

Cairo University

Faculty of Computers and Artificial Intelligence



CS251

Introduction to

Software Engineering

Toffee

Software Design Specifications Version 1.0

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Software Design Specification

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Software Design Specification

Team

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Document Purpose and Audience

The purpose of a Software Design Specification (SDS) is to provide a comprehensive and detailed description of the software system to be developed, and letting stockholder knows the progress and the structure of his project.

Audience:

- Stockholders
- Development team



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System Models

I. Architecture Diagram

1-The main components or subsystems of the e-commerce system for Toffee are:

- Catalog management: This component is responsible for managing the products offered in the online store. It includes updating product information, adding new products, and removing old products.
- User management: This component handles user authentication and authorization, as well as user profile management. It includes registration, login, logout, and password reset functionalities.
- Shopping cart: This component allows users to add items to their shopping cart and to modify their cart before checking out.
- Order management: This component handles the processing of orders placed by users. It includes order confirmation, payment processing, and shipping information management.
- Loyalty program management: This component is responsible for managing the loyalty program and calculating loyalty points earned by users.
- Gift voucher management: This component manages the gift voucher system, generates unique codes, and validates voucher codes during checkout.
- Reporting and analytics: This component provides statistics and analytics to system administrators and store owners to monitor the performance of the online store.

2-A suitable architectural design for e-commerce systems like Toffee is a 3-tier system, because this system is simple and not predicting too much improvement in the future , consisting of:

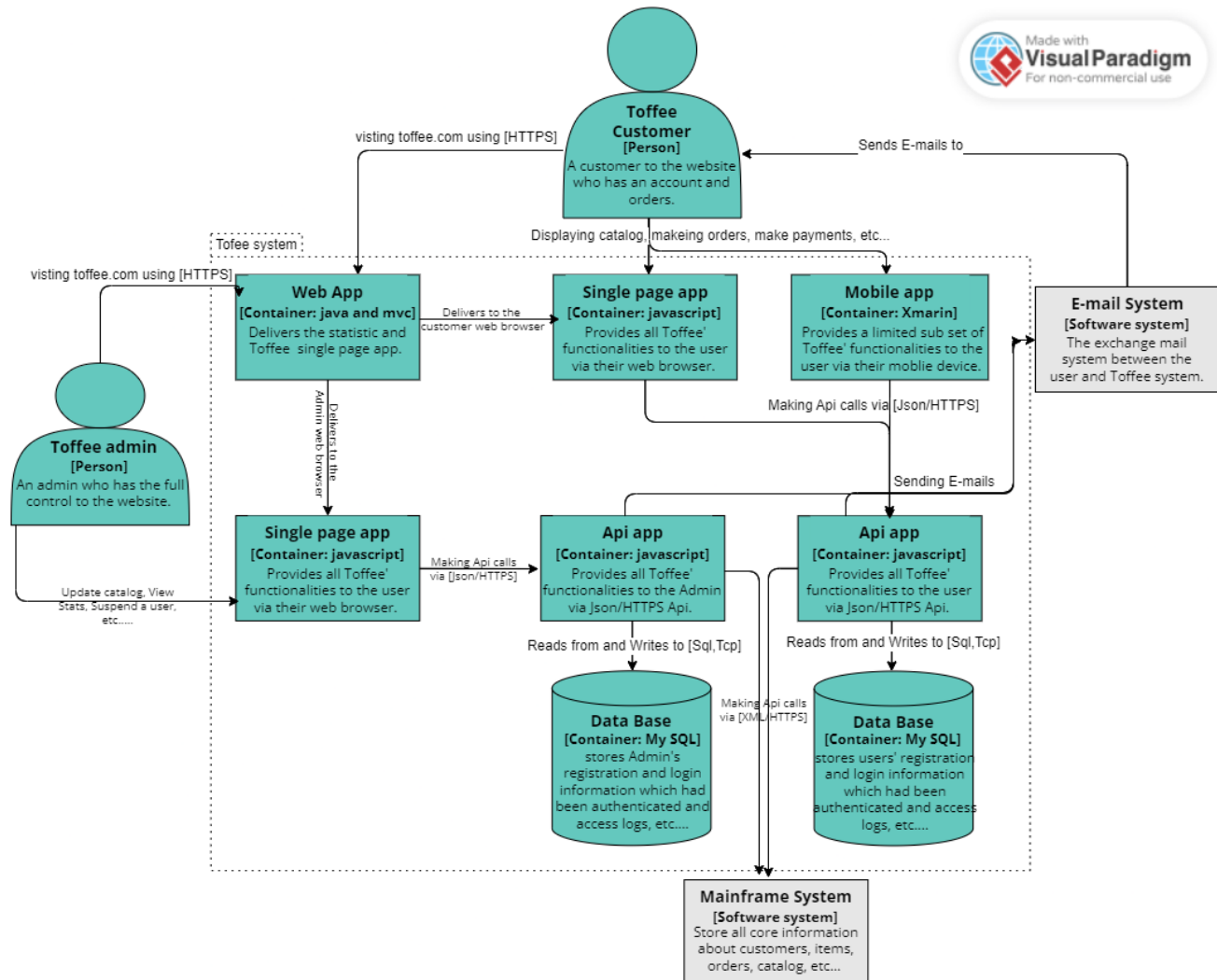
- Presentation layer: This layer includes the user interface components that users interact with, such as web pages, mobile apps, and other client-side applications.
- Application layer: This layer includes the business logic and application components that process user requests and interact with the database layer. It handles tasks such as authentication, authorization, shopping cart management, order processing, and loyalty program management.
- Database layer: This layer includes the database management system that stores and retrieves data related to the online store, such as product information, user profiles, orders, and loyalty points.



