SE230-FUNDAMENTALS OF SOFTWARE ENGINEERING

Project supervisor: Dr. Yousef Khasawneh.

“Online Market”

Project members:

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Saif Alzoubi (127231)

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1. Project Title: Online Market.

Online Market System can facilitate the process of shopping from different aspects.
Due to the surrounding conditions these days and the global quarantine we have, the aim of the application is to help people get their groceries safely and easily far from any gathering.
In addition, it helps reducing the lost time while shopping and fortunately, most people can easily access it.

2. Planning Phase:

A. **The System Context Diagram** below shows how a system interacts with other systems, business units, and key personnel by showing the system and its surrounding environment. In other words, it can help us understand the scope of system's operations and the system boundaries.

As we can see, the circle in the middle is called "The context bubble" which represents the main system job "ONLINE MARKET" that is made up of all the related processes or activities.

While the boxes located around the context bubble are called "External entities", they are important to be shown because they interact with the system. In other words, they are the sources of the data processed by the system. ONLINE MARKET has four dependable systems:

- **Customer management system,** which is responsible of the customer's data and his/her needs.
- **Payment management system,** which is responsible of managing money, cash, credit cards, points and payments. It is also connected to the bank accounts of each customer due to the online payment service.
- **Product management system,** which is about organizing the planning, production, marketing and other tasks related to the creation and distribution of a product. It involves the coordination of teams, data, processes, business systems and more. It is responsible of buying all the required products from markets and present them in one big market in a way to attract the customer to buy (marketing).
- **Delivery management system,** which is about focusing on delivering a finished product and enhancing the delivery processes to boost customer satisfaction by using the most recent technologies and tools. It will be using Google maps and GPS service.)

B. "Incremental Development model"

Why this model? It is always better for most business, e-commerce, and personal systems to use this type of process model. By developing the software incrementally, it is cheaper and easier to make changes in the software as it is being developed.

This feature gives us the chance to always work on enhancing the system and gives the customer a chance to evaluate the system at early stage in the development to see if it delivers what is required or not.

C. Risks

- Data breaches can expose all of this information to harmful sources, jeopardizing your company's reputation and safety.
- Competition between markets.
- Not all People have smart phones or at least know how to use.
- Brands reliability; counterfeit products.
- Lack of products.
- Specifying the location to deliver the groceries is not accurate.

D. Feasibility Study

- **Technical Feasibility:** Since the application requires an Internet connection and database systems for the customer and products' information, the technical analysis is important to include the needed technical support: Database SQL Server 2019,Internet Connection, available on Android/iOS platforms.
- **Economic Feasibility**: Financially, using the application will not cost you a lot but an internet connection and your personal phone.
- **Operational Feasibility:** As long as this application helps in reducing the time needed to shop, satisfy people needs, get them their groceries on time safely and legally and have access easily, then this application is likely to be an effective, friendly and successful tool to be used.

E. Scheduling Table:

Task name	Duration
Customer management	4 days
Payment management	5 days
Delivery management	5 days
Product management	10 days
Feasibility Analysis	15 days
Design	7 days
Total	**1.5 month**

F. Techniques Used to gather requirements:

1. A group thinking activity where several people of different ideas put forward ideas and decision together.

2. Data collection through interviews: The critical feature of this process is that it assists the project manager to interview experienced project participants, sponsors, stakeholders and other executives.

G. Functional Requirements:

1) The User must:

a. Download the application.
b. Make an account
c. Enter his/her specific information such as, address, payment method, etc.
d. Start shopping by moving from one page to another.
e. Ensure all the groceries he/she bought by checking the cart.
f. Choose the paying technique either cash or online.
g. If paying online, then must enter the number of card and password.

2) The System must:

