Cairo University
Faculty of Computers and Artificial Intelligence

CS251

Introduction to Software Engineering

Toffee

Software Design Specifications

Version 1.0

May 2023

CS251: Phase 2 – <Candy Crush>
Project: <Toffee>

Software Design Specification

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Team

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Document Purpose and Audience

Document Purpose:

The purpose of this document is to clarify software requirements that have been agreed upon by the business owner. It also provides a clear vision to the development team about the functionality and features that provide client's needs in the system, so we can save the development time and cost, and satisfy the client at the same time, and then all parties will be satisfied.

Audience:

- Client (Business owner).
- Software Development team.
- Customers.

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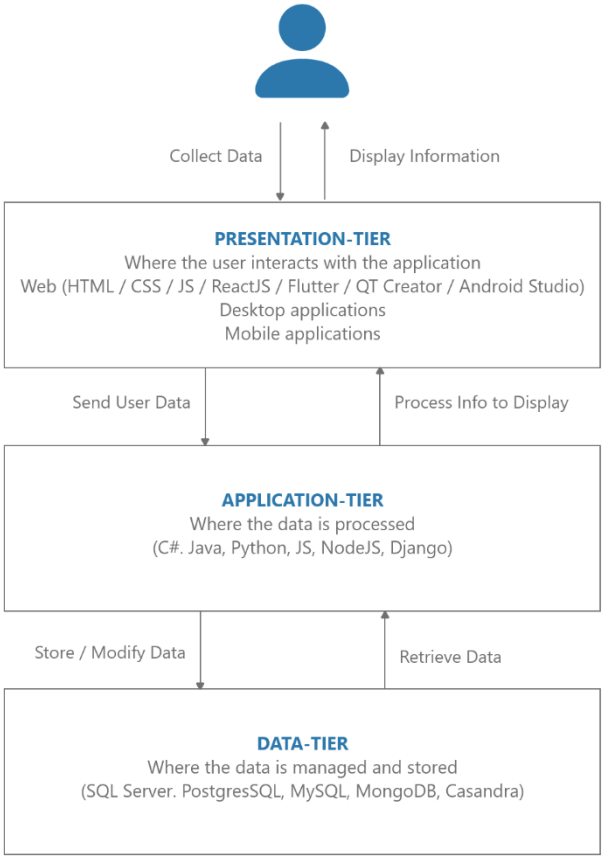
System Models

I. Architecture Diagram

Three-tier architecture

- The product's time to market is optimized, and developers can use the newest tools and the best languages for each layer as they enhance each tier simultaneously by working with various teams.
- Increased scalability: By dividing the application into distinct tiers, you can scale any tier on demand without affecting the others.
- You may also increase availability and dependability by executing separate parts of your application on multiple servers and using cached results because it has different tiers.
- A well-designed application tier can be used to increase security since it acts as a kind of internal firewall and guards against harmful vulnerabilities like SQL injections.