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3- Container diagram





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Class ID	Class Name	Description & Responsibility
4.	Cart	It describes the cart object that contains list of items and the price of these items.
5.	Order	It describes the order object that contains the price of order and another information about it.
6.	Payment	It is abstract class and has two child cash and e-wallet and it describes the method of payment.
7.	registered	It describes the registered user object
8.	OTP	It describes the otp object
9.	Voucher	It describes the voucher object that contain the id of voucher and its value to use it in a discount or send as a gift to someone.
10.	Authentication	It describes the authentication process object
11.	Register	It describes the register method that includes email and another information of the user and this method can't be completed without OTP and Authentication classes.
12.	DB	This class is the connection between the program and the database this class is responsible for getting data from the database and sending data to database.
13.	Admincatalog	It is child class of catalog class that describes the catalog that the admin control it
14.	sealedItem	It is child class of Item class that describes the sealed item object
15.	looseItem	It is child class of Item class that describes the loose item object
16.	Cash	It is child class of payment class that describes the cash method object
17.	Ewallet	It is child class of payment class that describes the ewallet method object



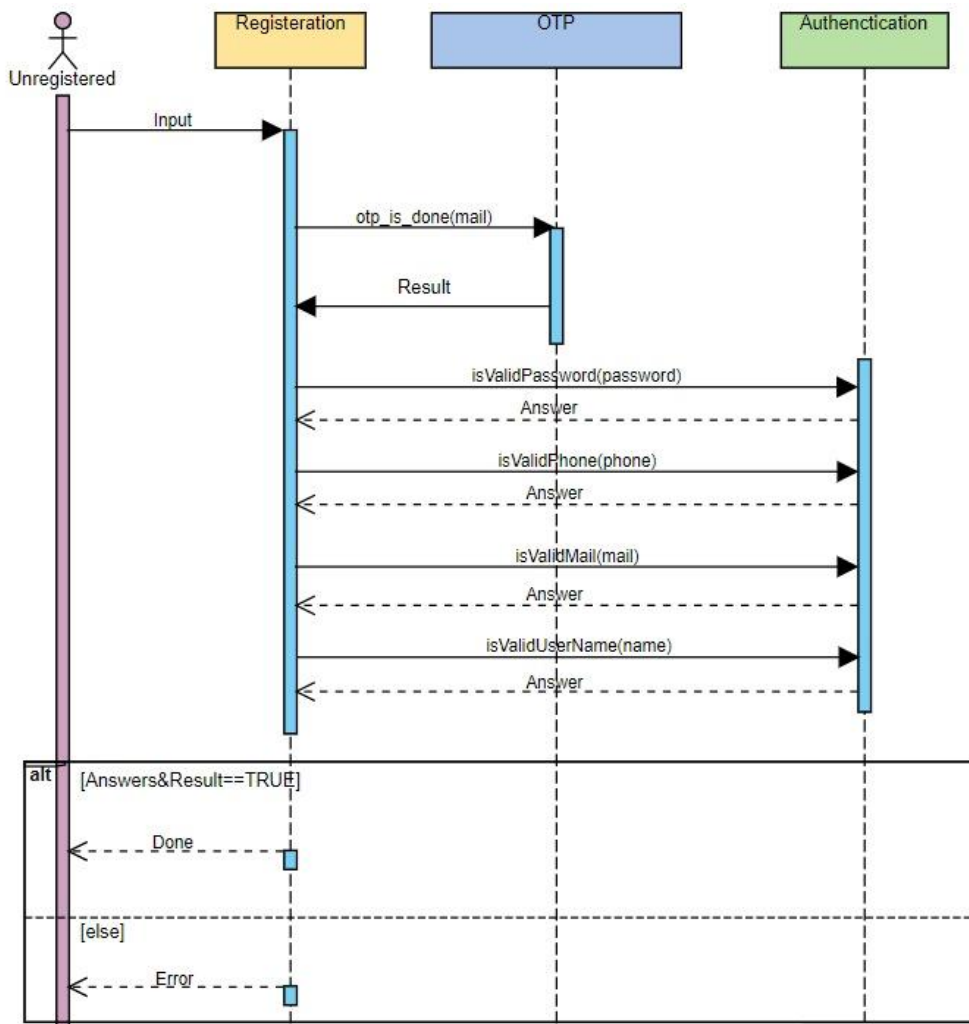
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IV. Sequence diagrams

