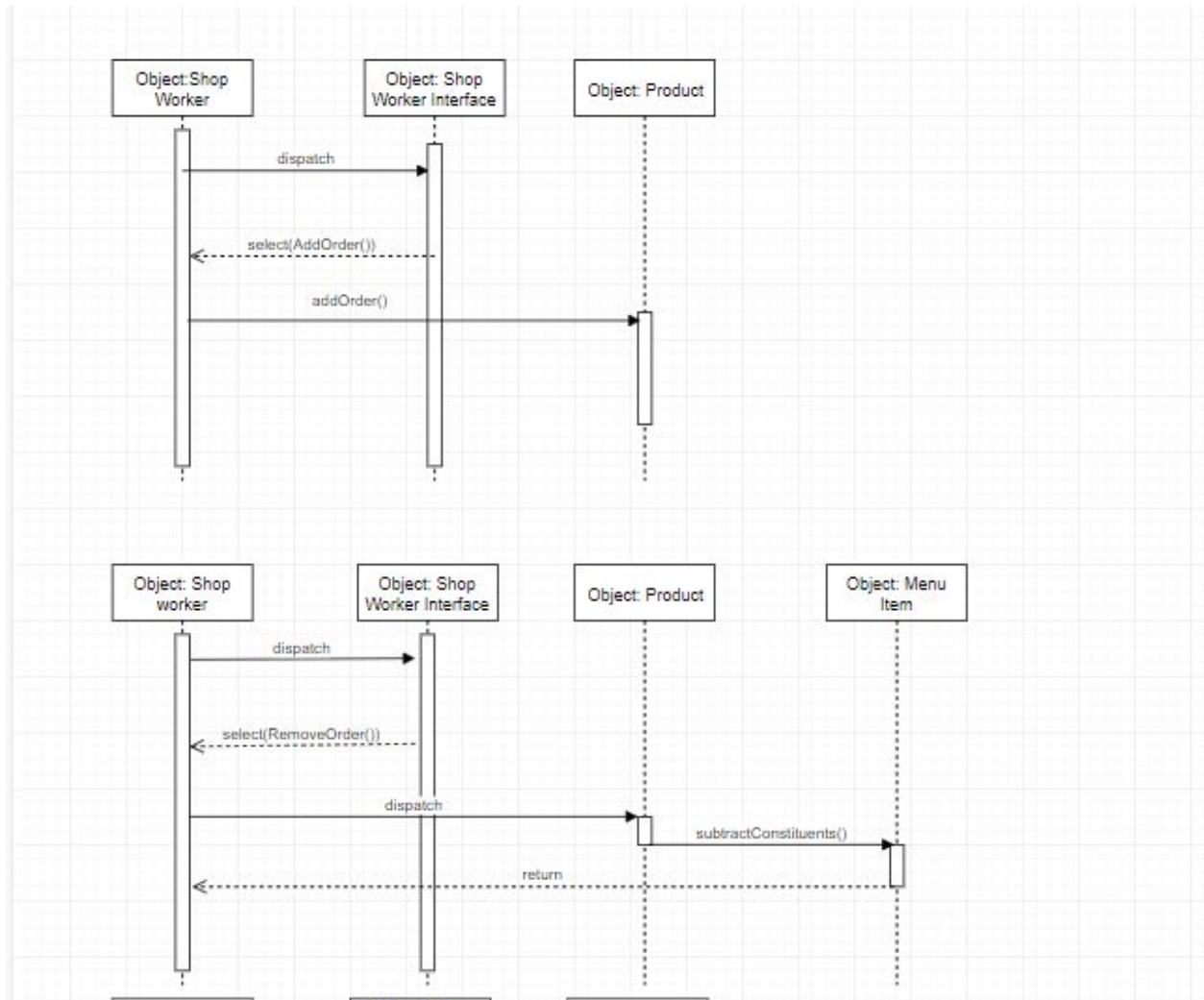


ST-03 - ECONOMIST



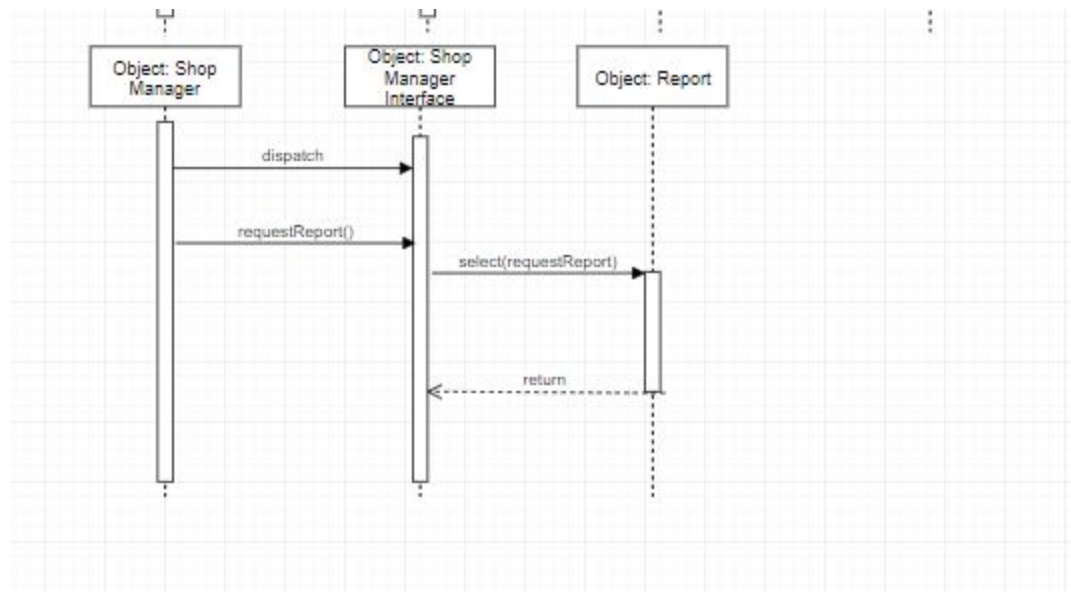
ST-04 - ADMINISTRATOR

Cappuccino: Sequence Diagrams

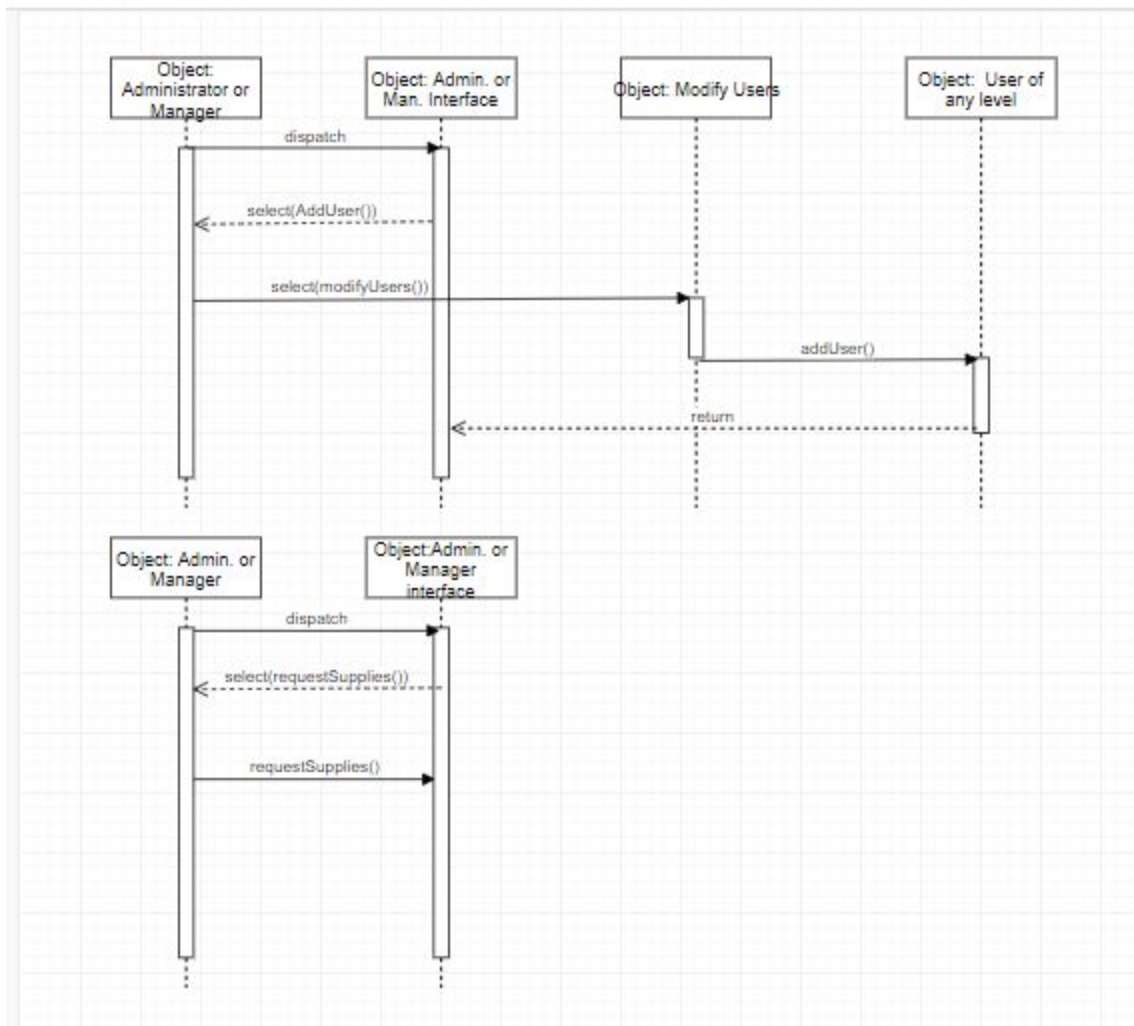


SEQ 01

SEQ 02