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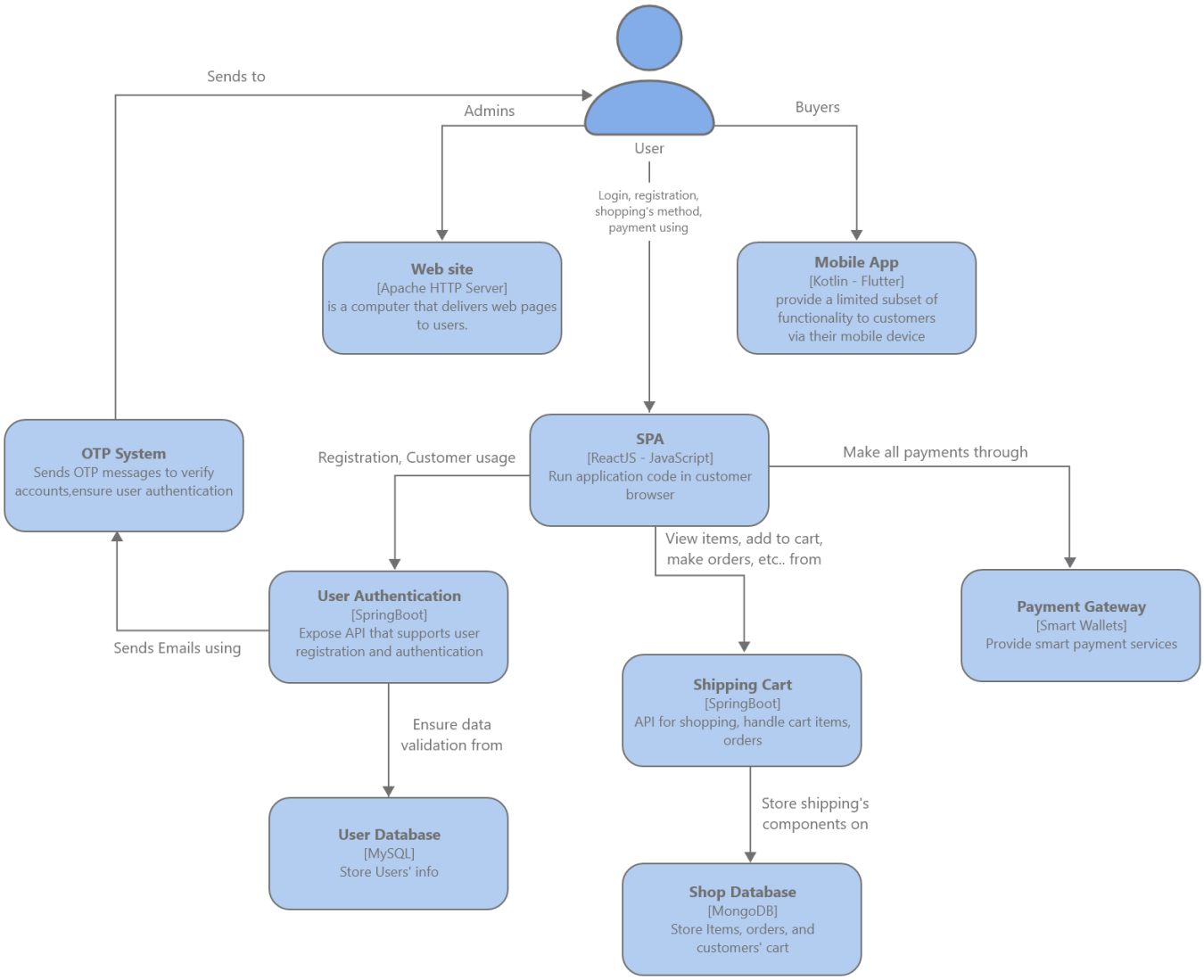

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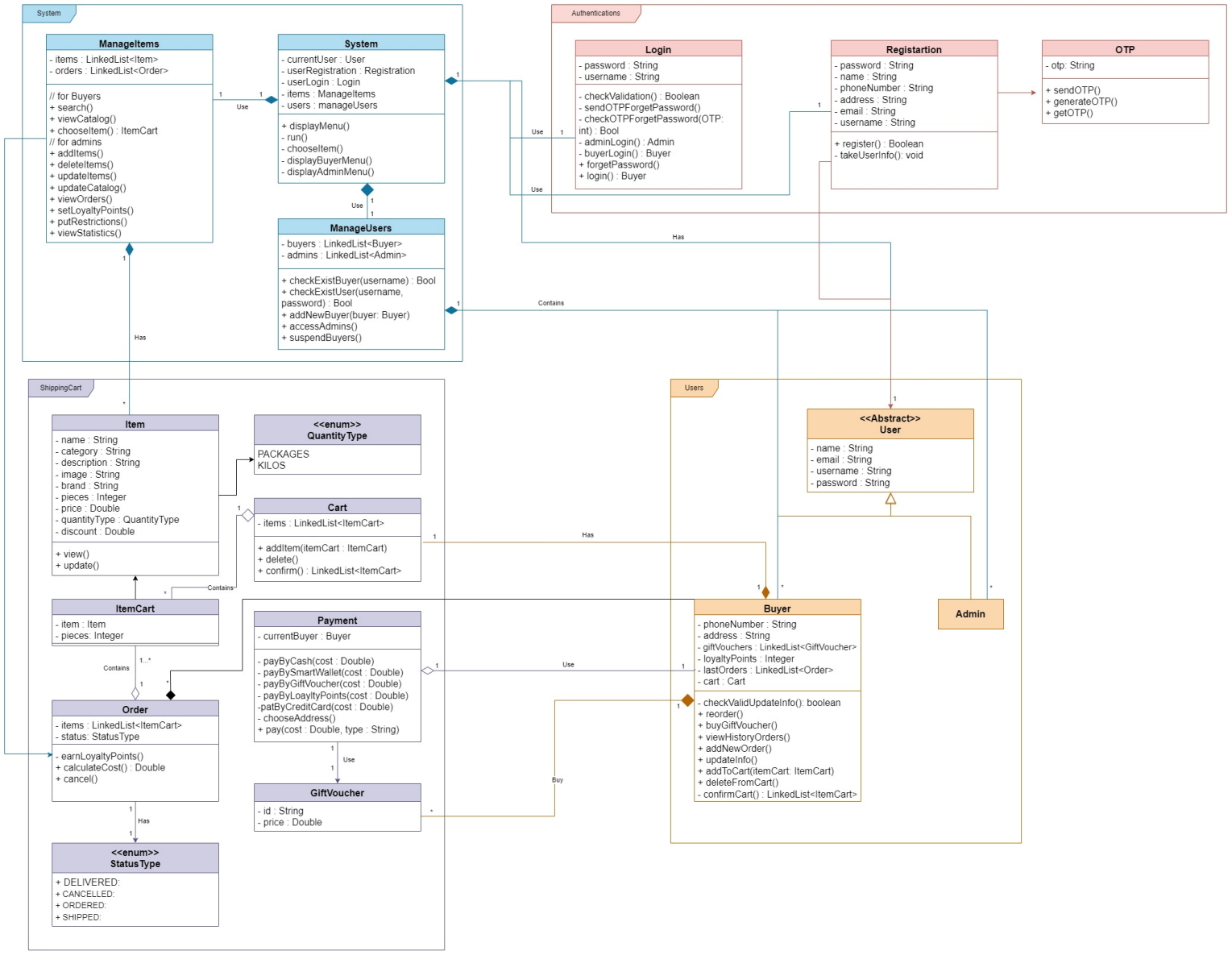
II. Class Diagram(s)



