Cairo University
Faculty of Computers and Artificial Intelligence

CS251

Introduction to Software Engineering

Toffee

Software Design Specifications

Version 1.0

Section s25-s26

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April - 2023

CS251: Phase 2 – G.O.A.T
Project: Toffee

Software Design Specification

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Team

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Document Purpose and Audience

- SDS: is a document that outlines the technical details of a software project. It describes the software's architecture, design, and implementation details.
- The SDS is typically written by software engineers or architects and is used as a reference guide throughout the software development lifecycle.
- (2) it can read by
  - Developers
  - Software architects
  - Project managers
  - Stakeholders

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System Models

I. Architecture Diagram

1. The main components or subsystems of the system

A. User Interface: This component is responsible for presenting the website or application to the user, including menus, buttons, and other elements that enable users to interact with the system.

B. Business Logic or Application server: This component handles the processing of user requests, such as order processing, inventory management, and payment processing.

C. Database or Storage: This component stores all data related to the system, including user information, product information, and transaction history.

2. Architectural design for Toffee

A suitable architectural design for an e-commerce system like Toffee is a 3-tier system, which separates the presentation (Client or UI) layer will be in the first tier, application layer will be in the second tier, and database (Storage) layer will be in the third tier.

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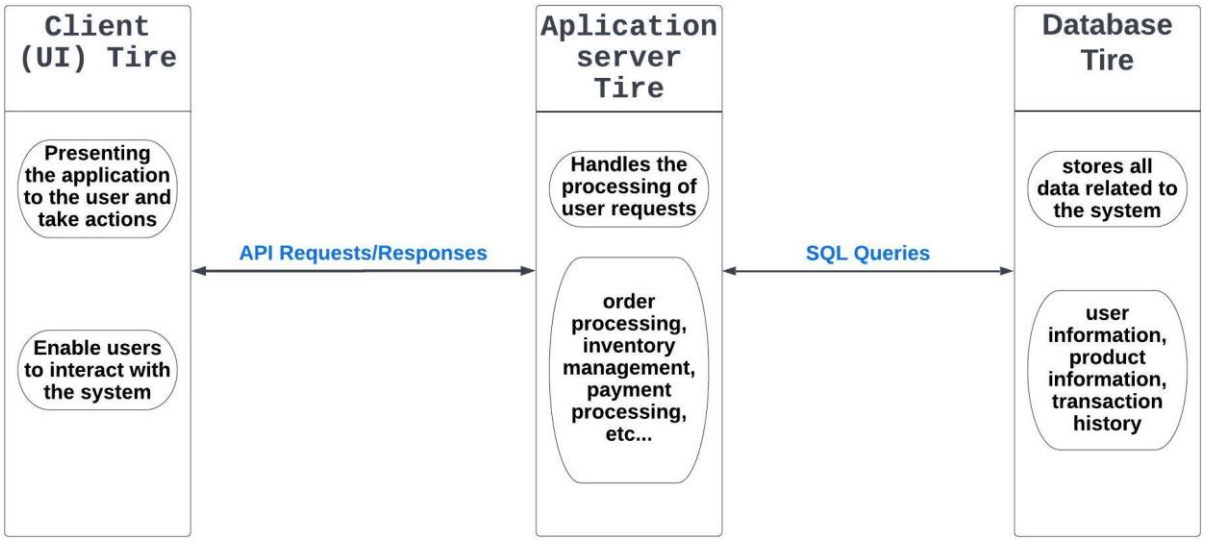
3. Architectural diagram



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II. Class Diagram(s)

The link of Class Diagram

https://drive.google.com/file/d/1fyyDYHXoSdh4L6i1ggHpjCFV8HOybUcn/view?usp=share_link

III. Class Descriptions

Class ID	Class Name	Description & Responsibility
1.	System	It initializes the database and products and creates user. It is responsible for running the whole system.
2.	User	It is responsible for doing the functions of general user want to make like: 1- Login 2- Register 3- Add To Cart some products. 4- Check out. etc.
3.	UserInformation	It is responsible for storing the information of User like: 1- Name 2- ID 3- Orders etc.
4.	Address	It is responsible for storing the address information of User like: 1- Street 2- Governate 3- Floor Number etc.