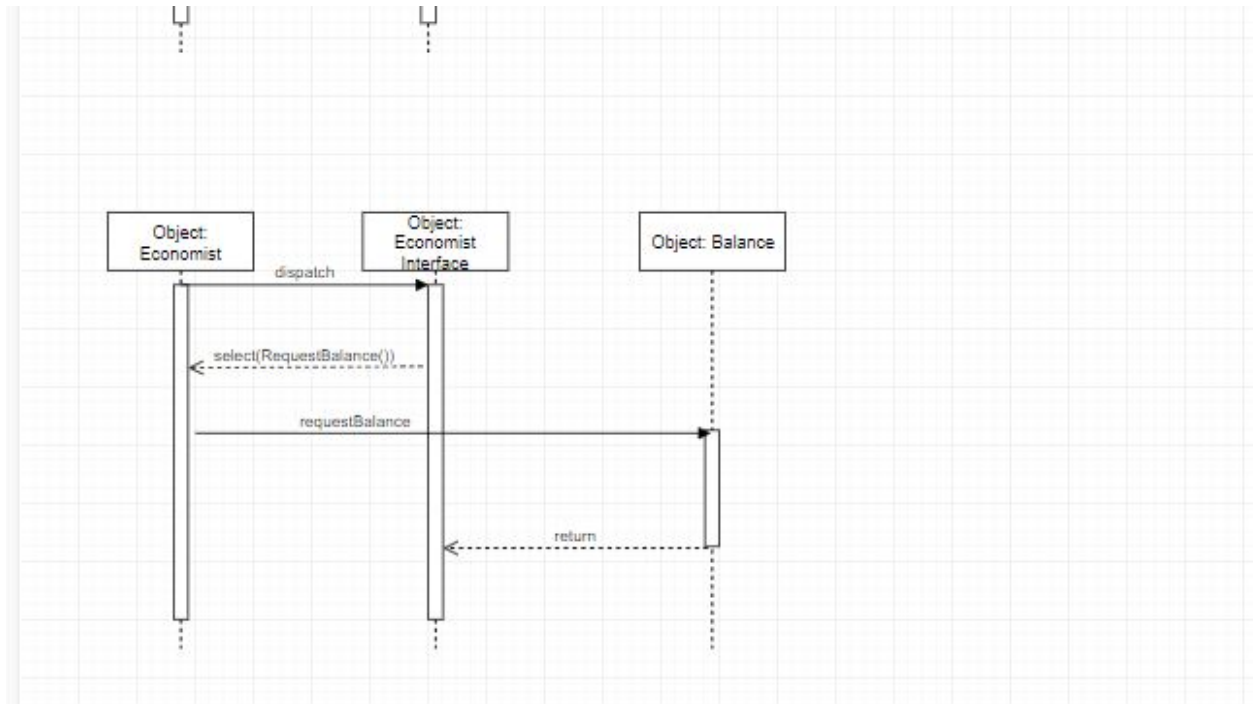


SEQ -03

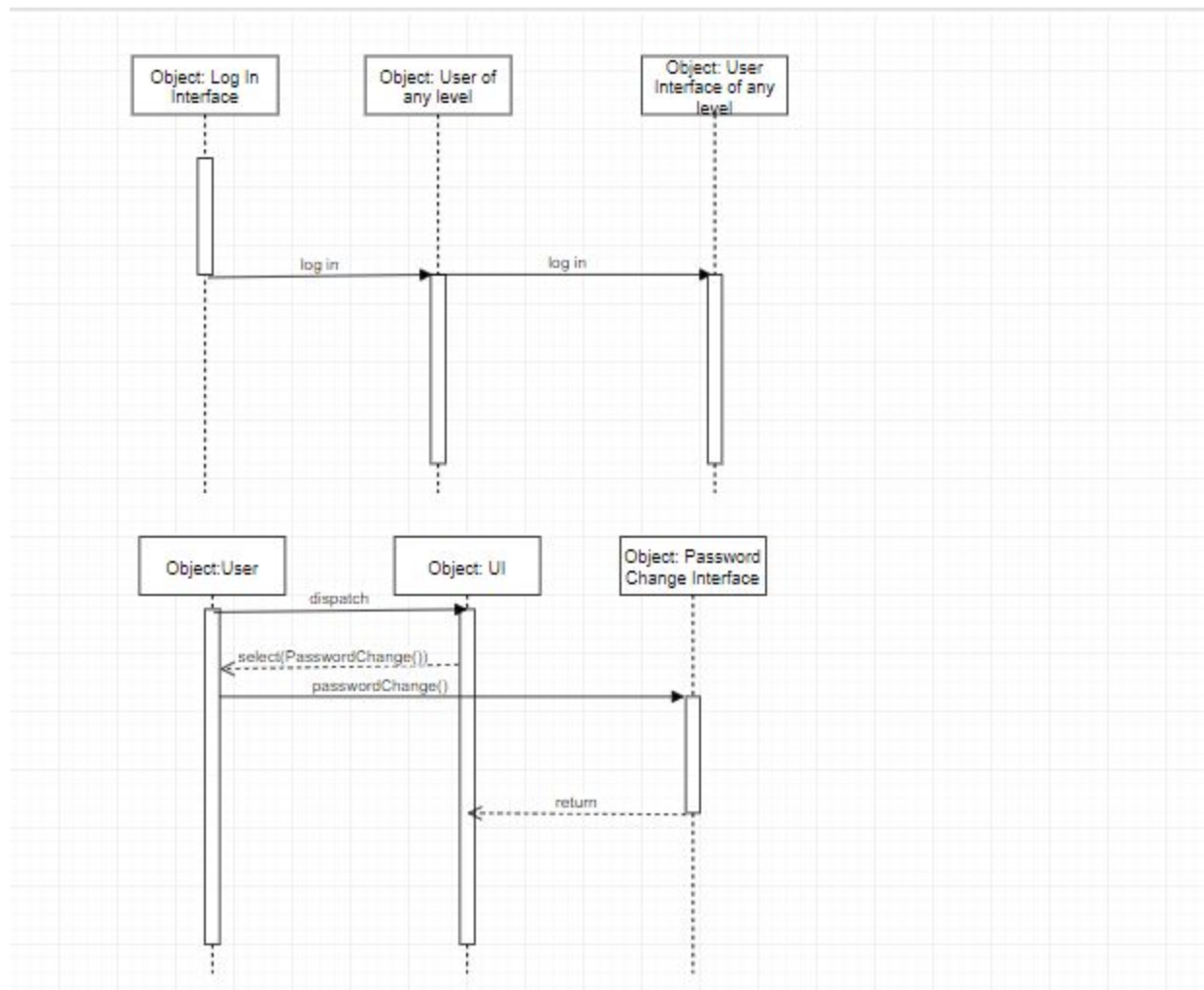


SEQ 04

SEQ 05

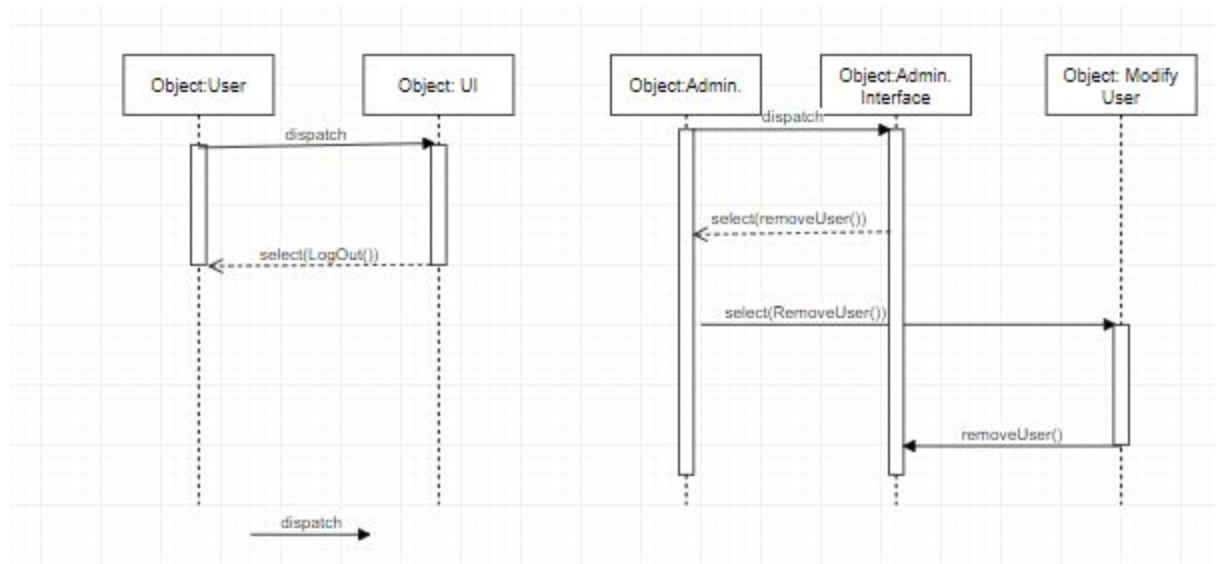


SEQ 06

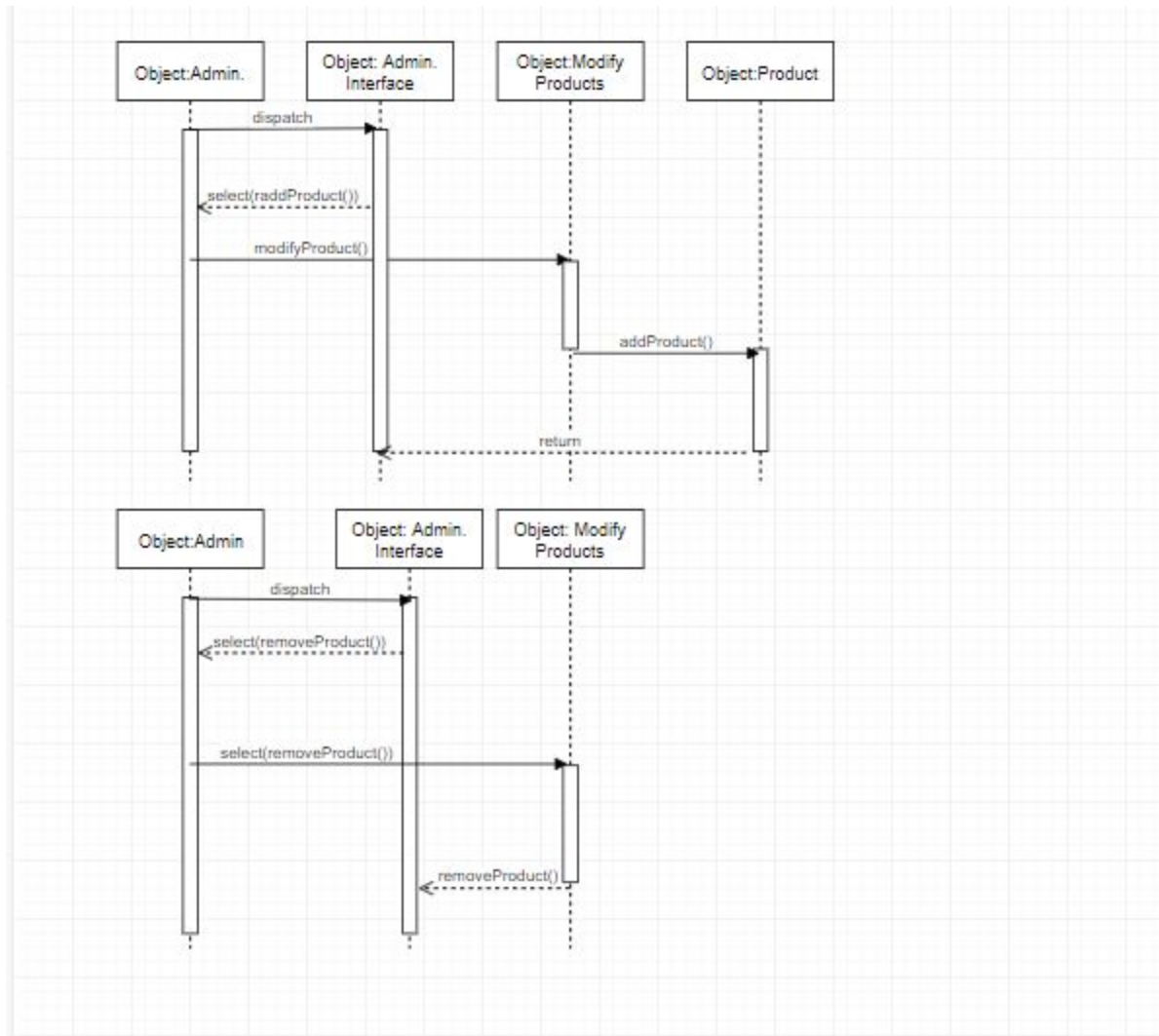


SEQ 07