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III. Class Descriptions

Class ID	Class Name	Description & Responsibility
1	AppSystem	Responsible for main functions in the website, show menu, login, registration
2	ManageItems	Responsible for all methods that related to items
3	ManageUsers	Responsible for all methods that related to the users either admins or buyers
4	Login	Responsible for all methods that related for login users either admins or buyers
5	Registration	Responsible for all methods that related for register users either admins or buyers
6	Item	Has all item attributes and its related methods
7	Order	Collect items to be ordered and make many methods on it
8	Cart	Has a collection of items chosen by buyer and calculate its cost
9	Payment	Responsible for all methods to finish the payment of orders
10	User	Has common methods with admins and buyers
11	Buyer	Has user attributes and additional attributes and his related methods
12	OTP	Responsible for sending of OTP
13	ItemCart	This class contains the item and the number of prices of it inside cart

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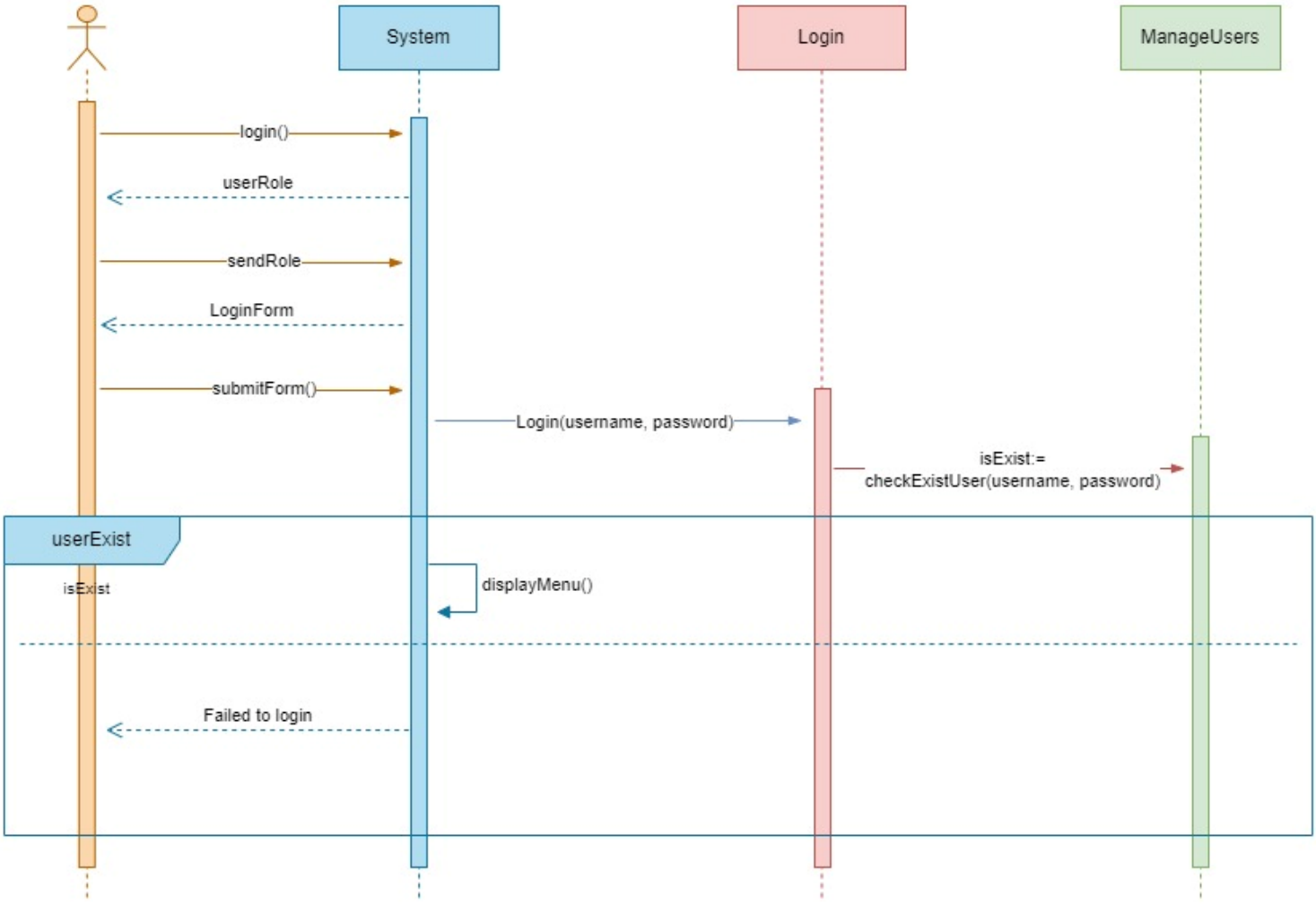
IV. Sequence diagrams

1- Login Sequence Diagram



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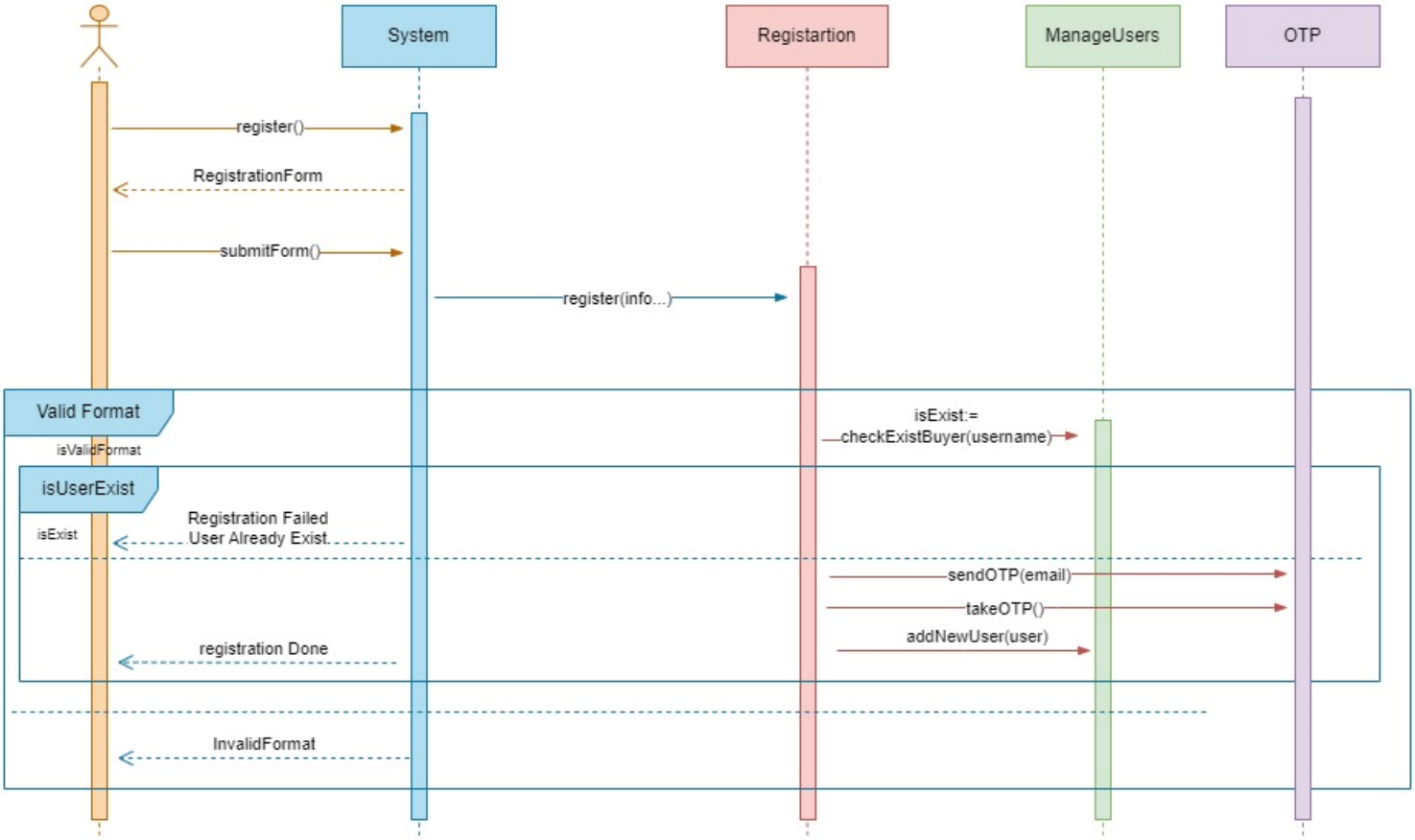
2- Registration sequence diagram