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Class ID	Class Name	Description & Responsibility
5.	Order	It is responsible for storing the information of orders of User like: 1- Date of the order 2- ID of order 3- Price etc.
6.	ShoppingCart	It is responsible for storing the products which the user adds to buy and some information of the Shopping cart like: 1- Id 2- CustomerId 3- LastModified etc.
7.	ShoppingItem	It is responsible for storing the information of the product which the user add to buy like: 1- Id 2- Quantity 3- Price etc.
8.	PaymentMethod	It responsible of identifying the method of payment and store the information of the method
9.	E-Wallets	It responsible of identifying the method of payment to be using E-Wallets and store the information of the method
10.	Loyalty Points	It responsible of identifying the method of payment to be using Loyalty Points and store the information of the method
11.	Vouchers	It responsible of identifying the method of payment to be using Vouchers and store the information of the method
12.	Cash	It responsible of identifying the method of payment to be using Cash and store the information of the method

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Class ID	Class Name	Description & Responsibility
13.	FilePersistence	It is responsible for loading, save, create, or remote the shopping cart
14.	PersistenceFactory	It is responsible for doing the processes in the FilePersistence class
15.	Product	It is responsible for storing the information from ProductInformation class
16.	ProductInformation	It is responsible for storing the information of products like: 1- Name 2- Id 3- Quantity etc.
17.	Catalog	It is responsible for storing the products, showing the catalog and search of a product by Name, Brand, or Category.
18.	Type	It responsible of identifying the type of the product either "**by unity**" (it means user must buy the product by units) or "**by kilo**" (it means user must buy the product by kilos)
19.	ByUnits	It is responsible for storing the amount of the product and Max amount which user can order
20.	ByKilo	It is responsible for storing the amount of the product and Max amount which user can order
21.	Database	It is responsible for storing the users, the information of each user, products in the website and shopping carts
22.	Register Process	It is responsible for doing the register process and save the new user in the database
23.	Login process	It is responsible for doing the login process and validates the information which user entered.

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Class ID	Class Name	Description & Responsibility
24.	Control	It is responsible for handling the processes which need the database like: 1- Login 2- Register
25.	Admin	It is responsible for storing the information of Admin like: 1- Name 2- ID 3- password etc.
26.	Type	It responsible of identifying the type of the admin either "**General Admin**" or "**Owner**"
27.	GeneralAdmin	It is an admin
28.	Owner	It is an Admin but can do this assign Admin Privileges and remove Admin Privileges

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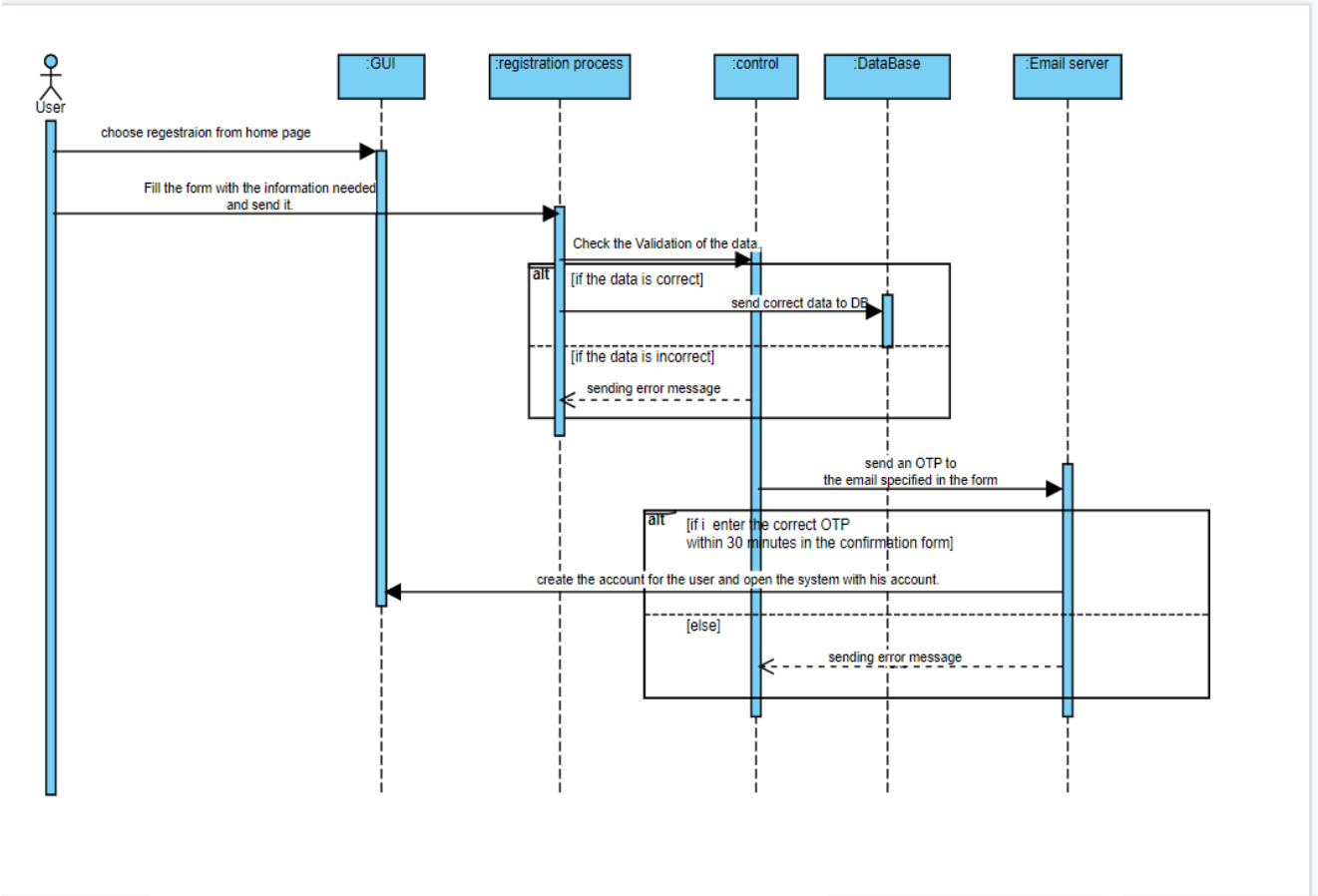
IV. Sequence diagrams