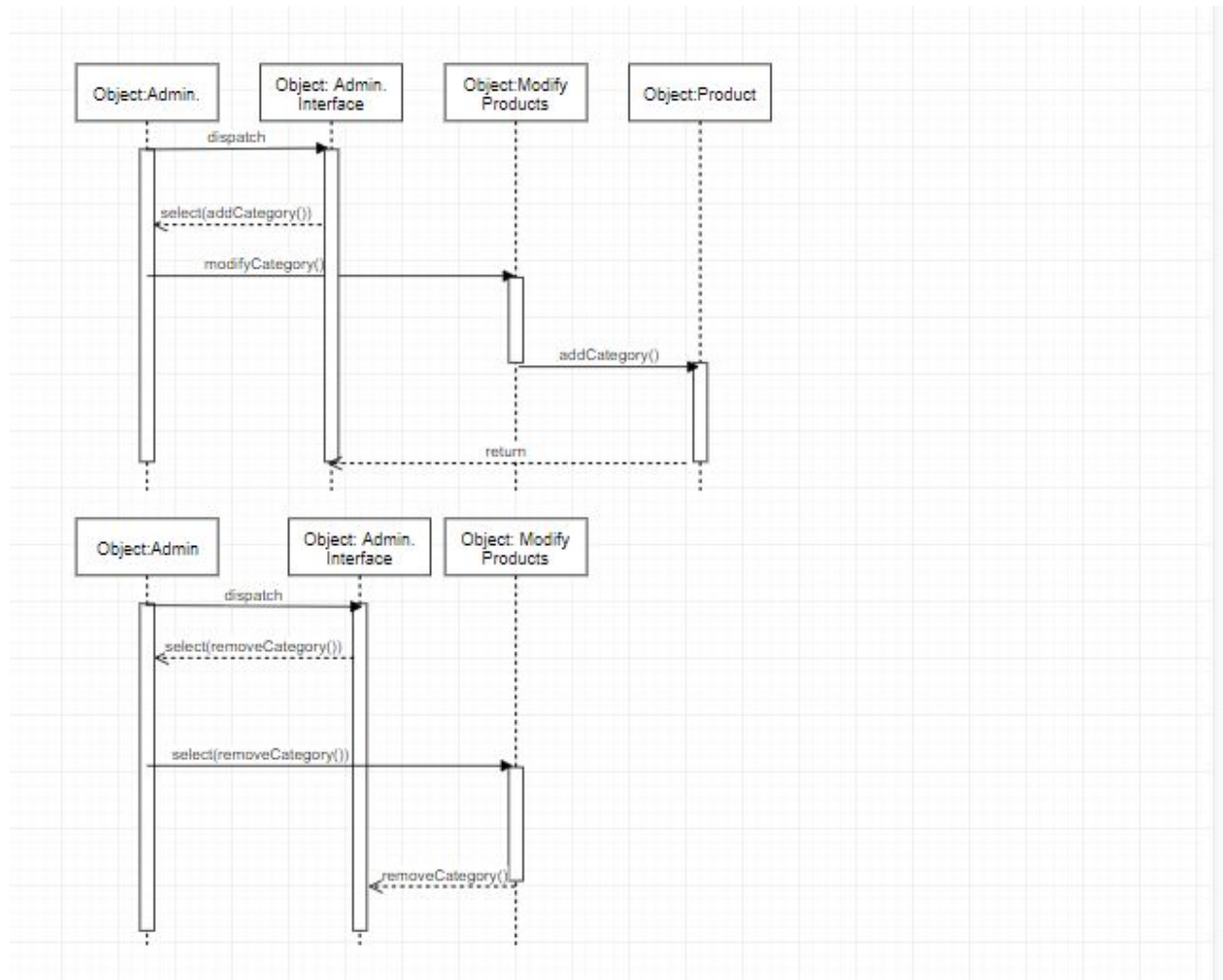
SEQ 08



SEQ 09 , SEQ 10

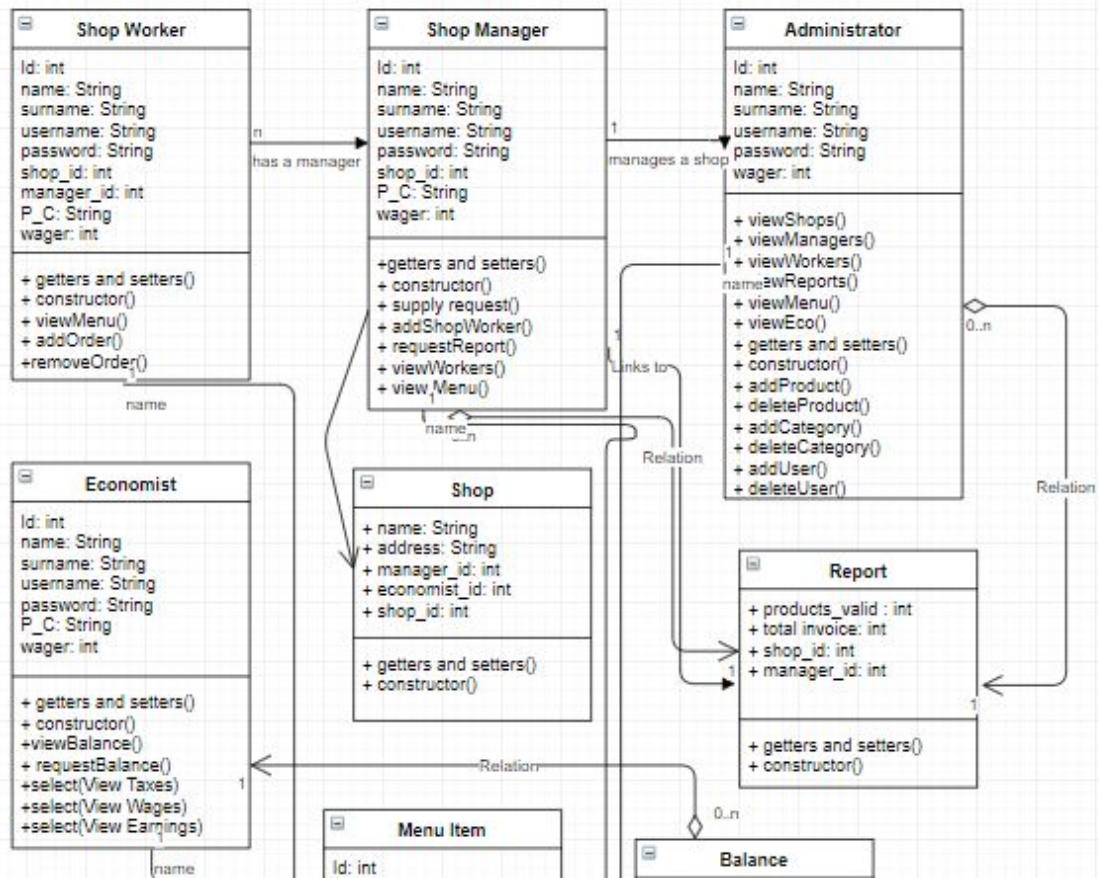


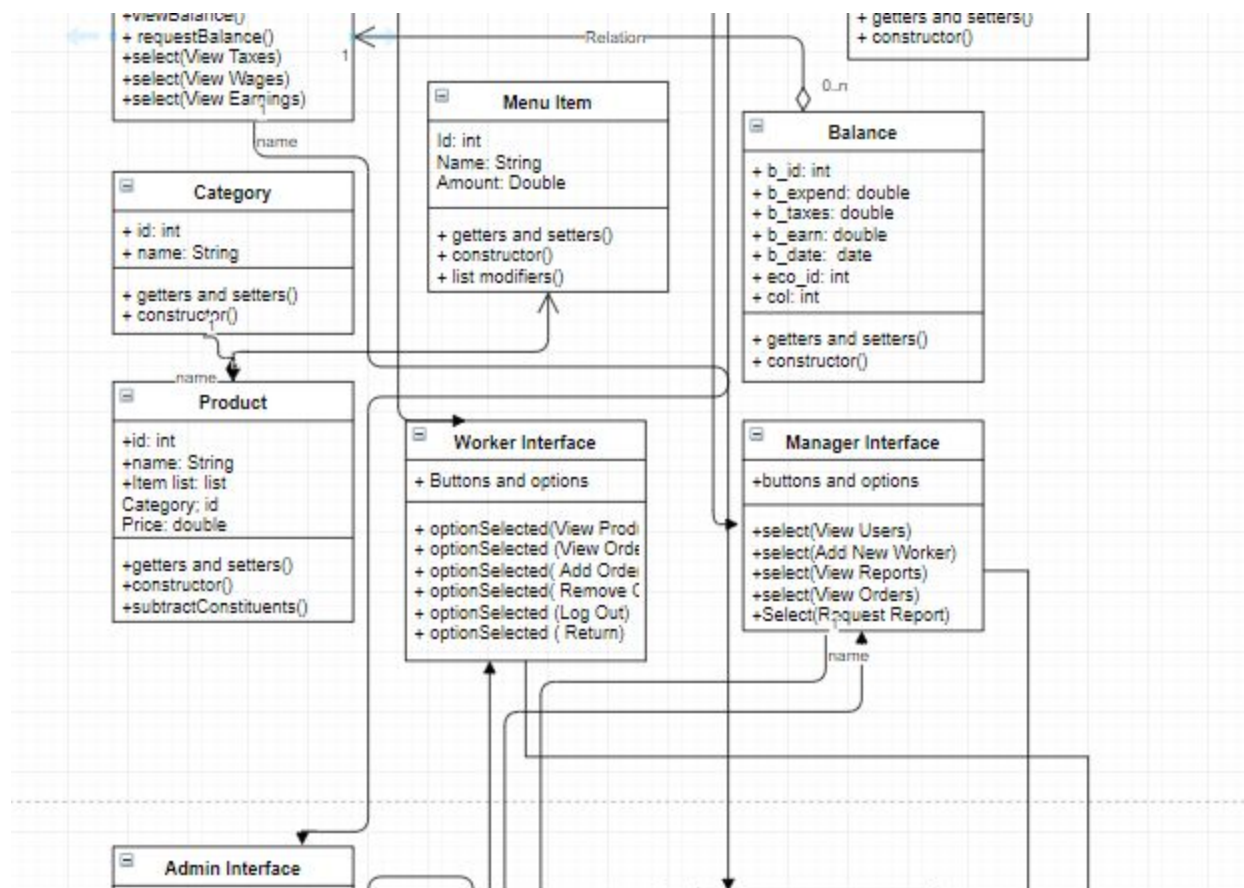
SEQ 11, SEQ 12

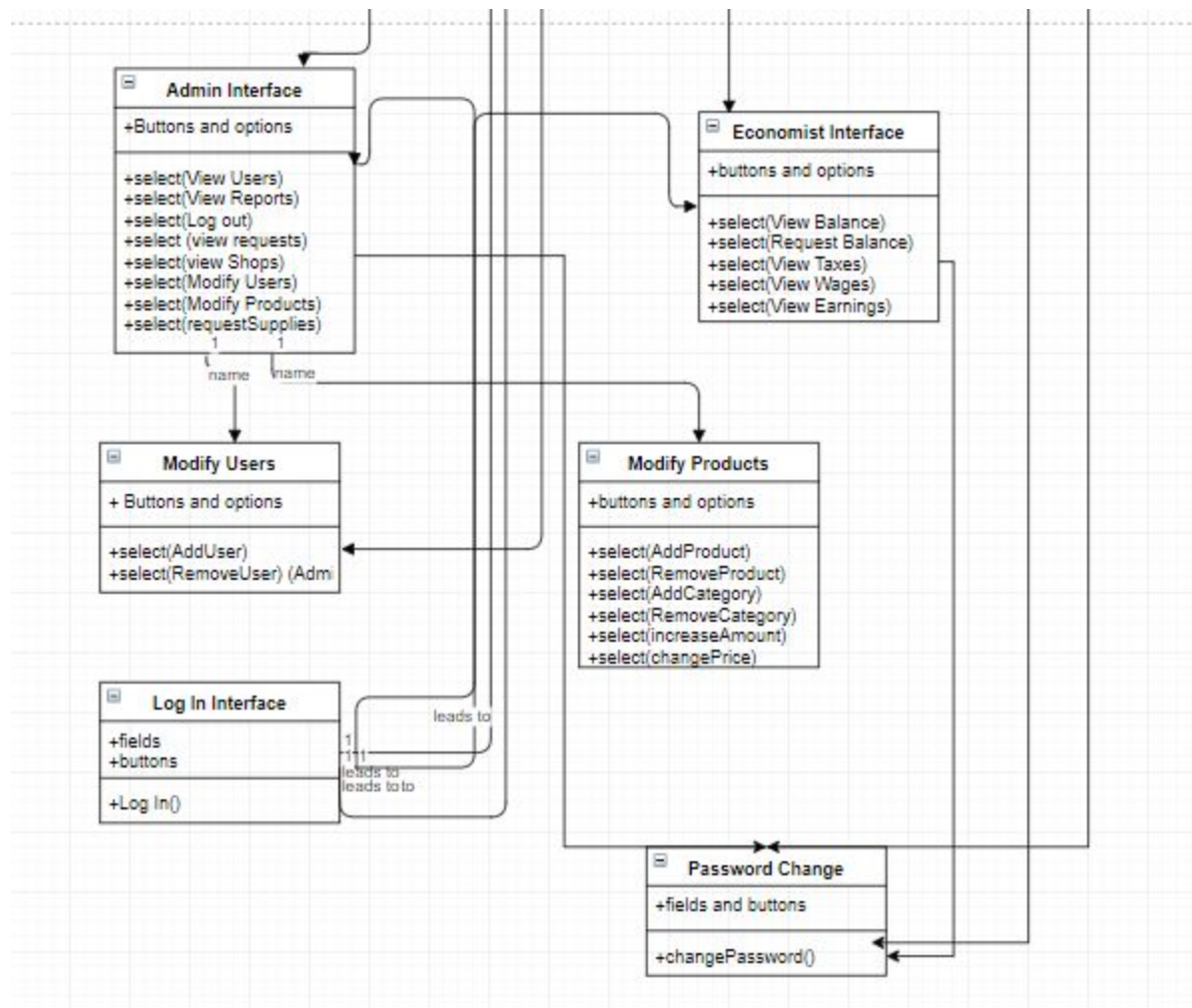


SEQ 13, SEQ 14