1. Registration



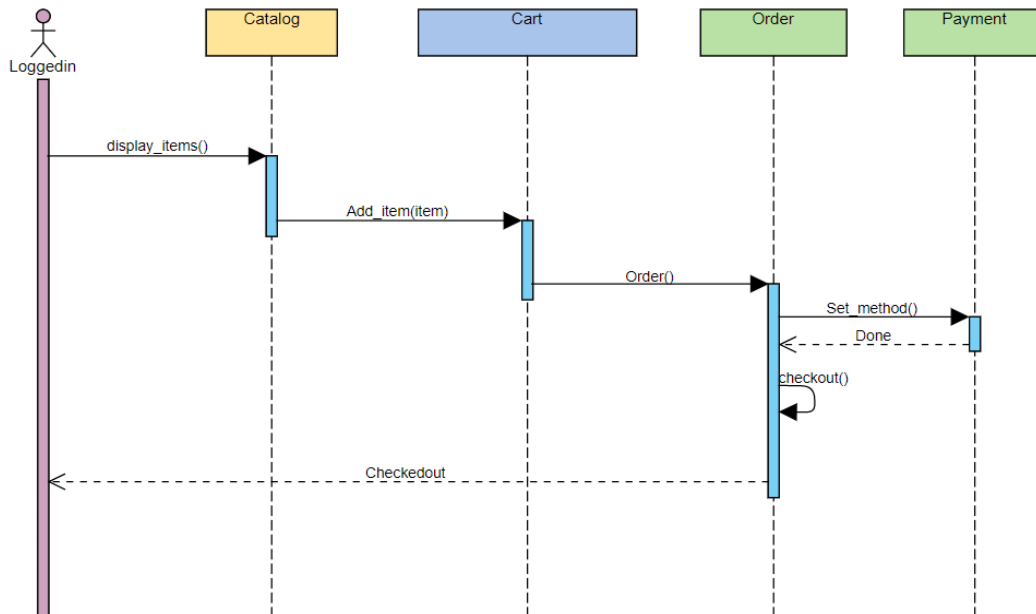


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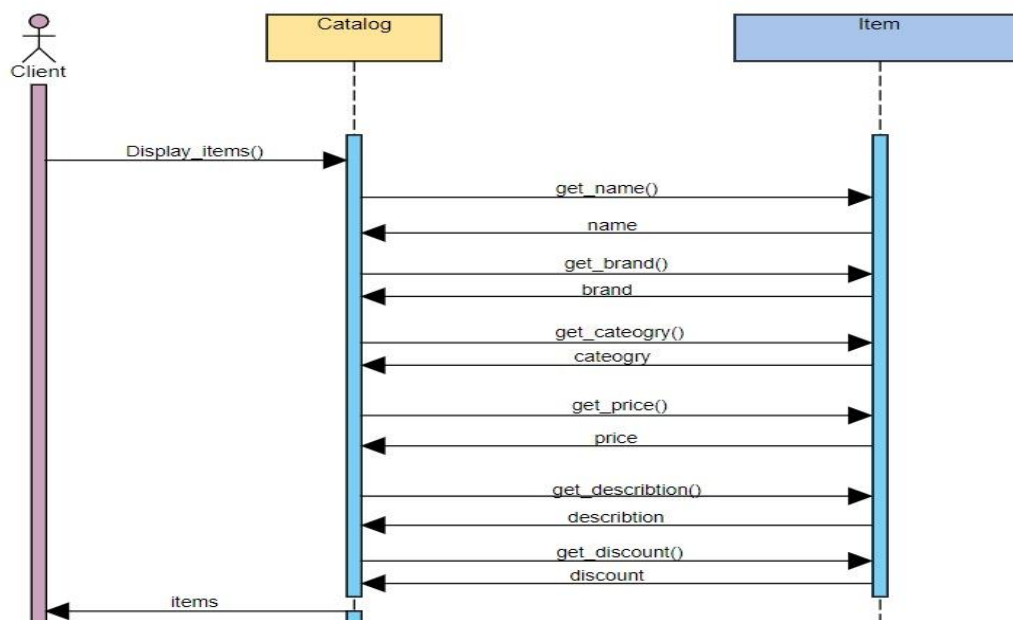
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2. Making an order