1. Sequence diagram for registration



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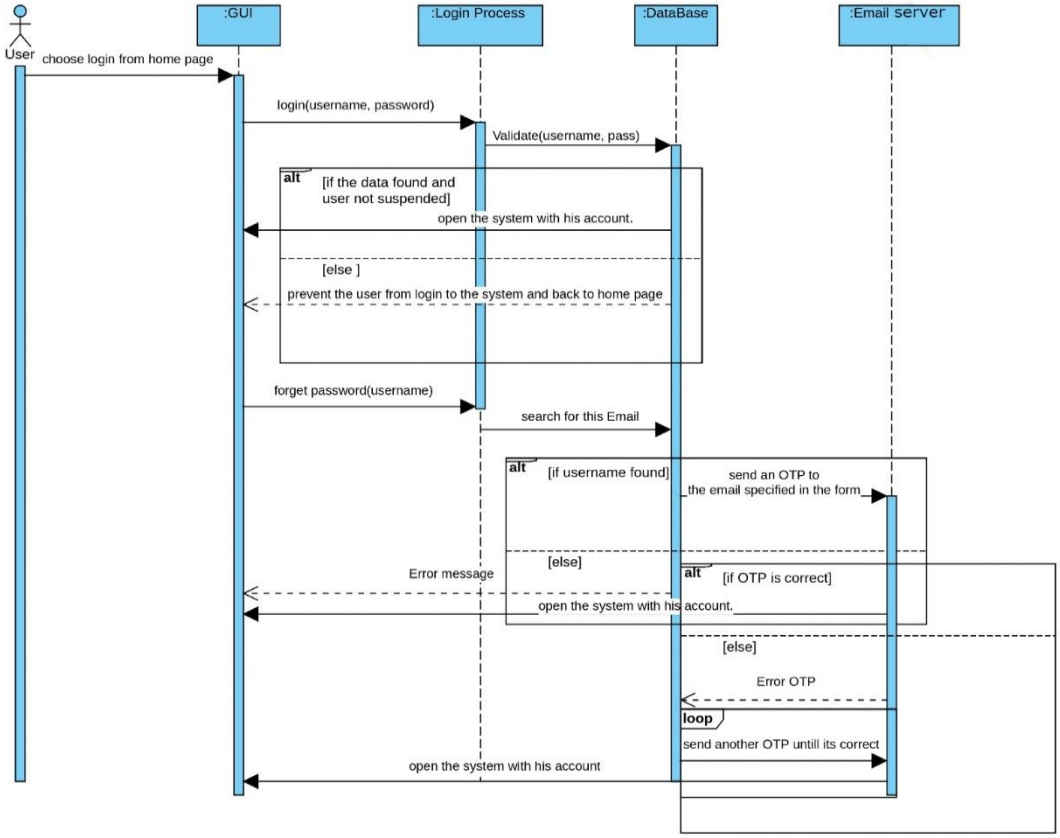
2.Sequence diagram for Login