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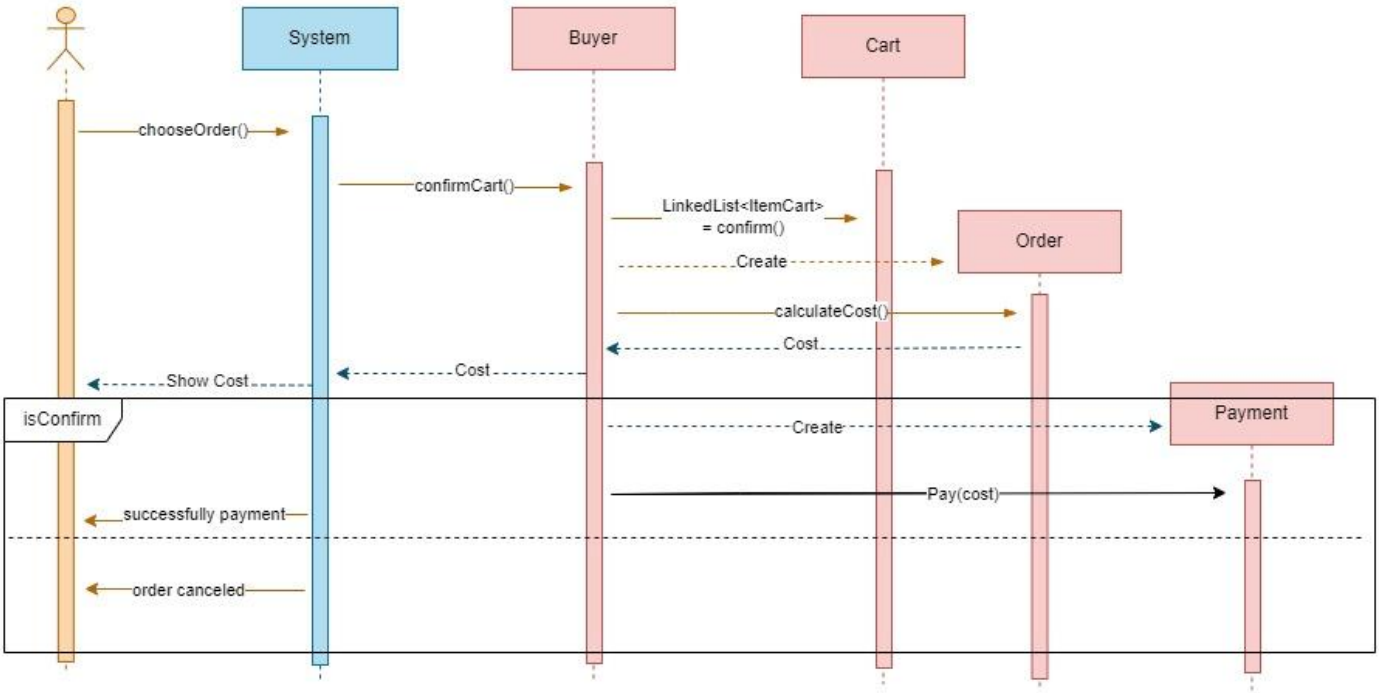
3- Choose Order Sequence Diagram