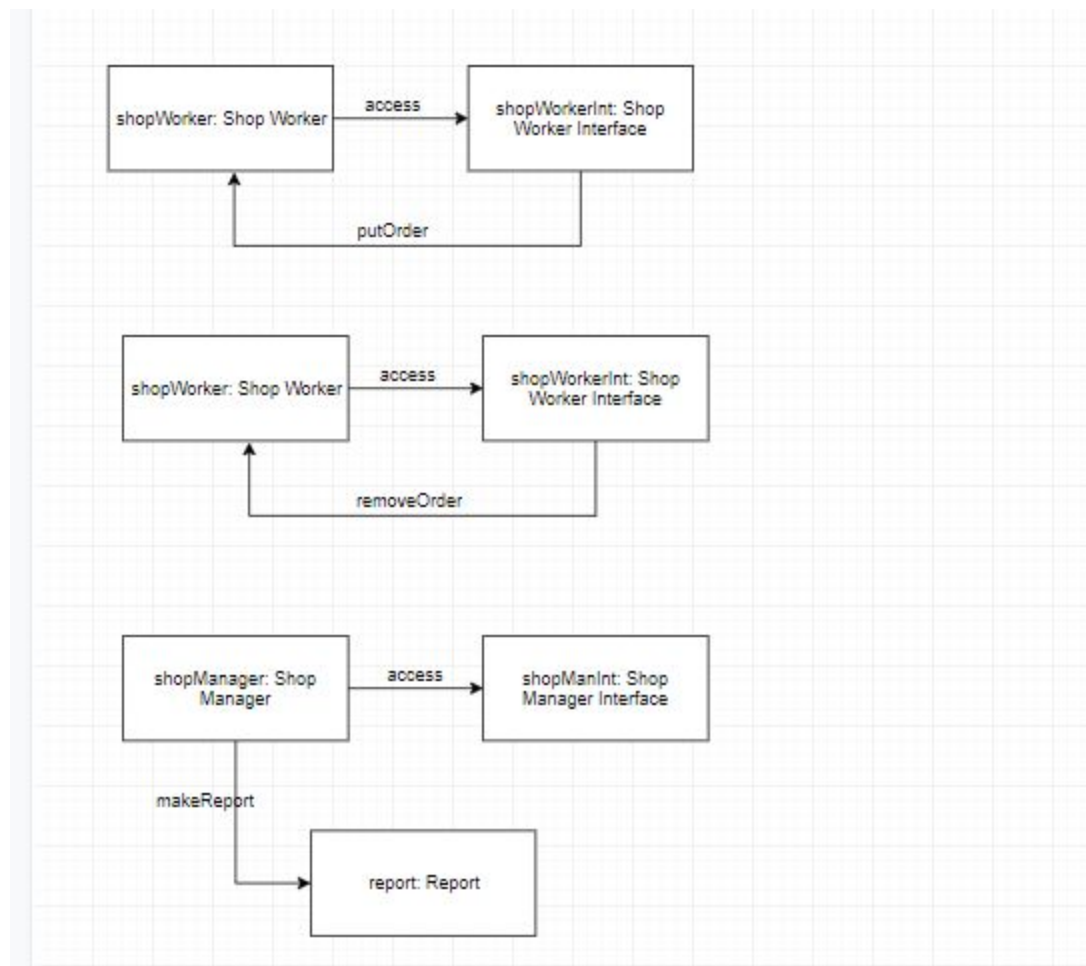
Cappuccino: Class Diagram



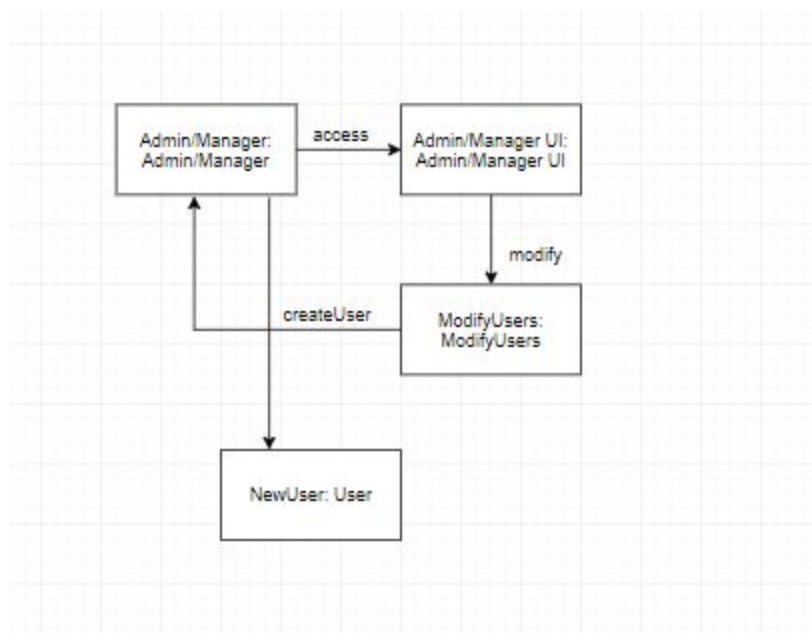




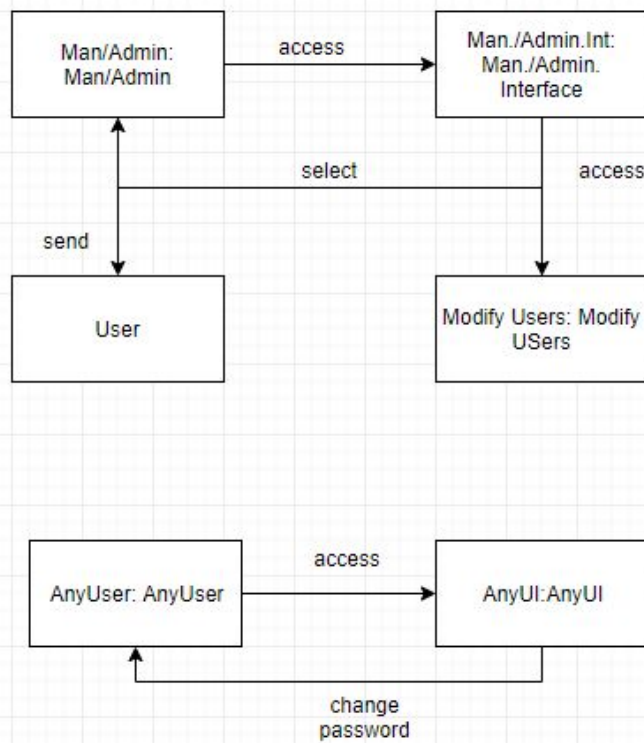
Cappuccino: Collaboration Diagrams



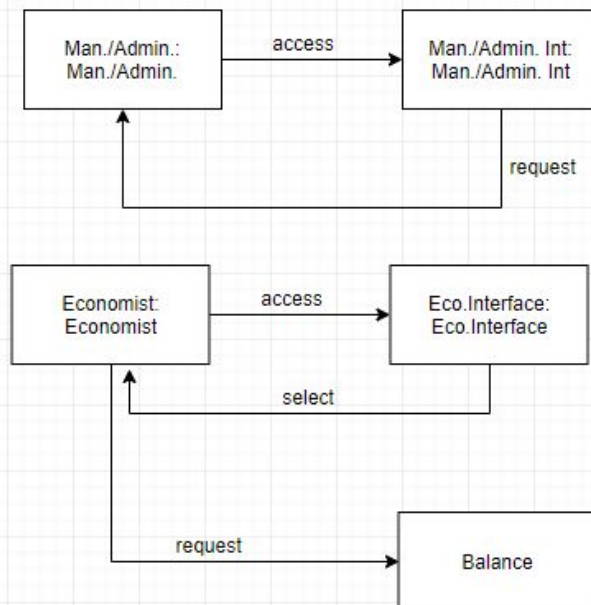