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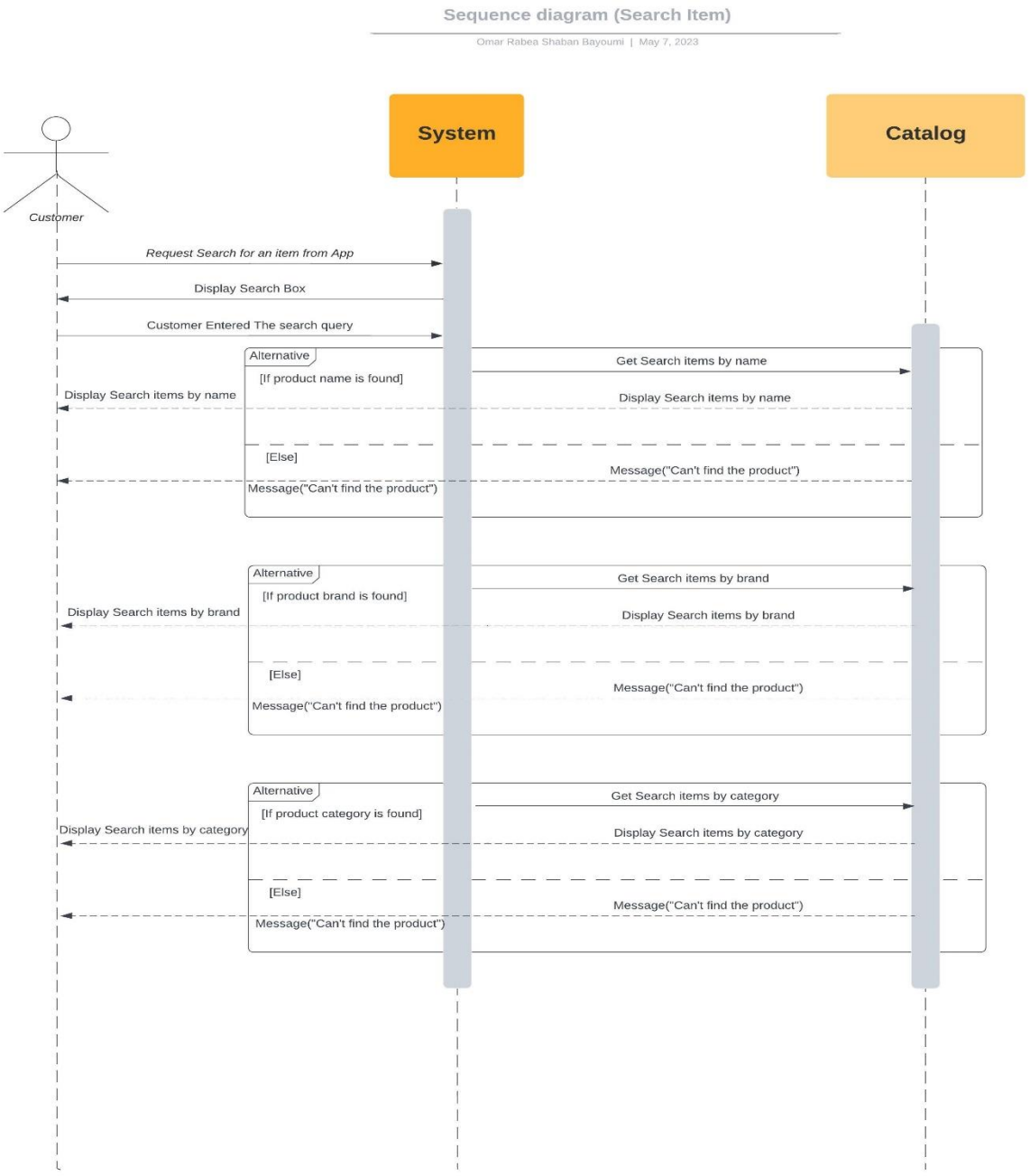
3-Sequence diagram Search Items



