Cairo University
Faculty of Computers and Artificial Intelligence

CS251

Introduction to Software Engineering

Toffee Project

Software Design Specifications

Version 0.0

Team Names and Emails

CS251: Phase 2 – <Team Name>
Project: <Project Name>

Software Design Specification

Month & Year

Contents

CS251: Phase 2 – <Team Name>
Project: <Project Name>

Software Design Specification

Team

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Document Purpose and Audience

Purpose

This document's goal is to make requirements for software that have been agreed upon by the stakeholders obvious by outlining the functionalities that must be included in the software. This will cut down on both development time and expense.

Audience

- Software Development Team
- Stakeholders
- System Users

System Models

I. Architecture Diagram

1- Subsystems of the system and their role

Subsystems	Role
Catalog System	View all items in the catalog, their price, items in a specific category, or search for an item by name or by brand. It also handles the addition and deletion of products, as well as updating

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	the product information. An item has a name, category, description, image, brand, price and a discount percentage (if any).
Shopping Cart	It allows users to add, remove, or update products in their cart. And calculate the total price.
Gift Voucher	Shoppers can also buy gift vouchers to give as a gift to someone. A gift voucher has a unique code and can be redeemed once when making an order to reduce the total price by the value of the voucher.
Loyalty Points	The admin set it. Can redeem some of the loyalty points to pay for the order or part of it.
Statistics System	Provide store owners with a view of how the store is doing. This may include daily and monthly sales, sales of each item in a period of time, most popular products, among other statistics.
User Management	Manages user authentication, registration, and account information. It stores user details such as email address, password, shipping address, and payment preferences. It also handles the verification of phone numbers and sending OTPs for registration and payment.
Admin Management	Can update catalog with new items, cancel items or update item info. Can view all orders, set loyalty points scheme, suspend a user and view statistics.

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Order Management	It's only available for logged in users. Users can also view their order history and they can re-order a previous order by clicking "re-order" button. It stores all the order details such as products, quantities, total price, shipping address, payment method, and order status.
Payment Management	It allows users to choose from different payment methods, such as cash on delivery, smart wallets, or credit cards. It also handles the application of any loyalty points or gift vouchers to the order.
Database System	Stores all the data related to users, products, orders, loyalty points, and gift vouchers. It provides the necessary data for all other subsystems to function correctly.

2- Suitable architectural design

1. The presentation layer is responsible for handling user interaction, displaying information, and receiving user inputs. In this architecture, the presentation layer is the web or mobile app that shoppers use to view and order products.

2. The application layer is responsible for implementing the business logic of the system, processing user requests, and coordinating with the data layer to retrieve and store data. This layer handles all the functionalities required by Toffee, such as user authentication, order processing, product management, and loyalty points system.

3. The data layer is responsible for storing and retrieving data from the system's database. This layer includes the database management system and the database itself, which stores all the data related to the system's users, products, orders, and loyalty points.