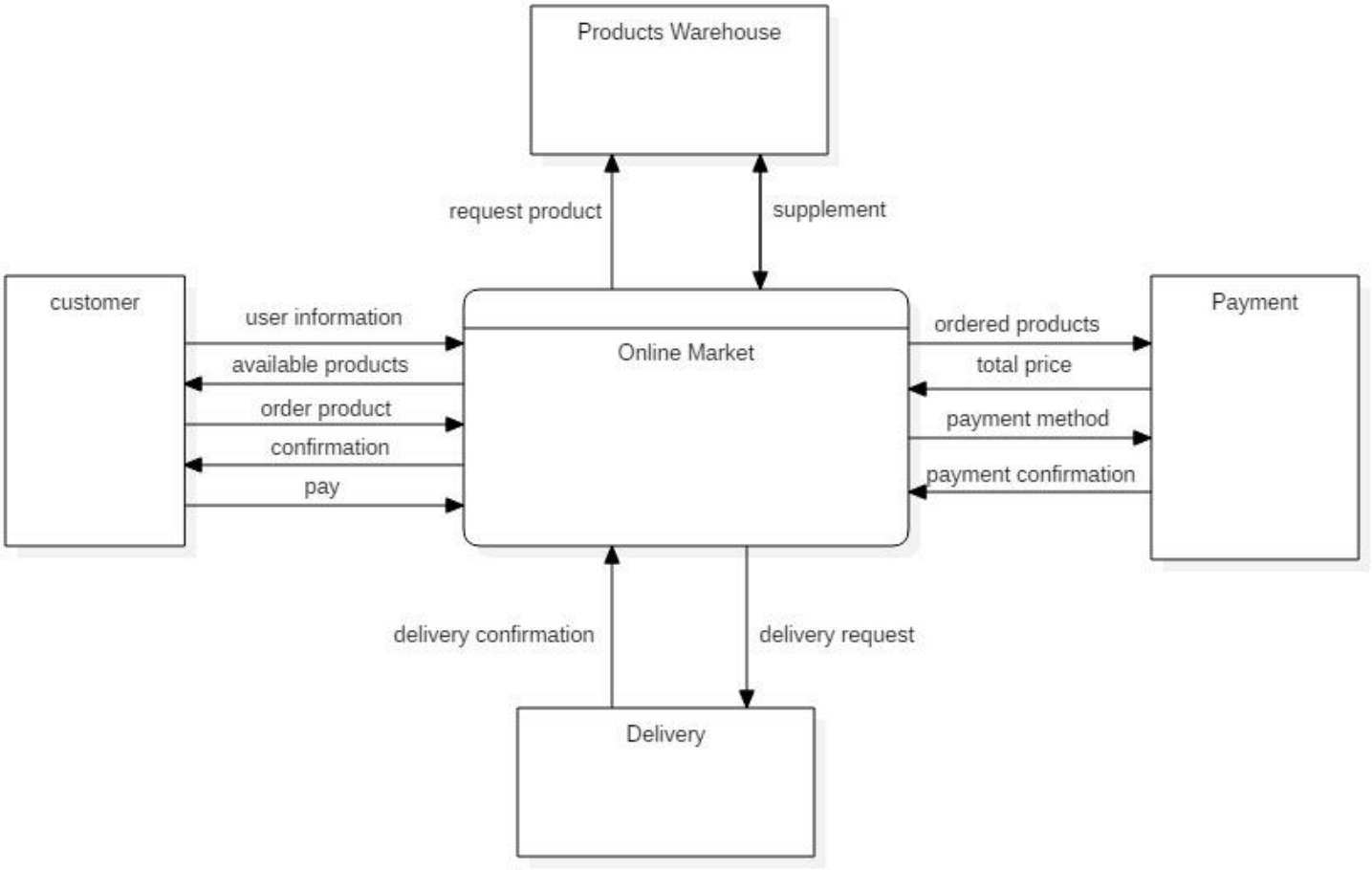
a. The application does not allow the user to shop without having an account unless he/she only wants to view products.
b. The System consists of multiple pages and categories where all the products are arranged according to the type or the price.
c. If there is a certain SALE on some items, the application may notify about it.
d. The application must be connected to your location by GPS so that it can deliver the order to the right address.
e. If the user is paying online, the application must verify the payment and shows a notification “Payment is successfully done”.