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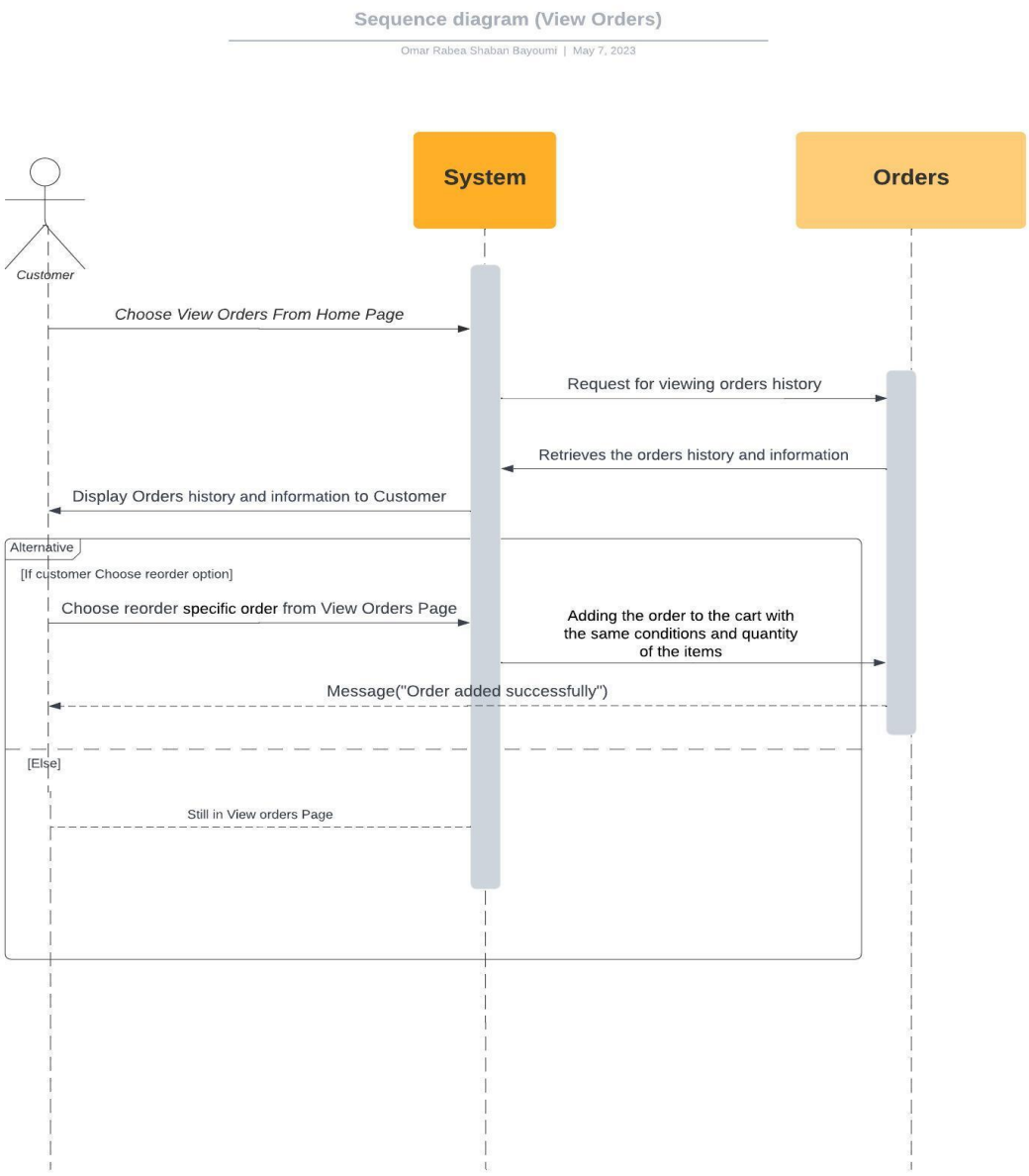
4-Sequence diagram ViewOrders