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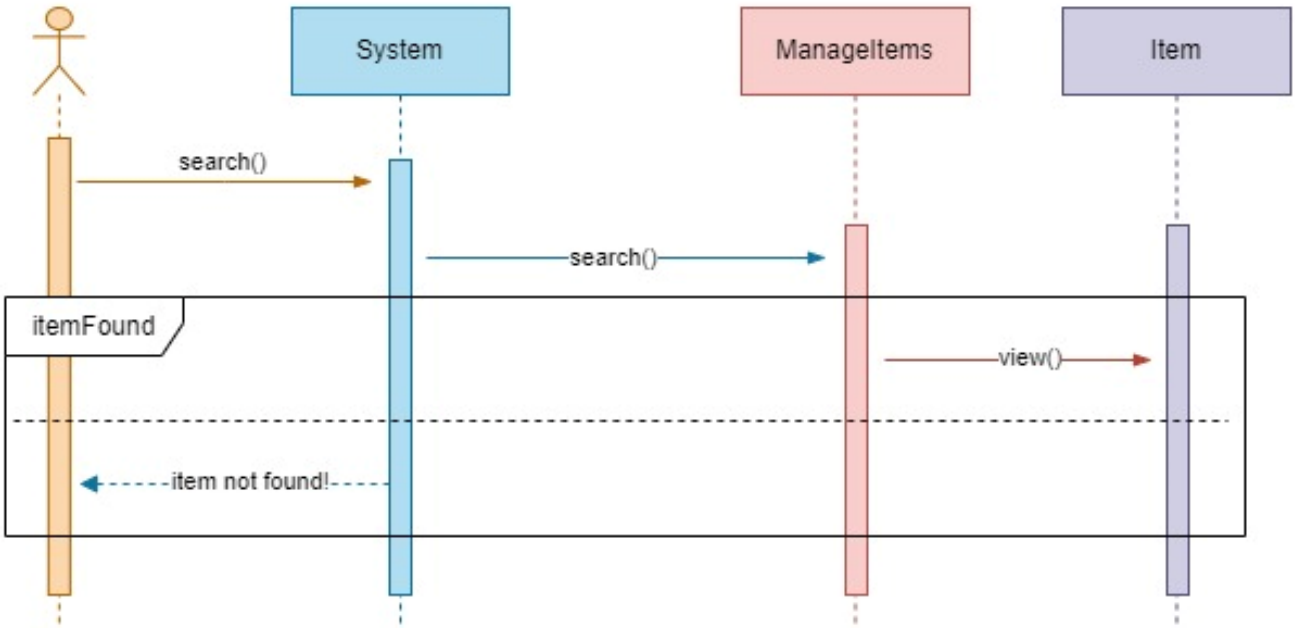
4- Search Item Sequence Diagram