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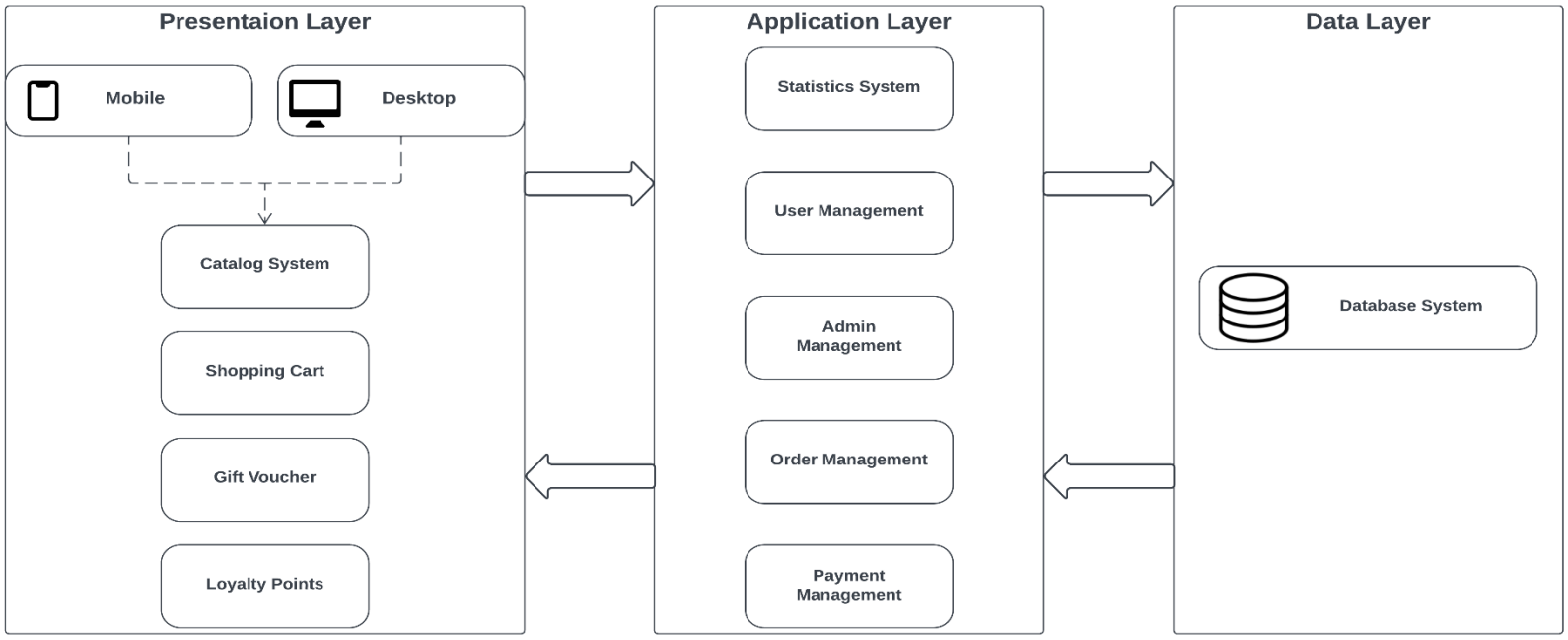
3- Architectural diagram