COLLAB 01-03

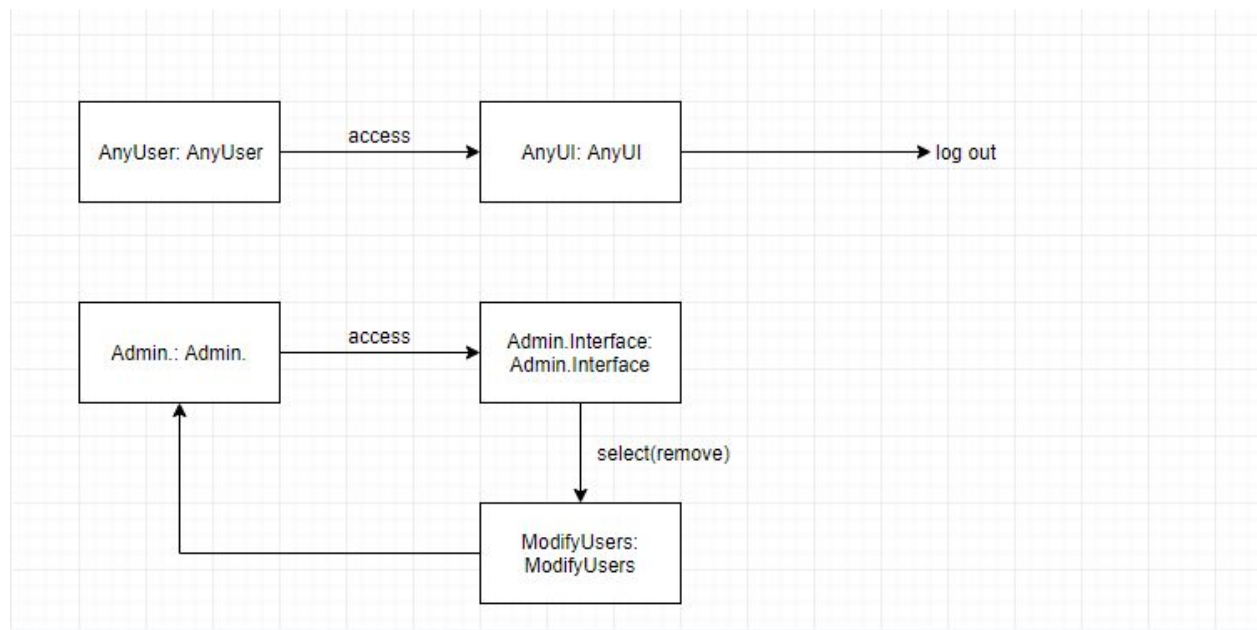


SEQ 04

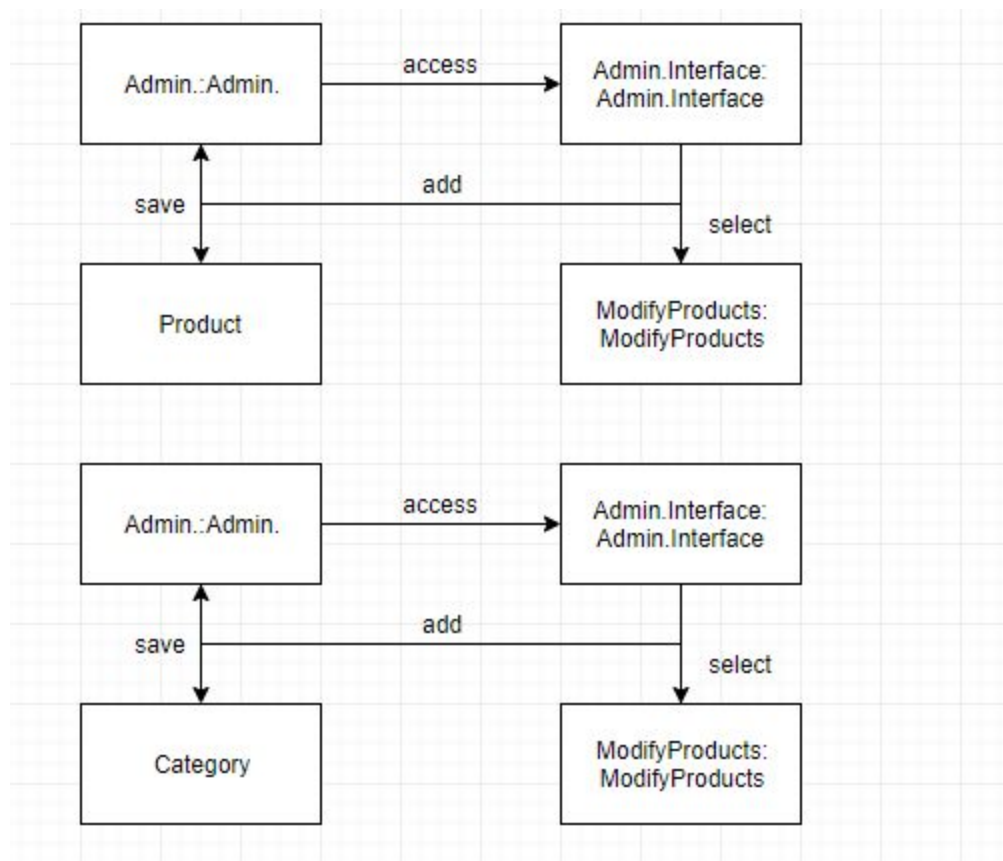


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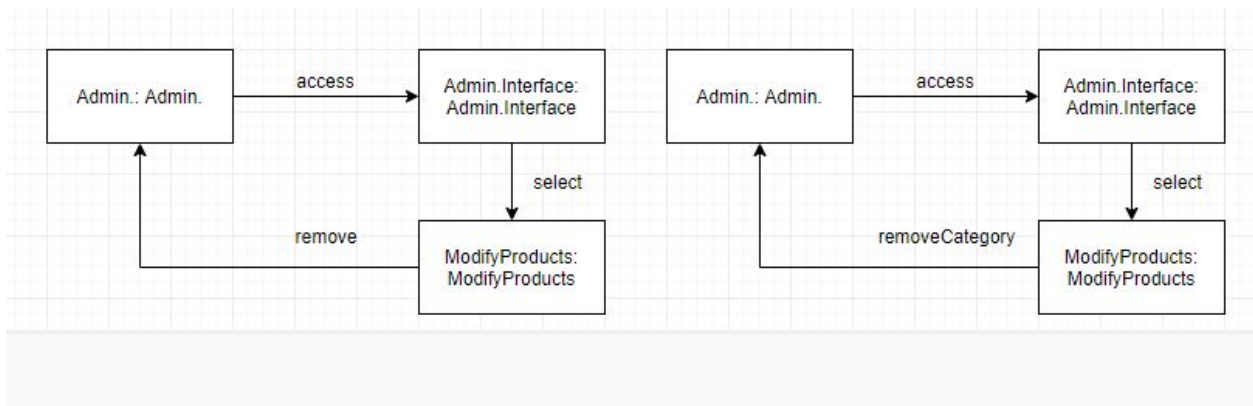