H. Non-Functional Requirements:

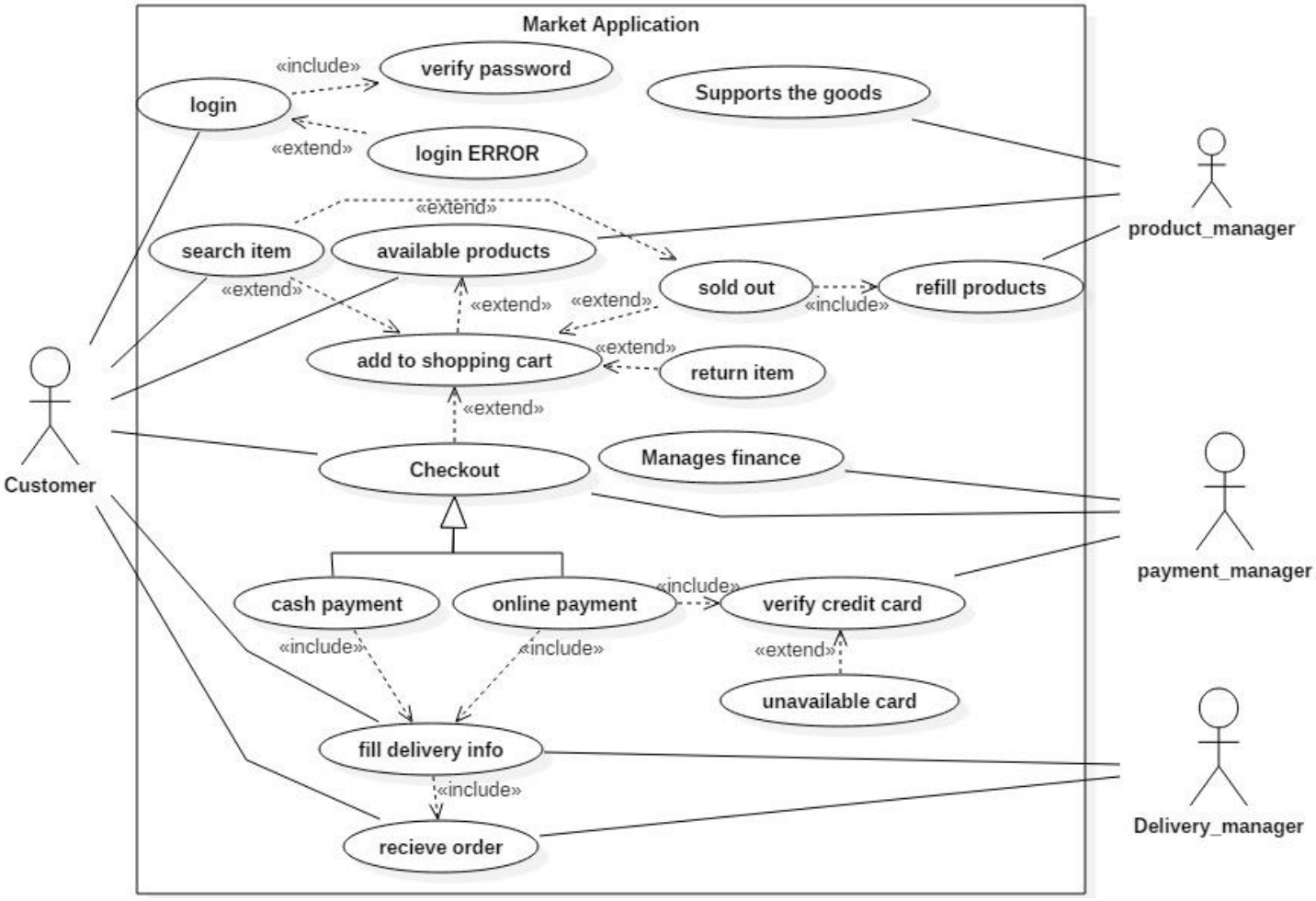
a. The application will allow the user to order his/her needs as long as the branch is open (8:00 am – 12:00am).
b. Try to enhance the platform (code) of the application by using an appropriate algorithm to find the nearest branch.
c. Have a high security to keep user’s information safe.
d. Must inform the customer about the “SOLD-OUT” products and the predictable time of having them again in store.
e. Calculate the estimated time to be taken to deliver the order.