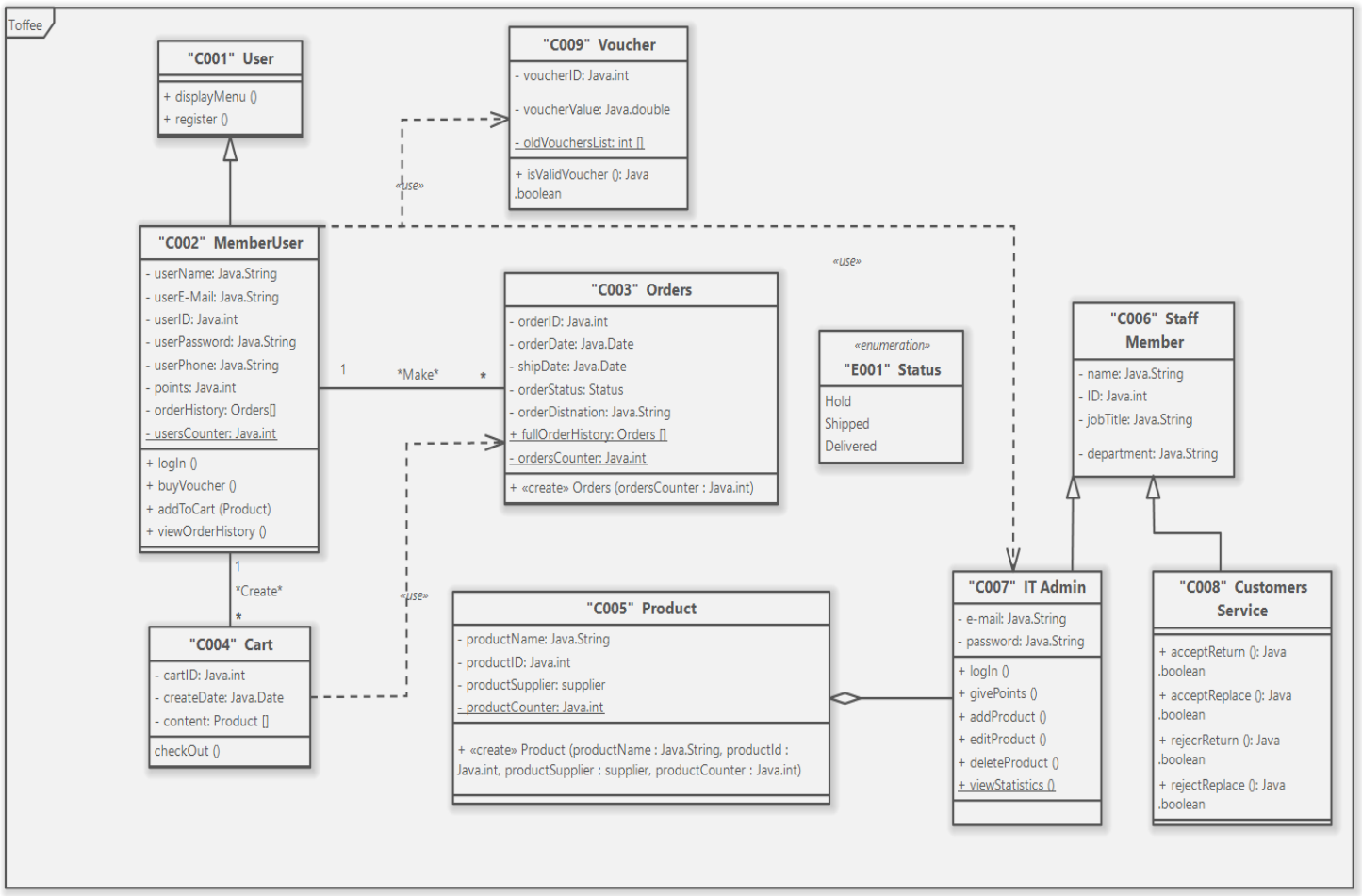


II. Class Diagram(s)

CS251: Phase 2 – <Team Name>

Project: <Project Name>

Software Design Specification



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III. Class Descriptions

Class ID	Class Name	Description & Responsibility
1. ”C001”	User	The super class of users, which represent the non-member user who can create an account or view menu only, but he can’t order.
2. ”C002”	MemberUser	The user who created an account already , who can log into his created account, the object contains all data about the user like name , password , phone, E-mail, points, and order history.
3. “C003”	Orders	The whole data is related by any order like ID, Date, and destination. One user can create many orders while one order has one and only one user.
4. “C004”	Cart	Where the user purchased items stored, each cart has its own ID and the user can checkout the cart he want. One user can create many carts while one cart has one and only one user.