3. Display the catalog

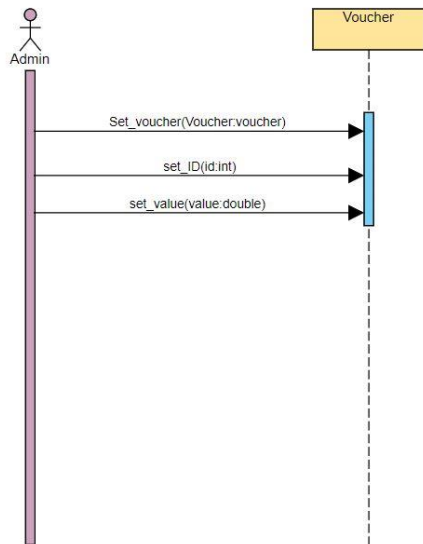




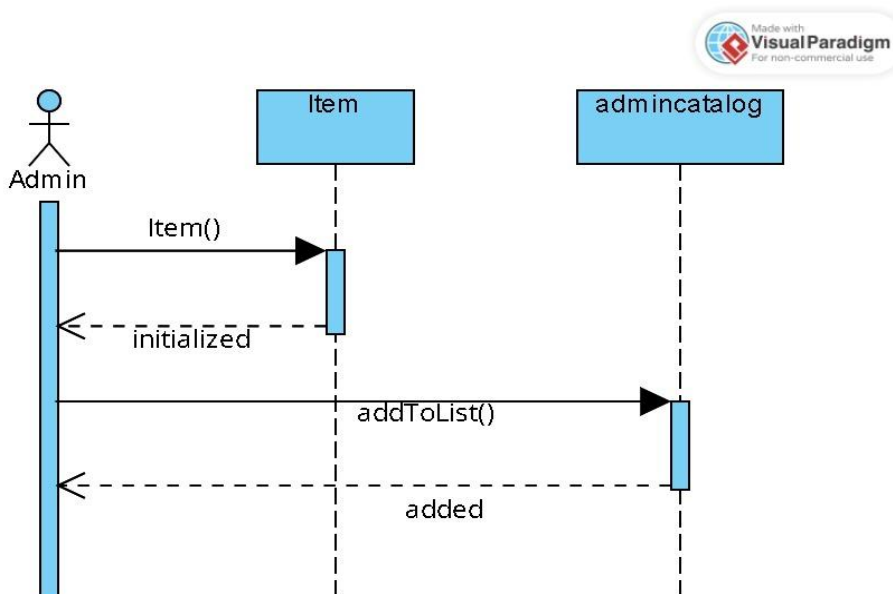
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4. Set Voucher