3. Diagrams:

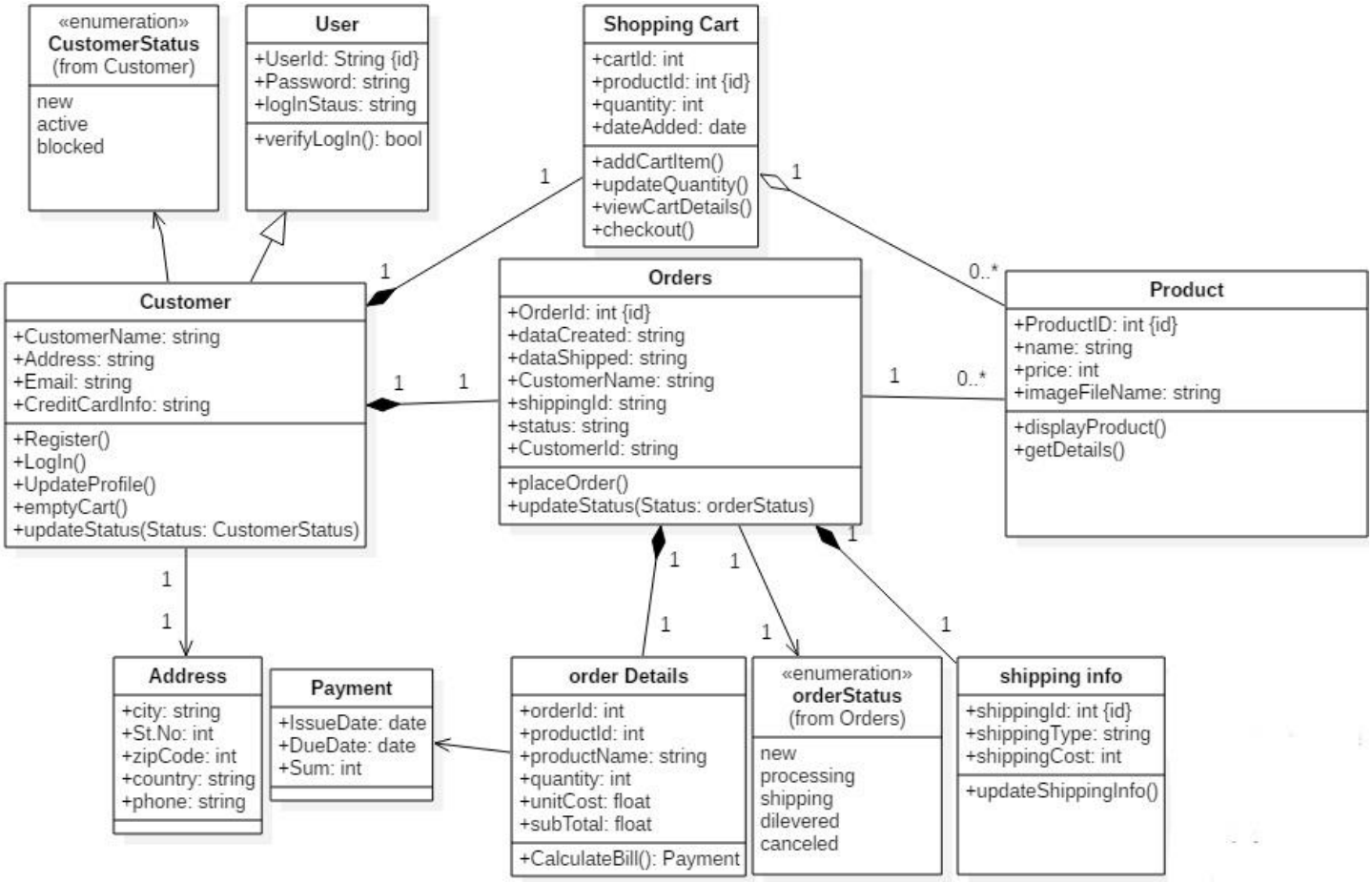
A. Context Diagram:



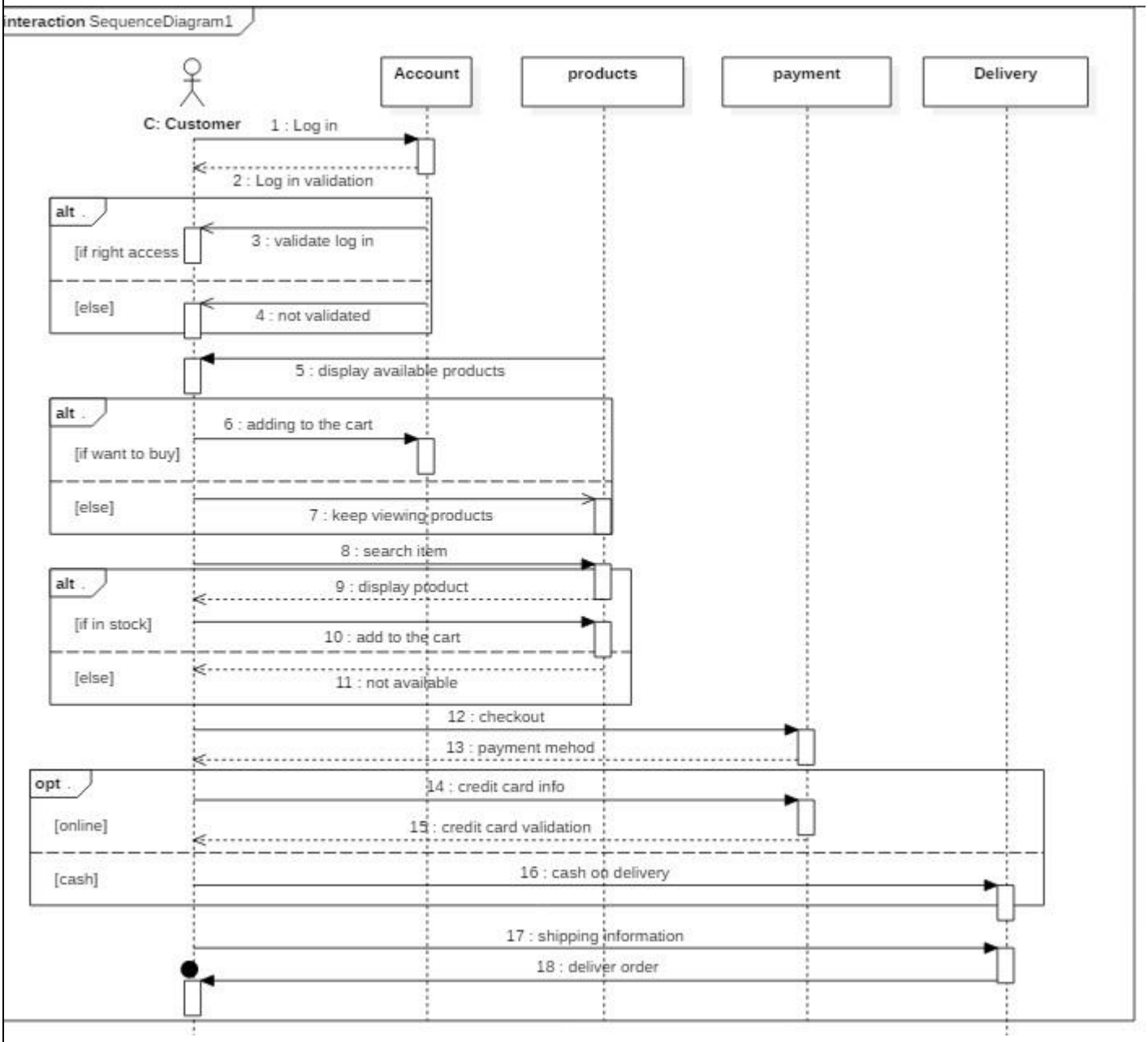
B. Use Case Diagram:



C. Class Diagram:

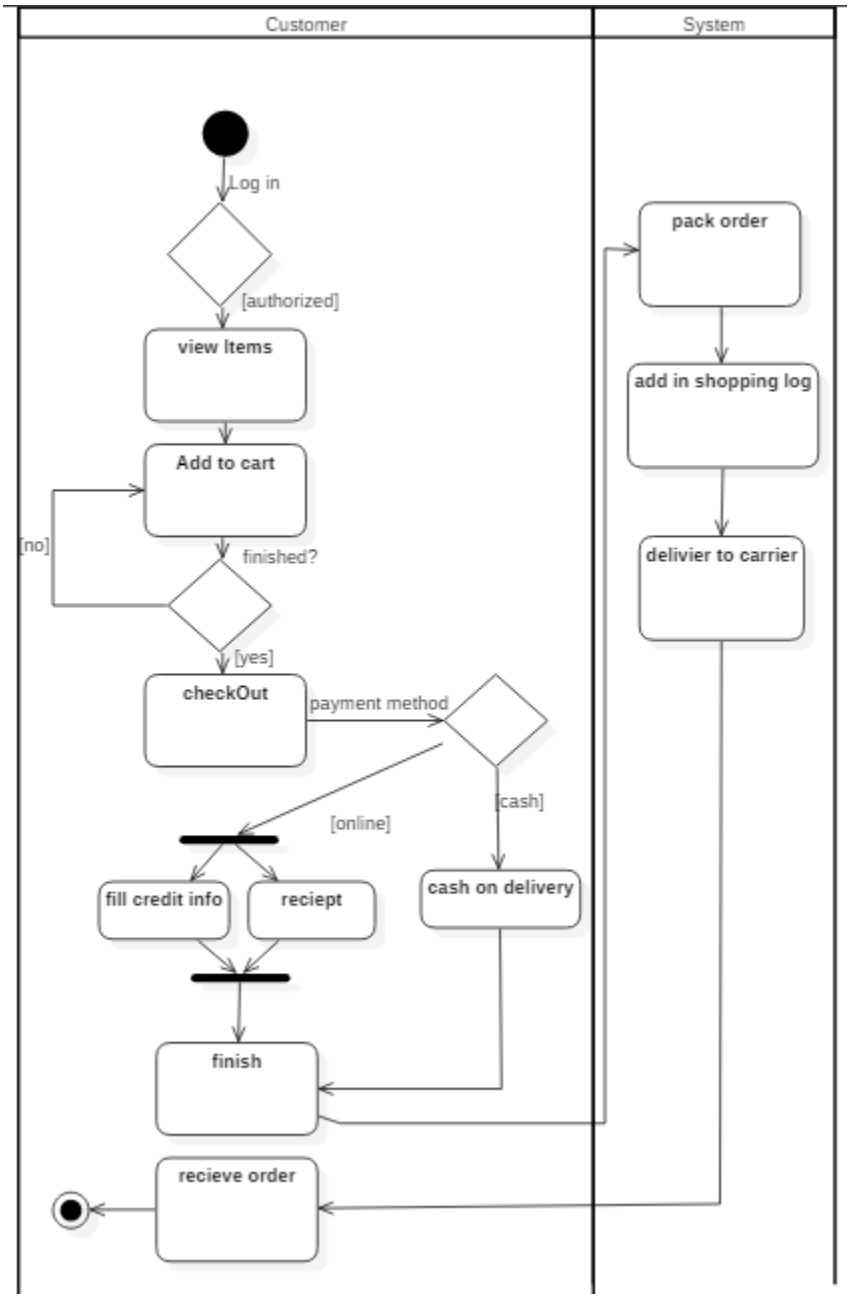


D. Sequence Diagram:

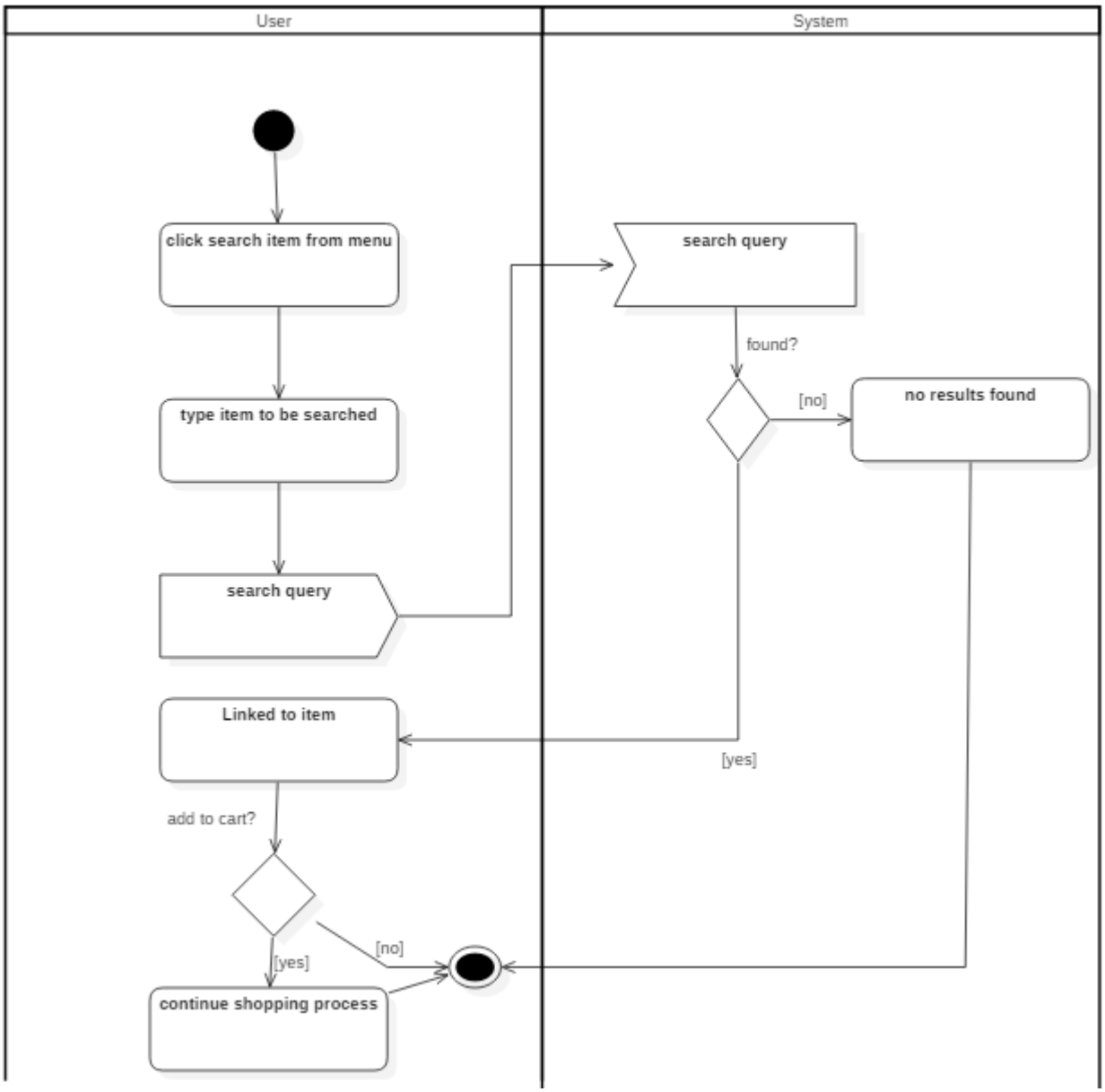


E. Behavioral Diagram:

a. Shopping process:



b. Searching process:



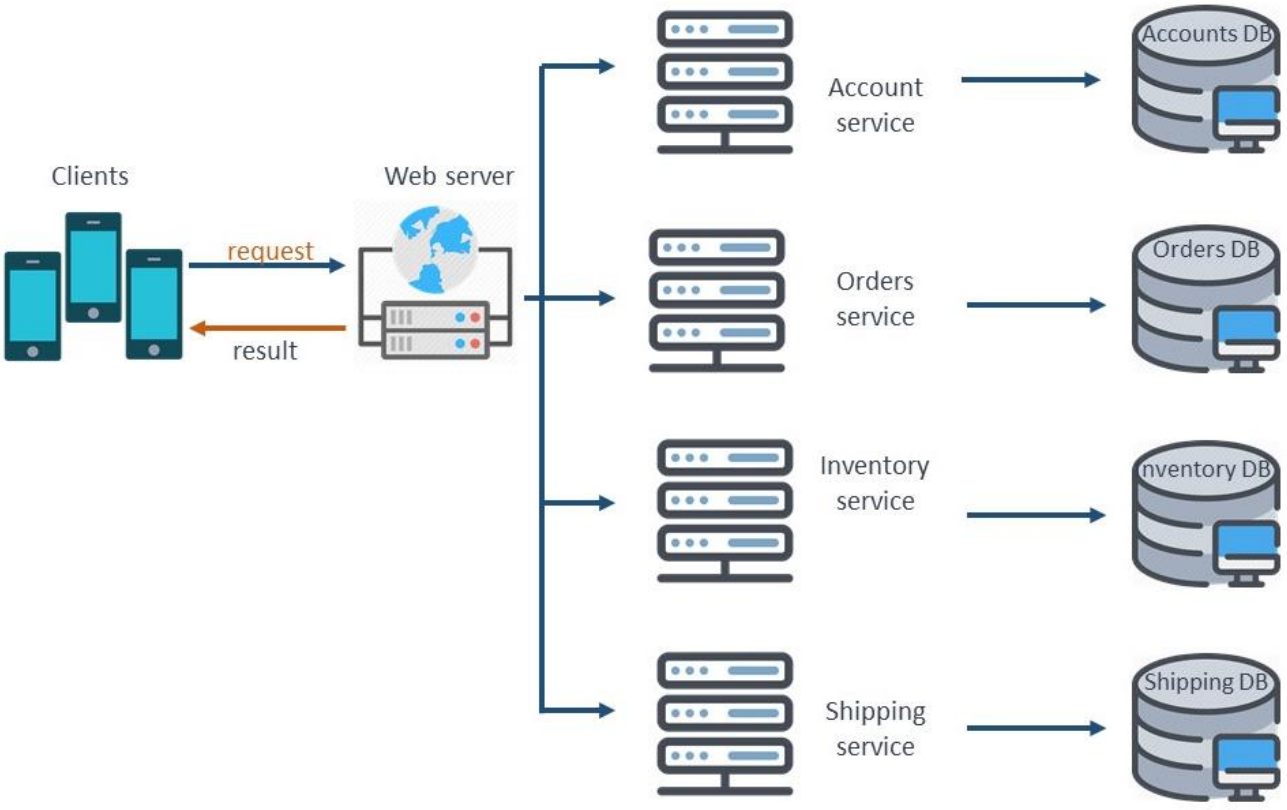
4. Architectural Design:

Micro-services pattern:

In a micro-services architecture, different features/tasks are split into separate respective modules/codebases which work in conjunction with each other forming a large service as a whole.