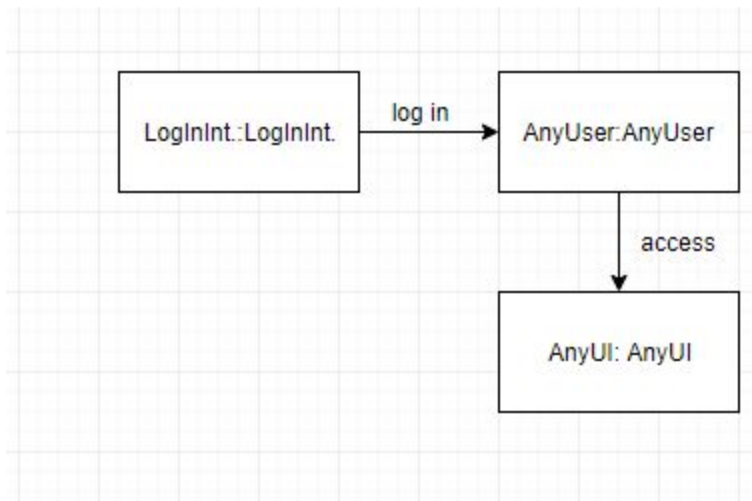
SEQ 07-09



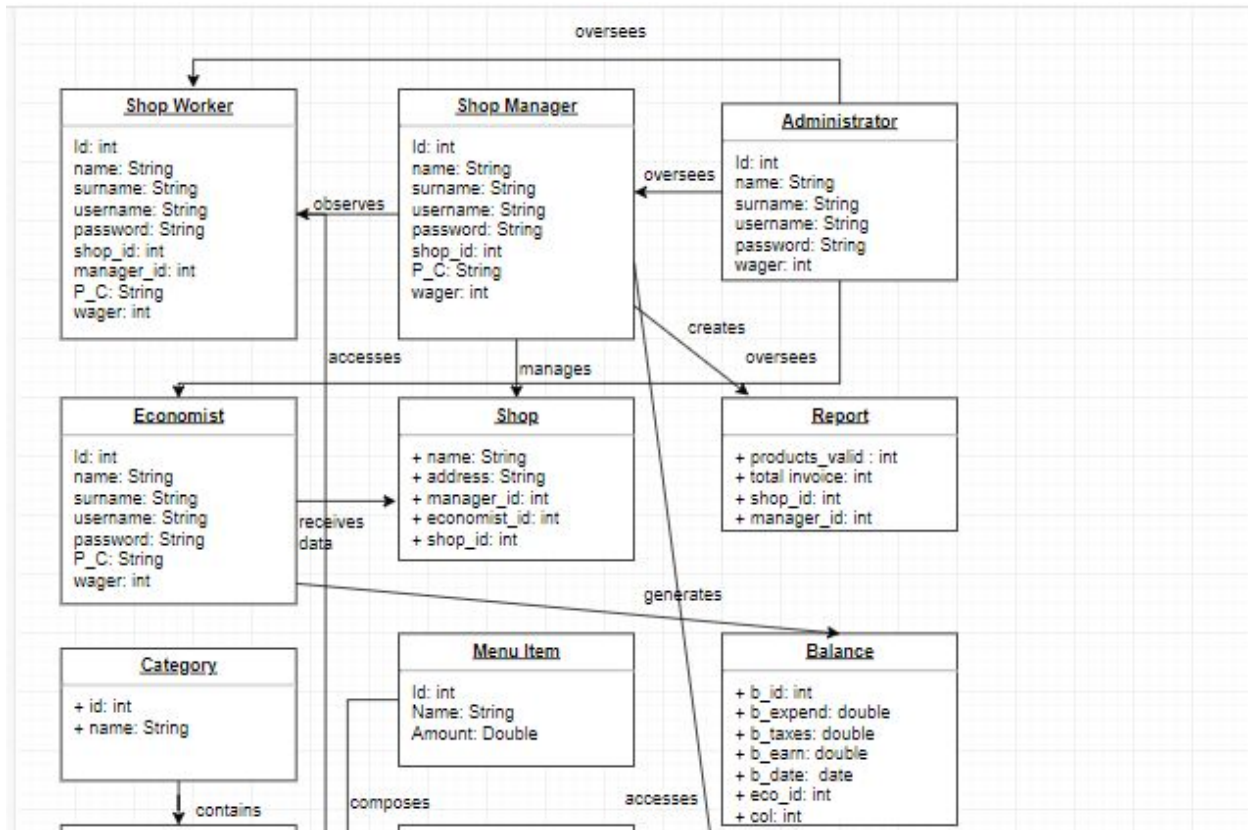
SEQ 10-11

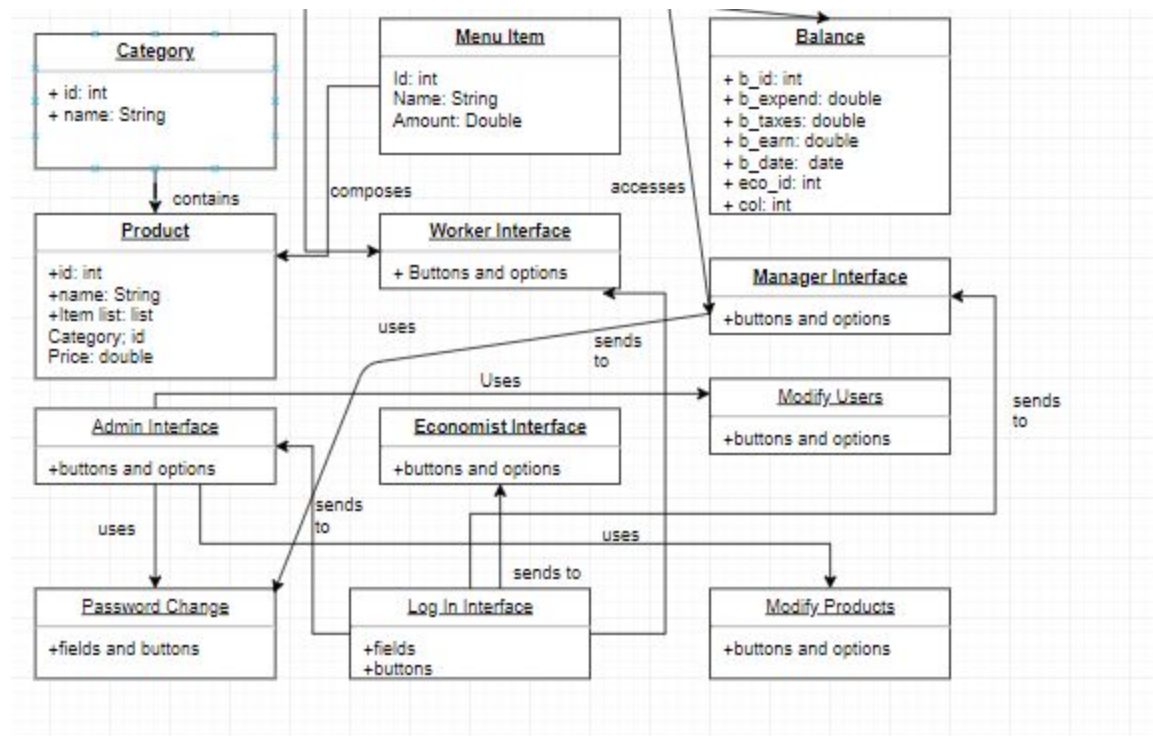