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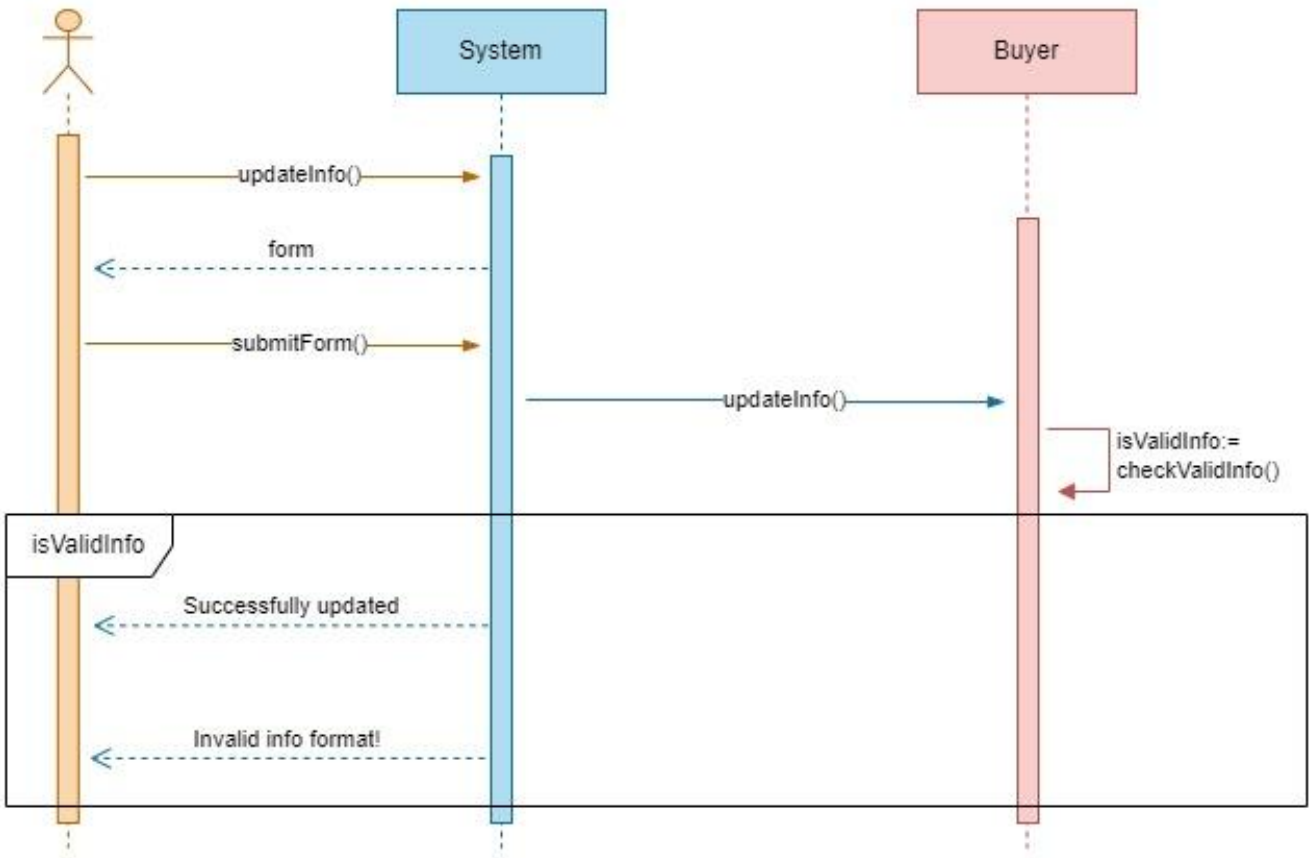
5- Update Buyer Info Sequence Diagram



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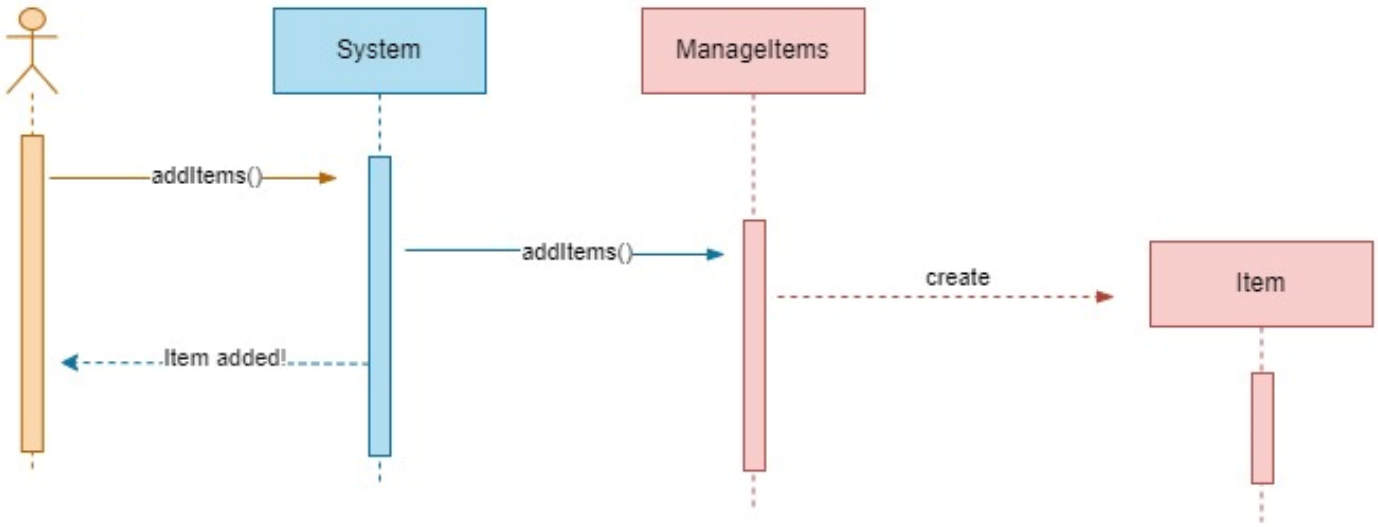
6- Add Item Sequence Diagram