5. “C005”	Product	The whole data about products like its name , price and a static member to count how many products are available and supply the IT with the data to create the statistics.
6. “C006”	StaffMember	A class that contains all data about the employees like name, ID , department and shift they work
7. “C007”	IT Admin	A subclass of StaffMember with additional methods that related with the IT admin of the system
8. “C008”	CustomersService	A subclass of StaffMember with additional methods that related with the customers service of the system
9. “C009”	Voucher	Stores the data about all voucher was issued like ID and value. In addition to have a method to check if the voucher id user had requested are valid.
8. “E001”	Status	An enumeration the specify the status of order to be one of the mentioned statuses to store in order to be easy to know.

IV. Sequence diagrams

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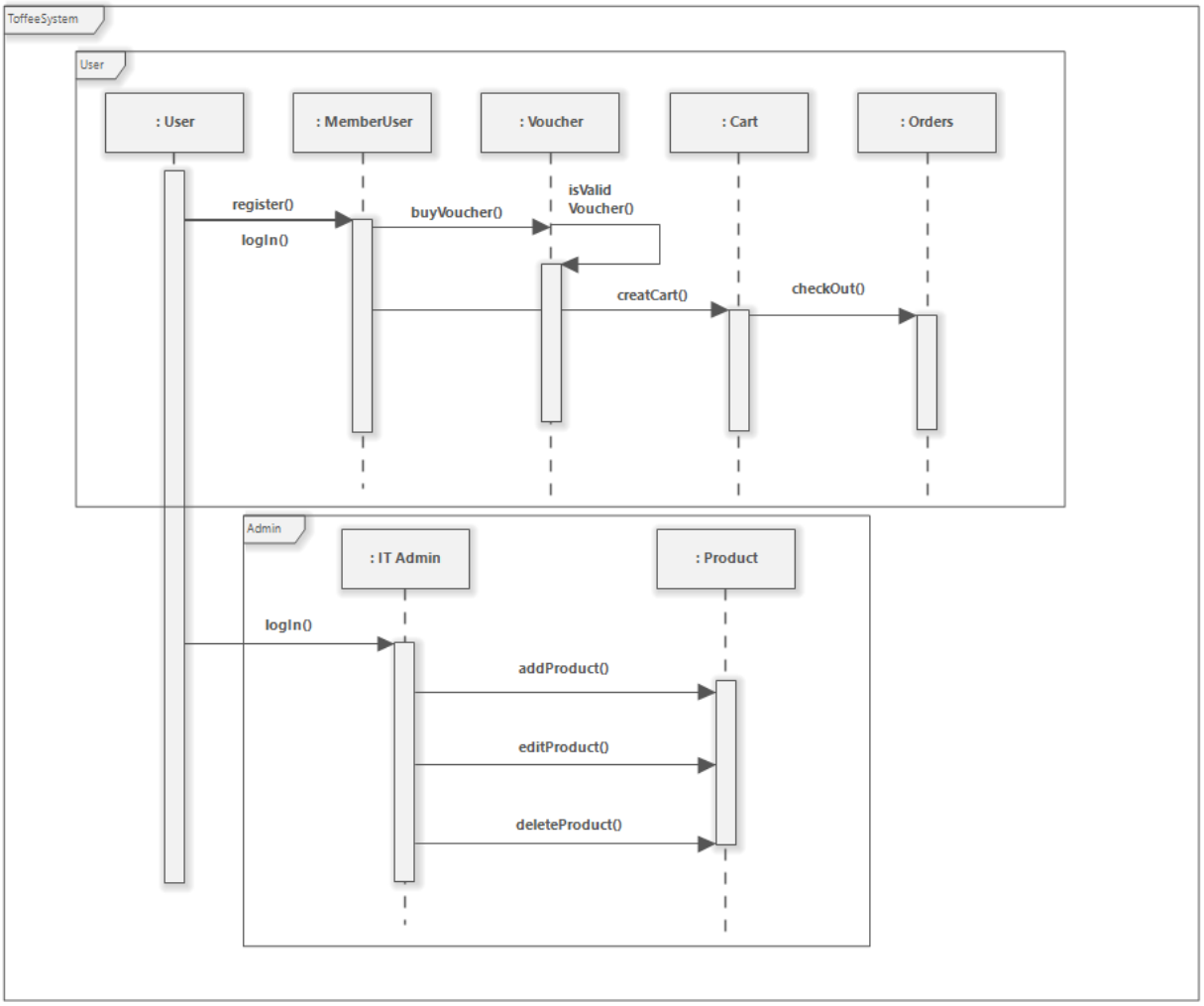
- Overall sequence diagram:



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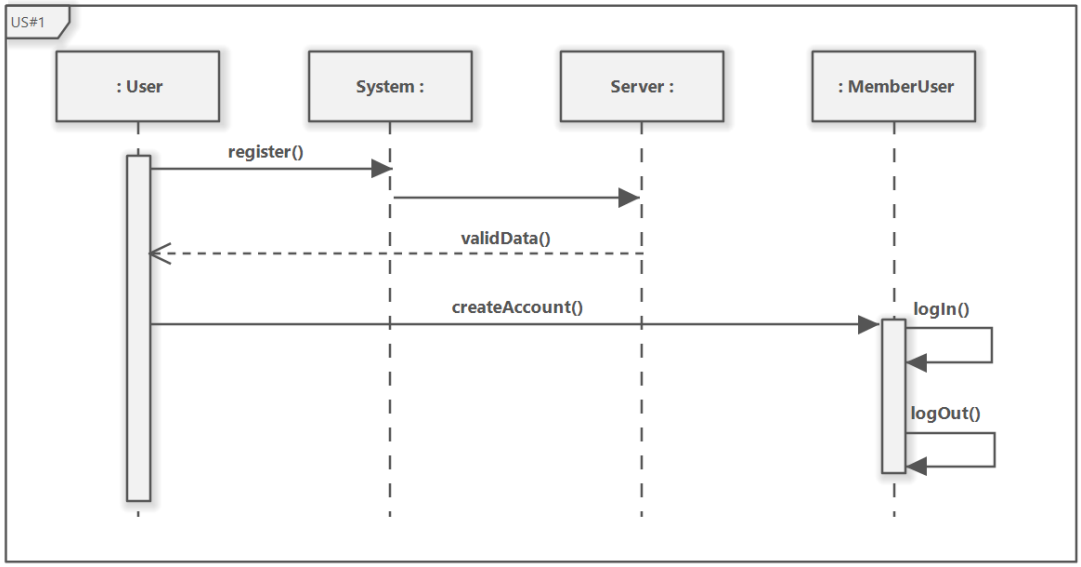
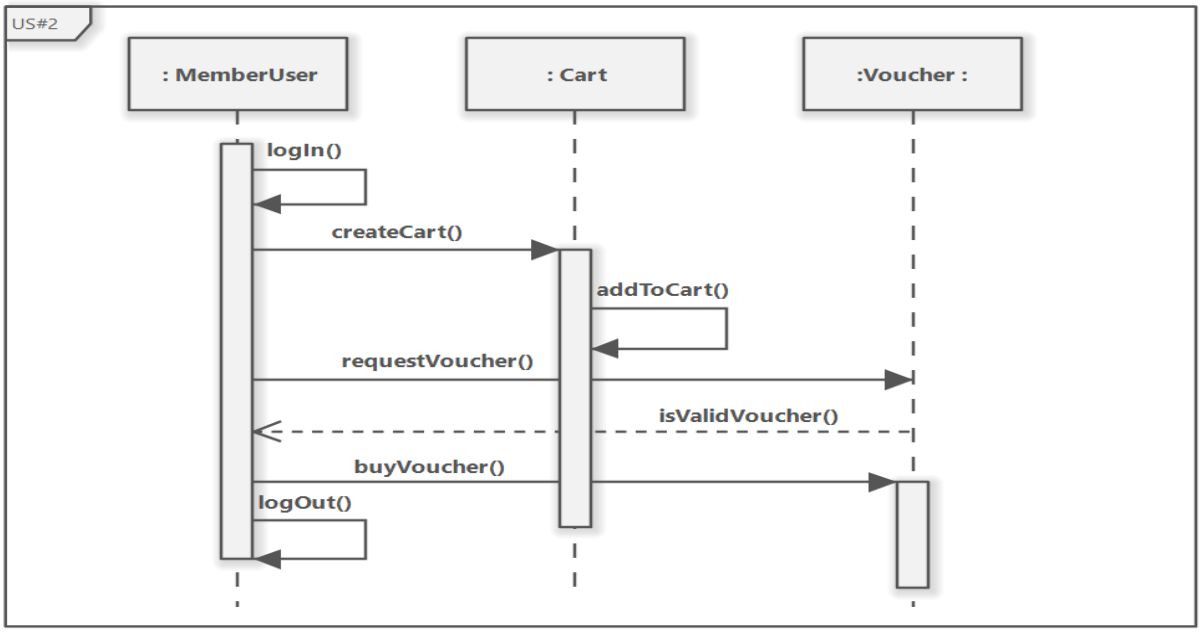
- User Story #1