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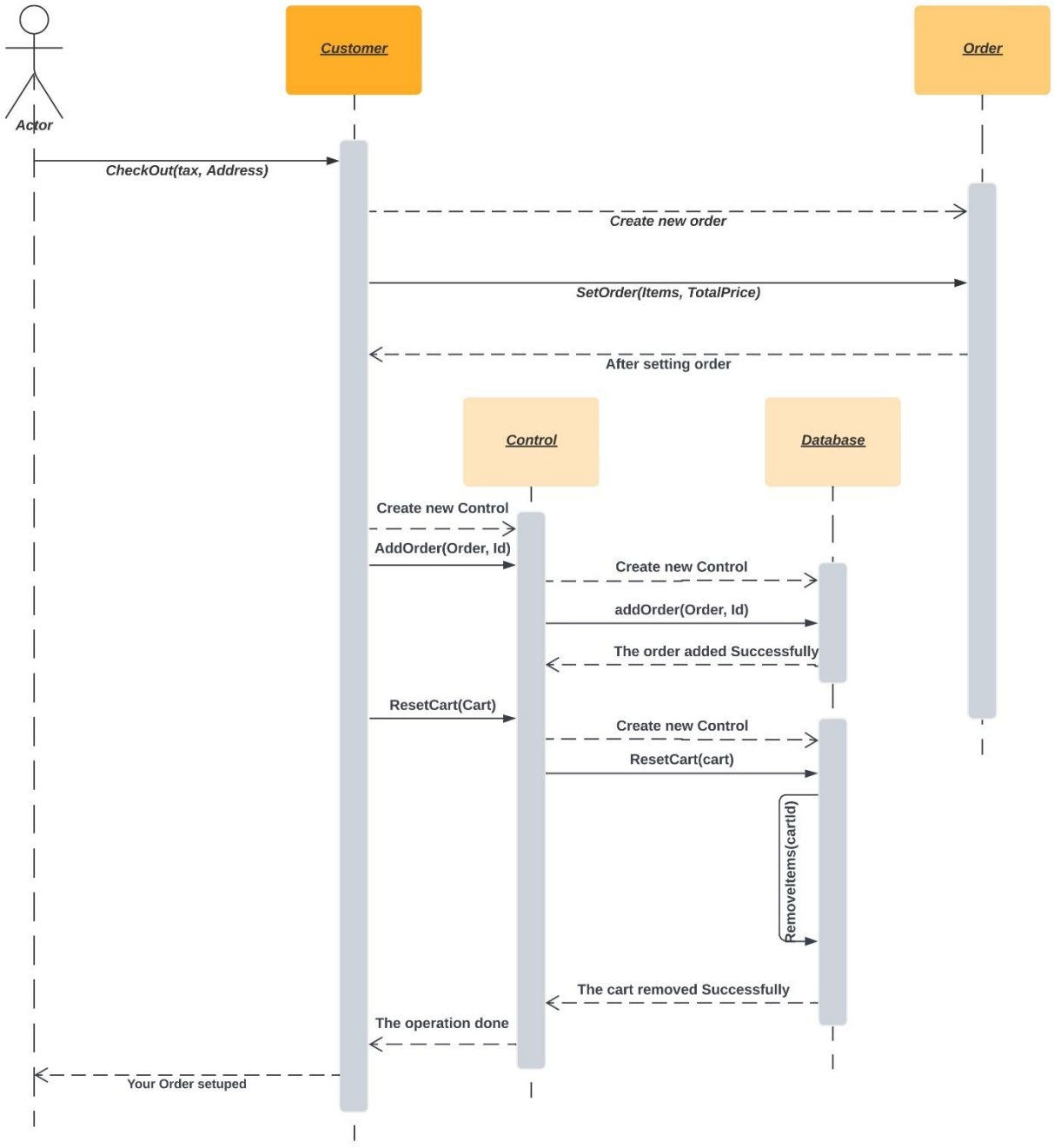
5-Sequence diagram checkout