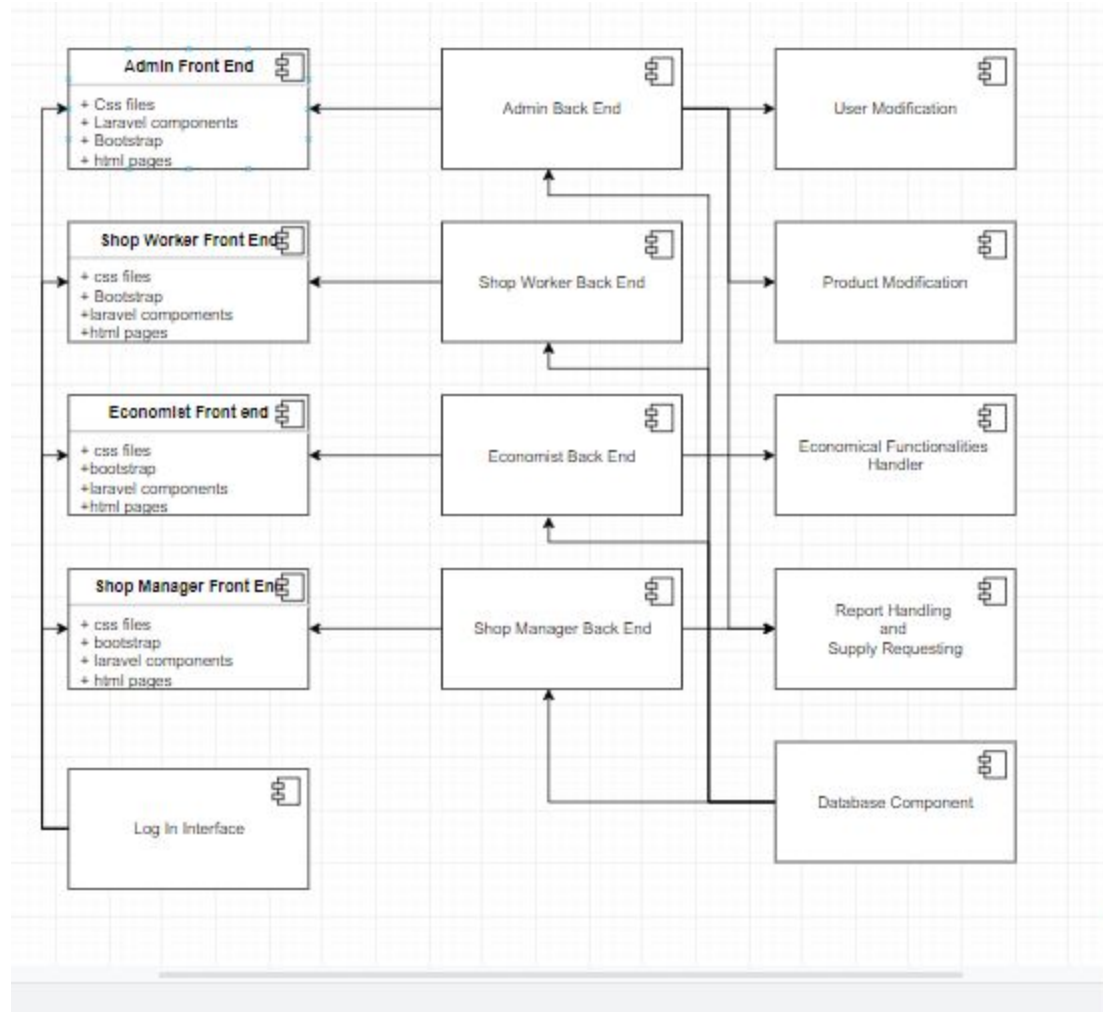
SEQ 12,13

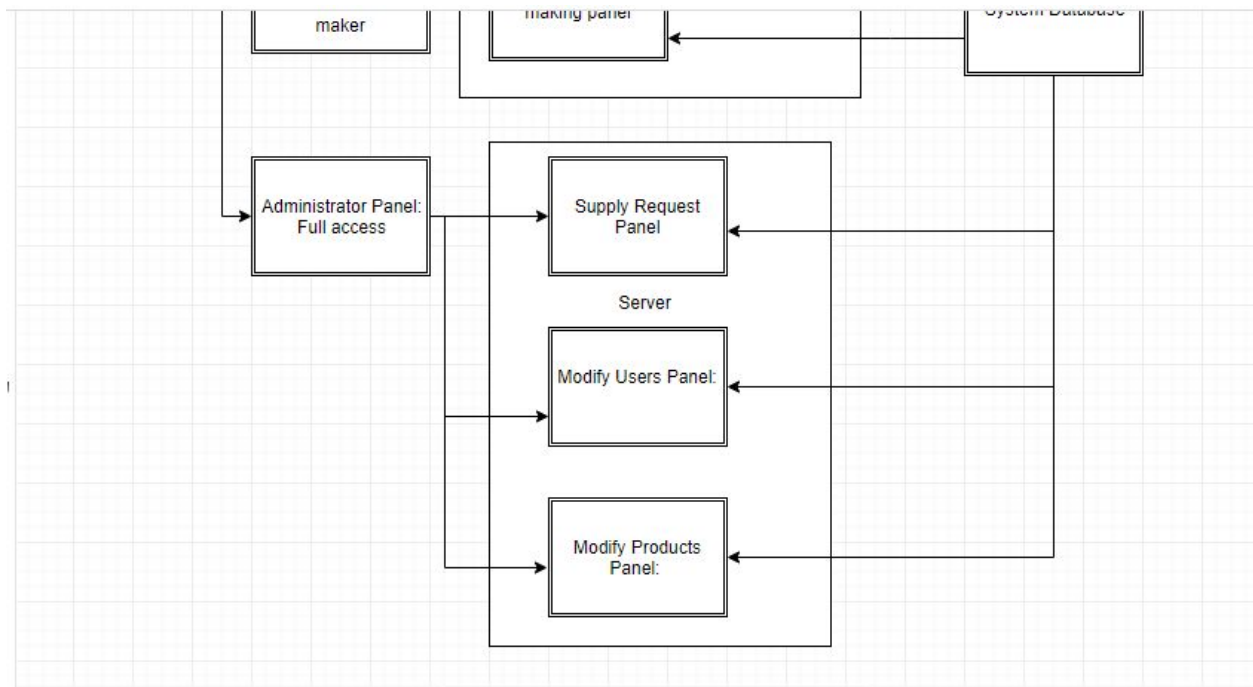
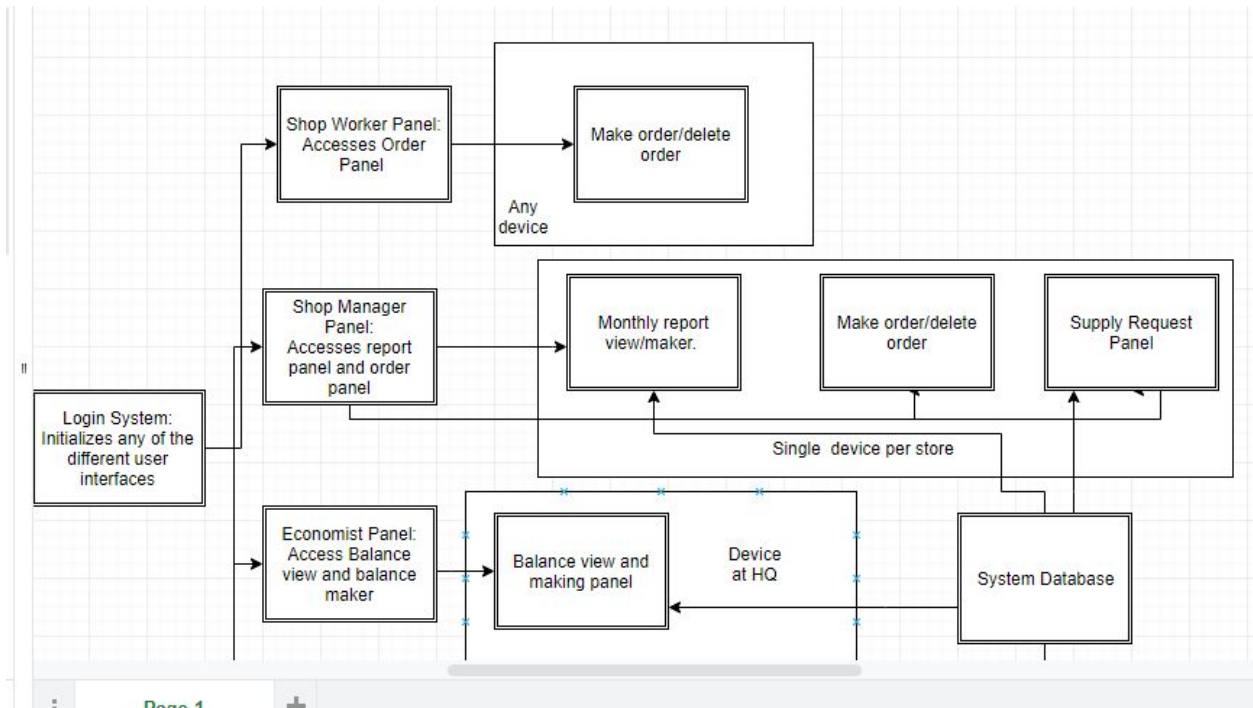