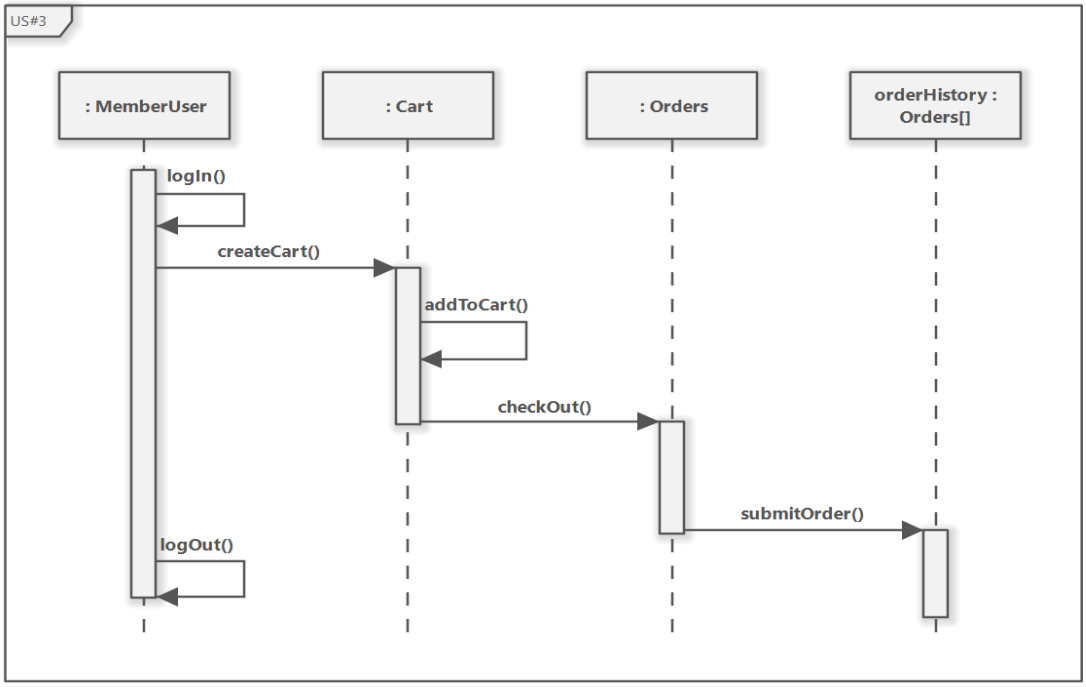


- User Story #2

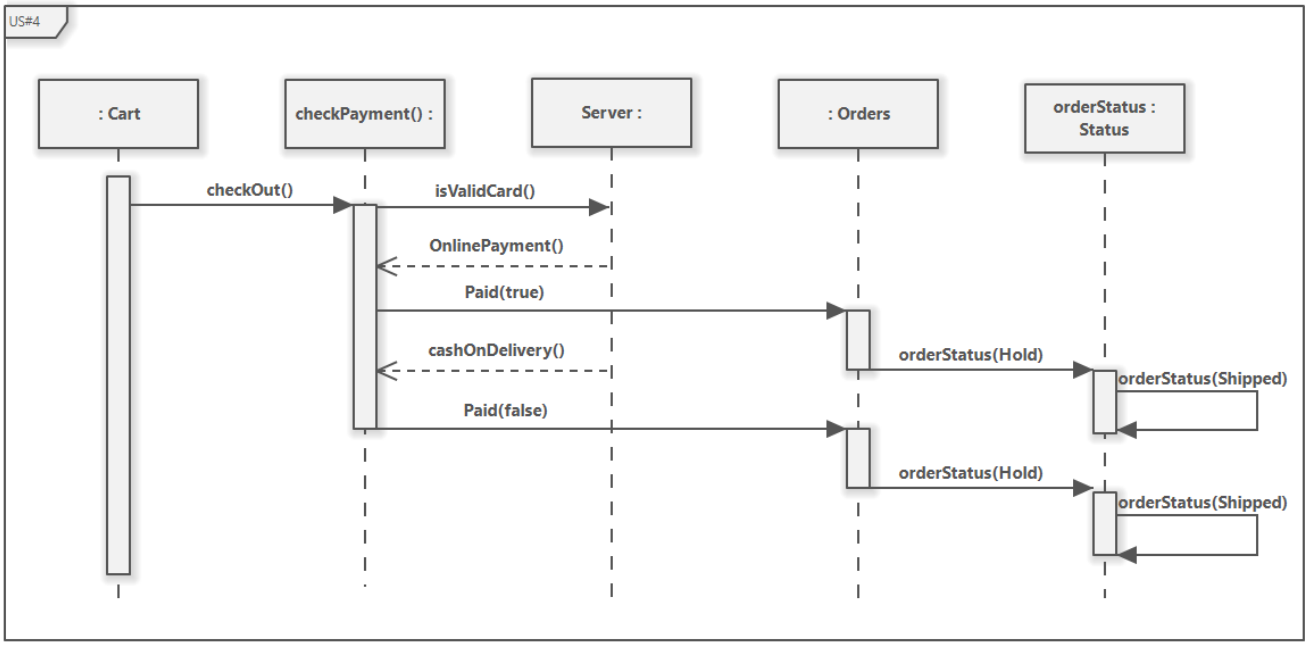


Software Design Specification

- User Story #3

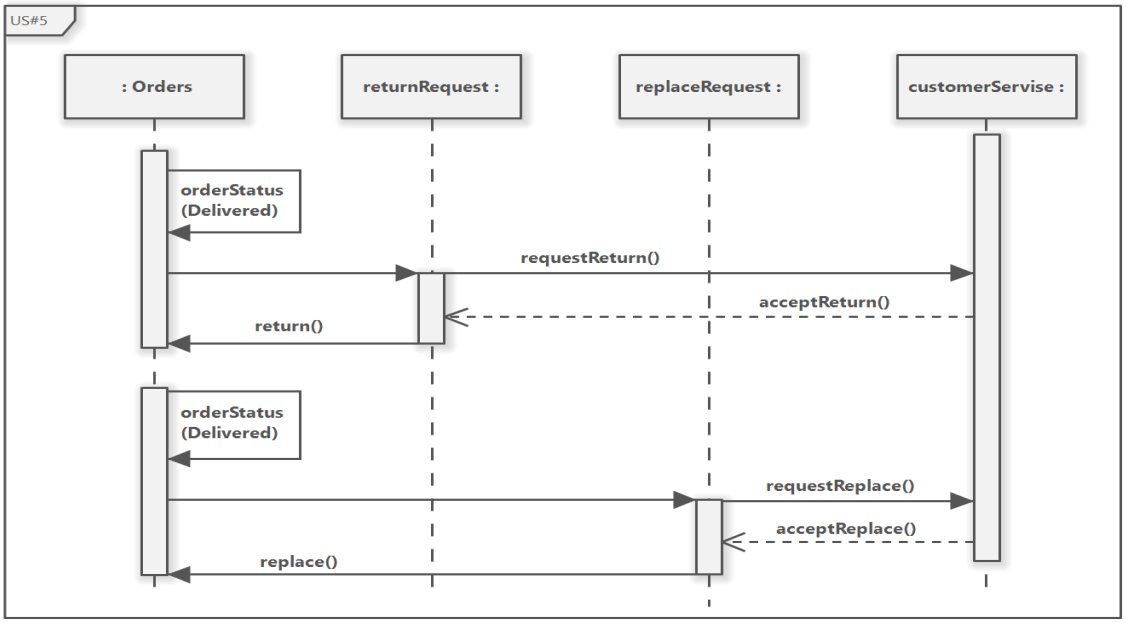


- User Story #4

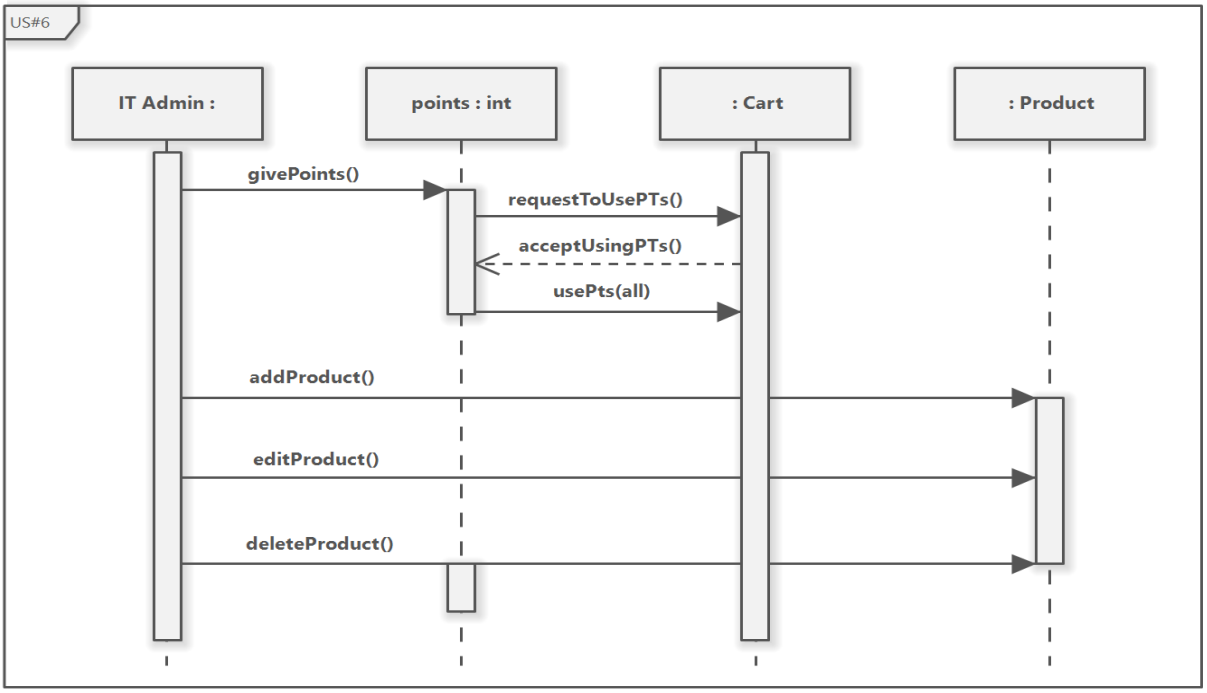


Software Design Specification

- User Story #5



- User Story #6



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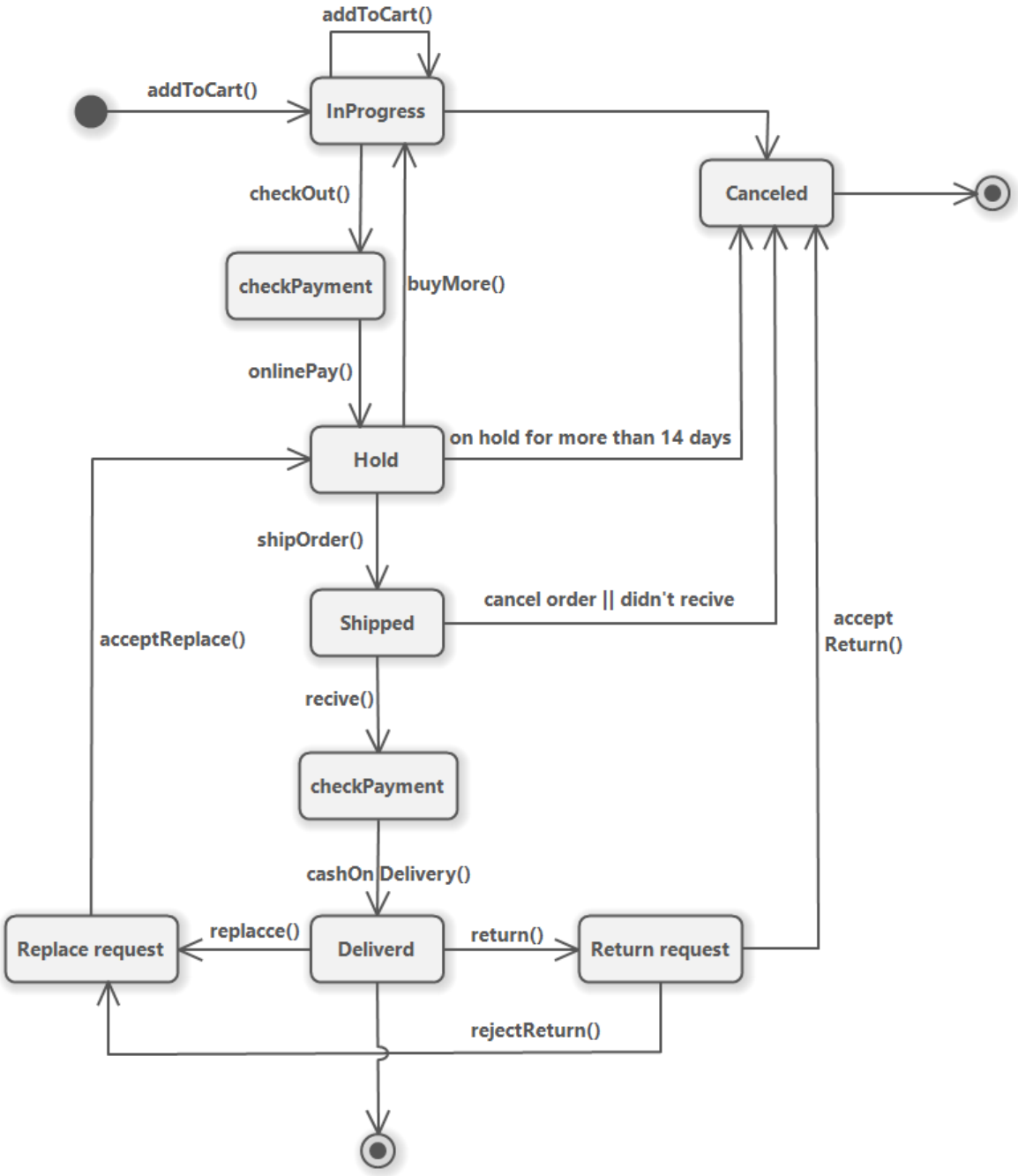
Class - Sequence Usage Table

Sequence Diagram	Classes Used	All Methods Used
1. Overall	Class User Class MemberUser Class Voucher Class Cart	Method register() Methods login() , buyVoucher() , createCart() Method isValidVoucher() Method checkout()