This particular architecture facilitates easier & cleaner app maintenance, feature development, testing & deployment in comparison to a monolithic architecture.

This pattern fits our application perfectly, because it shows the aim of it in a simple and clear way.



5. Test Types:

Test Type(s) might be used while implementing:

1. Graphical User Interface (GUI) Testing

It is a software testing type, which verifies whether the communication between two different software systems is done correctly.

The GUI Testing includes the size of the buttons and input field present on the screen, alignment of all text, tables, and content in the tables.

It also validates the menu of the application, after selecting different menu and menu items, it validates that the page does not fluctuate and the alignment remains same after hovering the mouse on the menu or sub-menu.

Interface Testing includes testing of two main segments:

-Web server and application server interface

-Application server and Database server interface.

This testing ensures that end-users or customer should not encounter any problem when using a particular software product.

2. User Testing

User testing is a valuable and effective exercise and we believe that anyone who wants to develop a web site, mobile app or software application can, and should, be performing user testing.

User testing is incredibly effective because it gives your insight into how people use the software you're building, making it the best way to ensure it is, in fact, usable and actually working the way it's intended to work.

User testing help discover problems in the design, It focuses on measuring the software's capacity and ease of use, and examines whether it fulfils its intended purpose.

Simply, it tests whether the software is user-friendly or not.

6. Students Documentation:

A. Mohammad Madi:
ID:125760.

One of the things I learned while working on this project is how to simulate ideas for the ground and look at ideas from other aspects than what we see as users.

I made a context diagram that defines the boundary between the system and its environment showing the entities that interact with it.

I also searched for the risks facing our project through a detailed study of the markets and the surrounding environment, and look at some of the markets that lost and the reasons for their loss.

Time is an important aspect of any project and that is why I made sure to schedule it for several reasons: Organizing work, honesty with the customer, not bearing the burden of delay in completing the work, and it is wise to take more time to avoid mistakes and circumstances.

I helped in collecting data or the main requirements of the project from more than one side in order to get a comprehensive and complete project.

In the end, I was kept informed with the teamwork and followed up with them.

B. Saif Alzoubi:

ID: 127231.

The project is an online market for shopping different items, it helps people to get their needs by creating an account on the application, and then they can order anything they want from the market in the application.

It helps people reducing time while shopping because it provides a delivery service for any place they want, and pay by different payment methods, online or cash on delivery, this can give a chance as a big shift in purchasing methods.

I contributed a part of the diagrams and they are the sequence and class diagrams, I also gave some suggestions to make the project better and more practical through adding some features to the application.

C. Tala Rabi:

ID: 127797.

Online Market project is a software system, which aims to help people get their groceries online easily and safely. Building such an application, we definitely needed more than one system to rely on, in our project, we needed four different subsystems to work all together and give a final satisfying service to the customer.

Doing full Feasibility Studies and knowing the Functional and Non-functional Requirements at an early stage was so important because it gave us a rich feedback on how the system works and interacts with the user and gave us the opportunity to make ourselves ready for all the requirements whether financially or technically or other needs.

Moreover, like any other project, we had some risks that made it challenging to accomplish the work and it is normal. And finally , to make sure that the project is working as intended , we should use the suitable testing type and see if the results match the expectations or not.

Personally, I participated in explaining the aim of the project, clarifying the subsystems, choosing the model type, feasibility study, functional and non-functional requirements and test types.

D. Bayan AL Safadi:
ID: 125634.

The main goal of this application, is due to the current situation that the country is going through from a crisis, because of the curfew and the prevention of going out to meet the needs that people have, so we decided that it is safer for people to do shopping from home and for purchases to reach their home, with a little time and effort and most importantly It guarantees that you will not get infected.

It is recognized in any project that there should be diagrams that indicate the mechanism of work for this project and from here came my role in highlighting this aspect by making part of the diagrams such as, the context diagram, the use-case diagram and the behavioral diagram. The architectural design of the application was my favorite part to be designed. I also did the design and coordination of the report.

At the end, the work between us was consistent and we distributed it to us while ensuring that everyone understood what others have done, it also gave me the chance to get advantages from others' projects on the web while I was searching for information.