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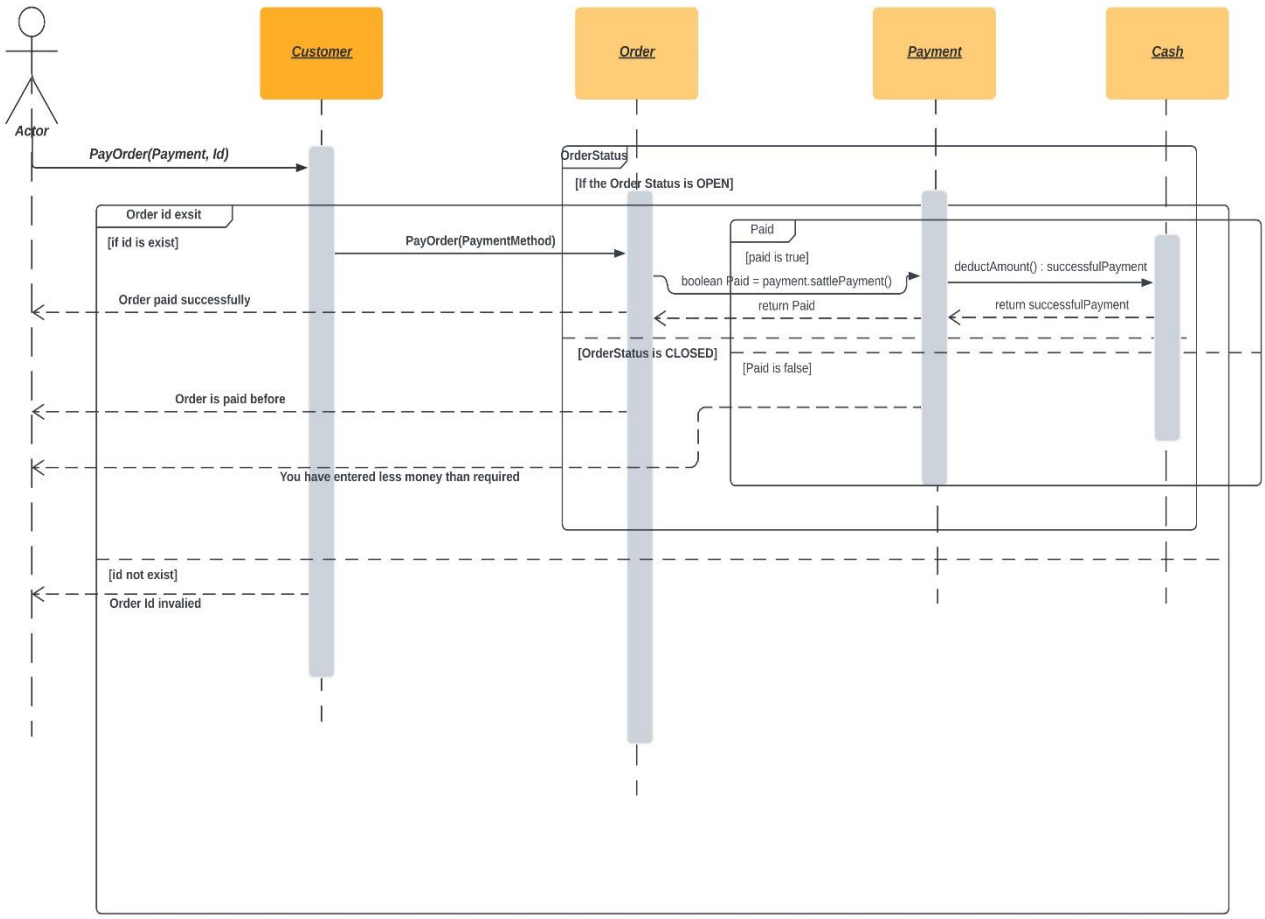
6-Sequence diagram Payment



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Class - Sequence Usage Table

Sequence Diagram	Classes Used	All Methods Used
1. Registration	Class GUI Class Registration process Class control Class Database	Methods play_system() Methods set_information () Methods checkInformation (), sendOTP (), confirmOTP(OTP_num)
2. Login	Class GUI Class Login process Class Database	Methods Play_system() Methods Login (Username, Password) validate(Username, Password) forgotPassword(Username)
3. SearchItems	Class System Class Catalog	Methods Search(), DisplaySearch() Methods DisplayOrder()
4. ViewOrders	Class System Class Order	Methods viewHistory(),ViewOrder, reorder() Methods ShowInformation(), AddToCart()
5. checkout	Class Customer Class Order Class Control Class DataBase	Methods checkout (tax, address) Methods setOrder(items, totalPrice) Methods AddOrder(Order, id) Methods AddOrder(Order, id), ResetCart(Cart)