2. UserStory #1	Class User Class UserMember	Method register() Method login()
3. UserStory #2	Class MemberUser Class Cart Class Voucher	Methods login() , cerateCart() , buyVoucher() , addToCart() Method Method isValidVoucher()
4. UserStory #3	Class MemberUser Class Cart	Methods login() , createCart() , addToCart() Method checkOut()
5. UserStory #4	Class Cart Class Orders	Method checkOut() Method orderStatus()
6. UserStory #5	Class Orders Class customerServise	Methods orderStatus() , returnRequst() , replaceRequest() Methods acceptReturn() , acceptReplace()
7. UserStory #7	Class IT Admin Class Product	Methods givePoints() , addProduct() , editProduct() , deleteProduct() Method

Software Design Specification

V. State Diagram



CS251: Phase 2 – <Team Name>
Project: <Project Name>

Software Design Specification

Tools

- Software ideas modeler
- GitHub
- Lucidchart
- Visual Paradigm

Ownership Report

Item	Owners
Mahmoud Sayed Abd-Elaty	*Class diagram,sequence diagram,state diagram,* Architecture diagram *and implentation.*
Kirolos Osama Adip	*Class diagram,sequence diagram,state diagram,* Architecture diagram *and implentation.*
Kerollos Mansour Milad	*Class diagram ,sequence diagram , state diagram,* Architecture diagram *and implantation.*