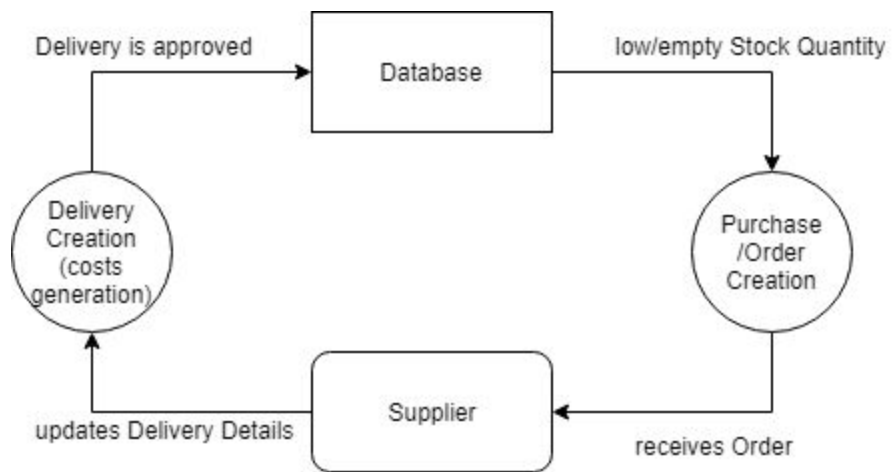
SEQ 14



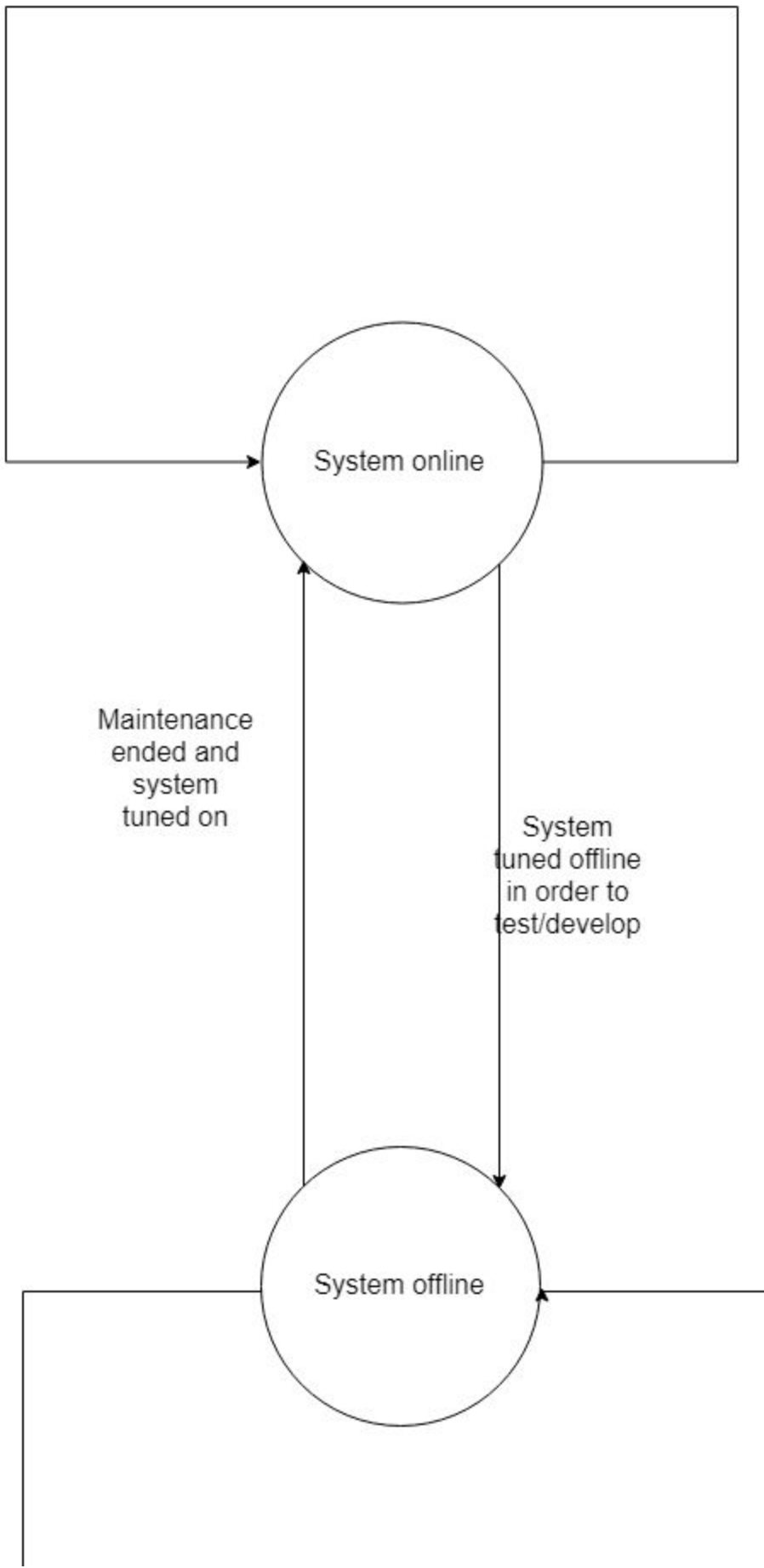




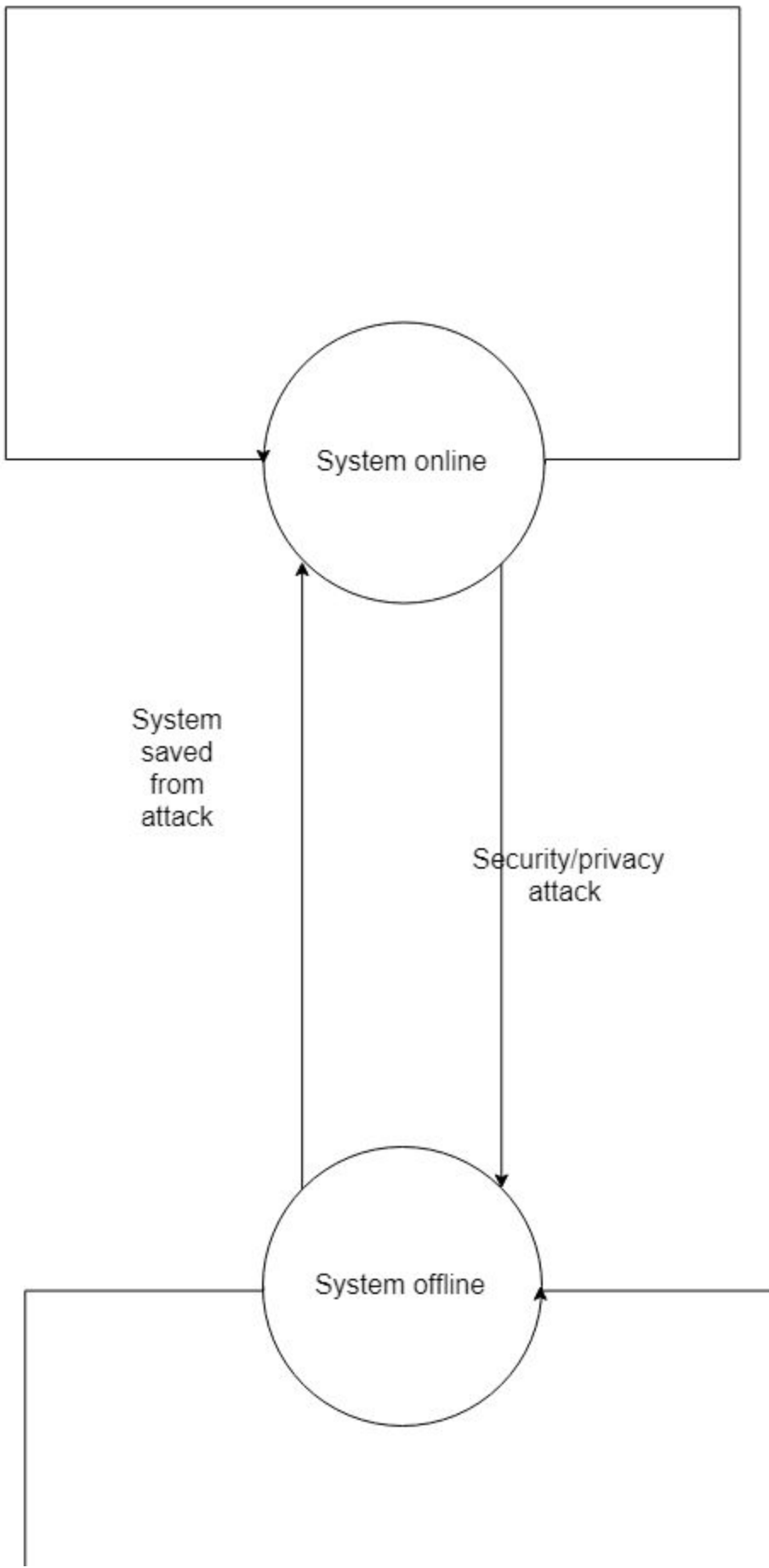


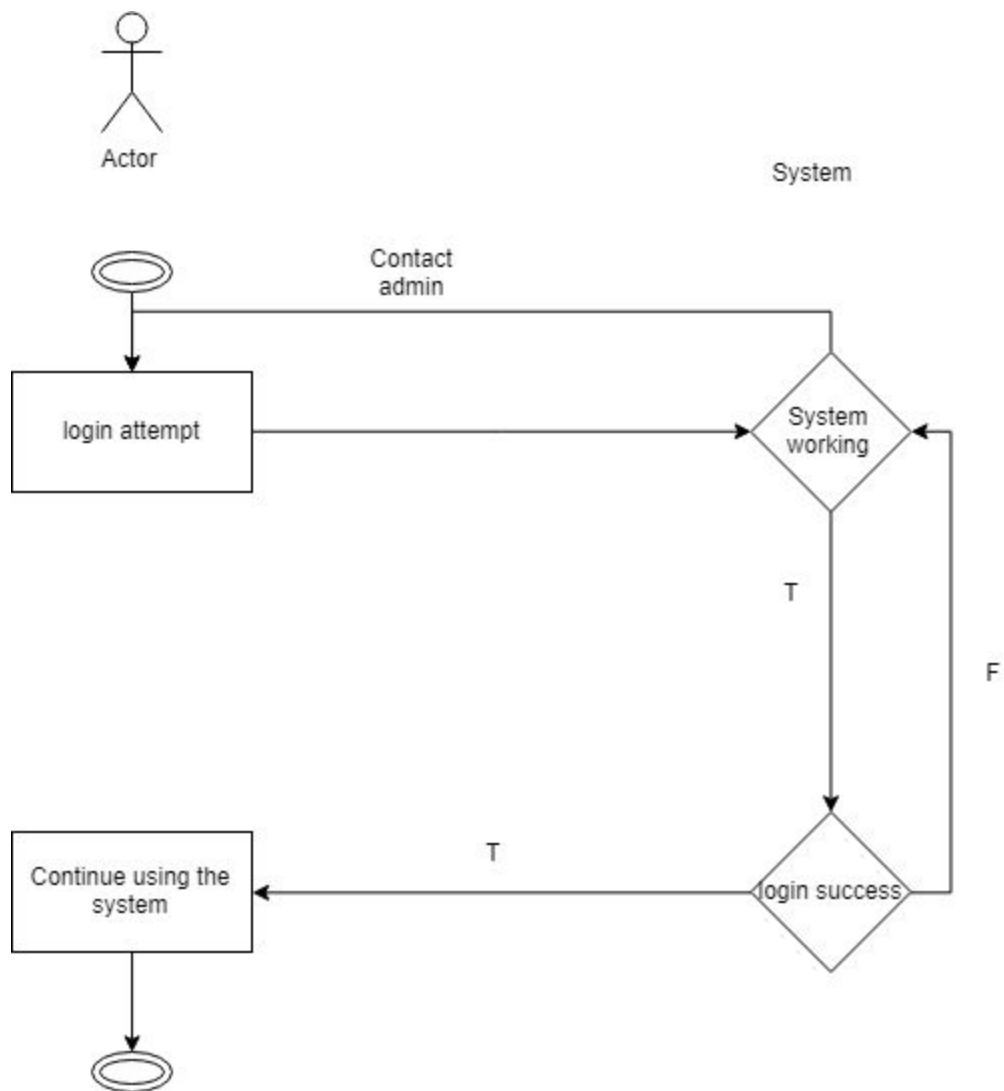


System online and working



System online and working





Supplies State Transition Diagram