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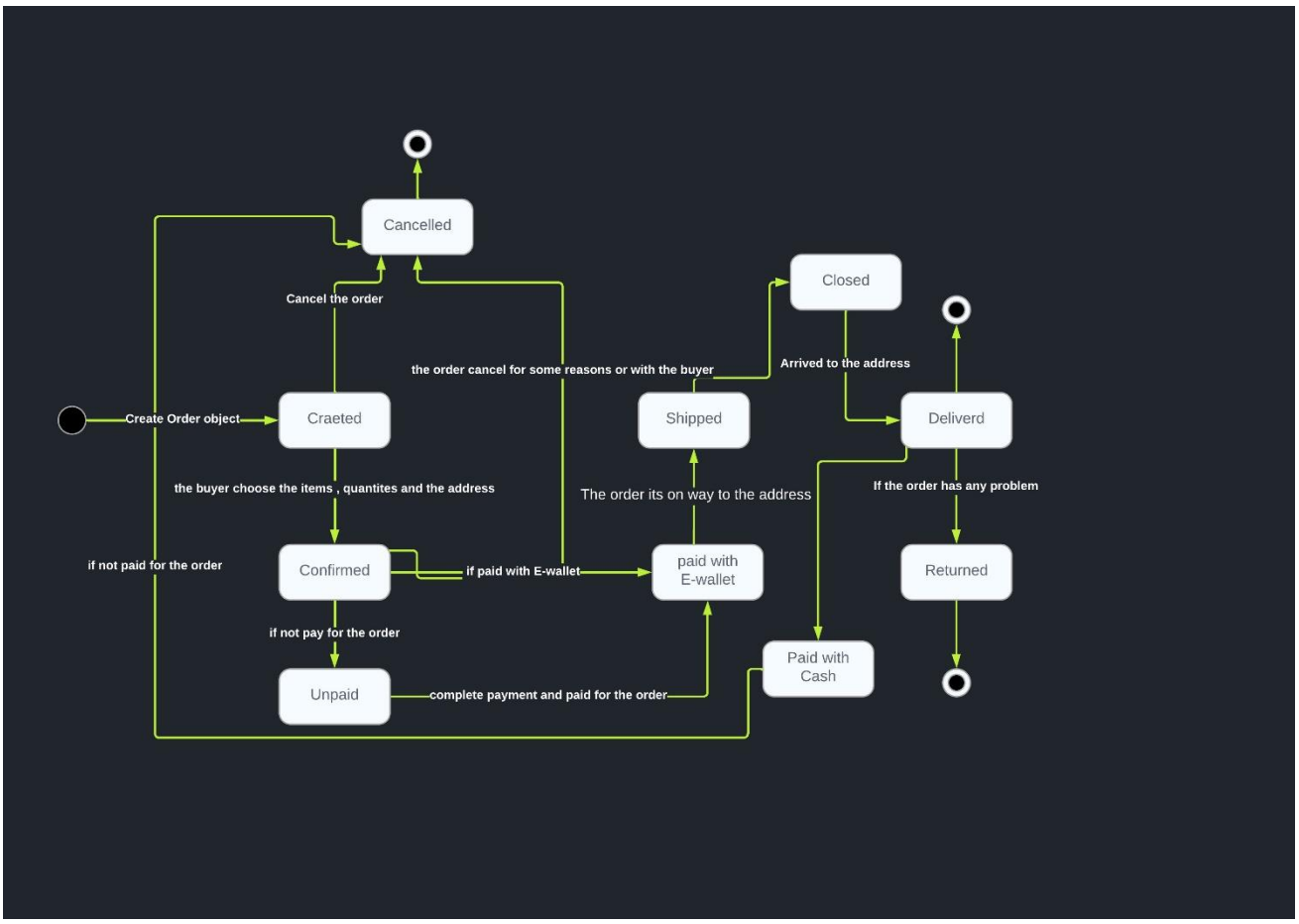
Sequence Diagram	Classes Used	All Methods Used
6. Payment	Class Customer Class Order Class Payment Class Cash	Methods payOrder(payment, id) Methods payOrder(paymentMethod) Methods sattlePayment() Methods deductAmount()

V. State Diagram



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Tools

- **Lucid**
- **Visual Paradigm**
- **Creately**

Ownership Report

Owners	Item
Badr Mohamed Ragab El-Said	2 Sequence Diagram, state diagram and part of implementation
Mohamed Amir Mohamed	2 Sequence Diagram, class diagram and part of implementation
Omar Rabea Shaaban	2 Sequence Diagram, Architecture diagram, and part of implementation