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Class - Sequence Usage Table

Sequence Diagram	Classes Used	All Methods Used
1. Login user	Class AppSystem Class Login Class ManageUsers	Method login Method checkExistUser Method displayMenu
2. Registration User	Class AppSystem Class Registration Class ManageUsers Class OTP	Method register Method checkValidation Method checkExistBuyer Method addNewUser
3. Choose Order	Class AppSystem Class Buyer Class Cart Class Order Class Payment	Method chooseOrder Method confirmCart Method calculateCost Method pay
4. Search Item	Class AppSystem Class ManageItems Class Item	Method search Method view
5. Update Buyer Info	Class AppSystem Class Buyer	Method updateInfo Method checkValidation
6. Add Item	Class AppSystem Class ManageItems Class Item	Class addItems

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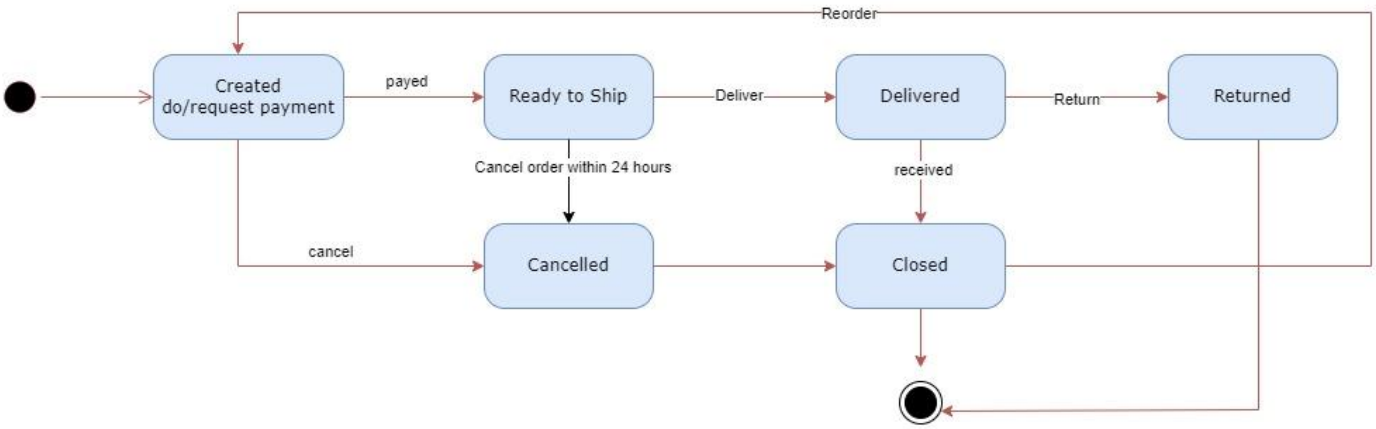
State Diagram



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Tools

Draw.io, Adobe XD, Adobe Illustrator, Visual Paradigm, Wondershare EdrawMax

Ownership Report

Student	Items created
Shawky Ebrahim Ahmed (**Leader**)	System Architecture Classes: • AppSystem Class • ManageUsers Class • ManageItems Class • Buyer Choose Order sequence State Diagram
Adham Mahmoud Abdelrahman	Documentation Purpose Classes: • Login • Registration • Items • ItemCart Login Sequence Update Buyer Info Sequence Add Item sequence State Diagram
Basmala Mohamed Sayed Gad	Classes: • Order • Item • Payment • User • OTP Registration Sequence Search Item Sequence State Diagram