5. Add to catalog

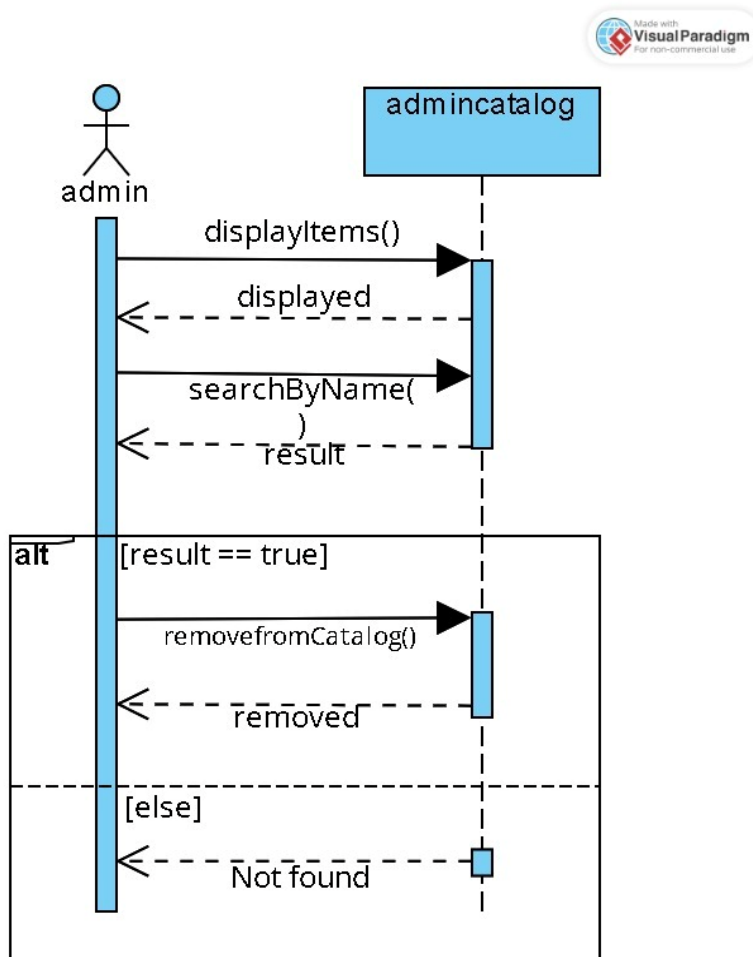




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6. Remove from catalog





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Class - Sequence Usage Table

Sequence Diagram	Classes Used	All Methods Used
1. Registration	Register class OTP class Authentication class Unregistered class	otp_is_done method isValidPassword method isValidphone method isValidMail method isValidUsername method
2. Make order	Catalog class Cart class Order class Payment class Loggedin class	Display_items method Add_item method Order method Set_method method Checkout method
3. Display catalog	Catalog Item	Display_items() get_name() get_brand() get_category() get_price() get_description() get_discount()
4. Set voucher	Voucher	Set_voucher(Voucher voucher) Set_ID(int id) Set_value(double value)
5. Add to catalog	Item admindcatalog	Item() addToList()
6. Remove from catalog	admindcatalog	displayItems() searchByName() removefromCatalog()



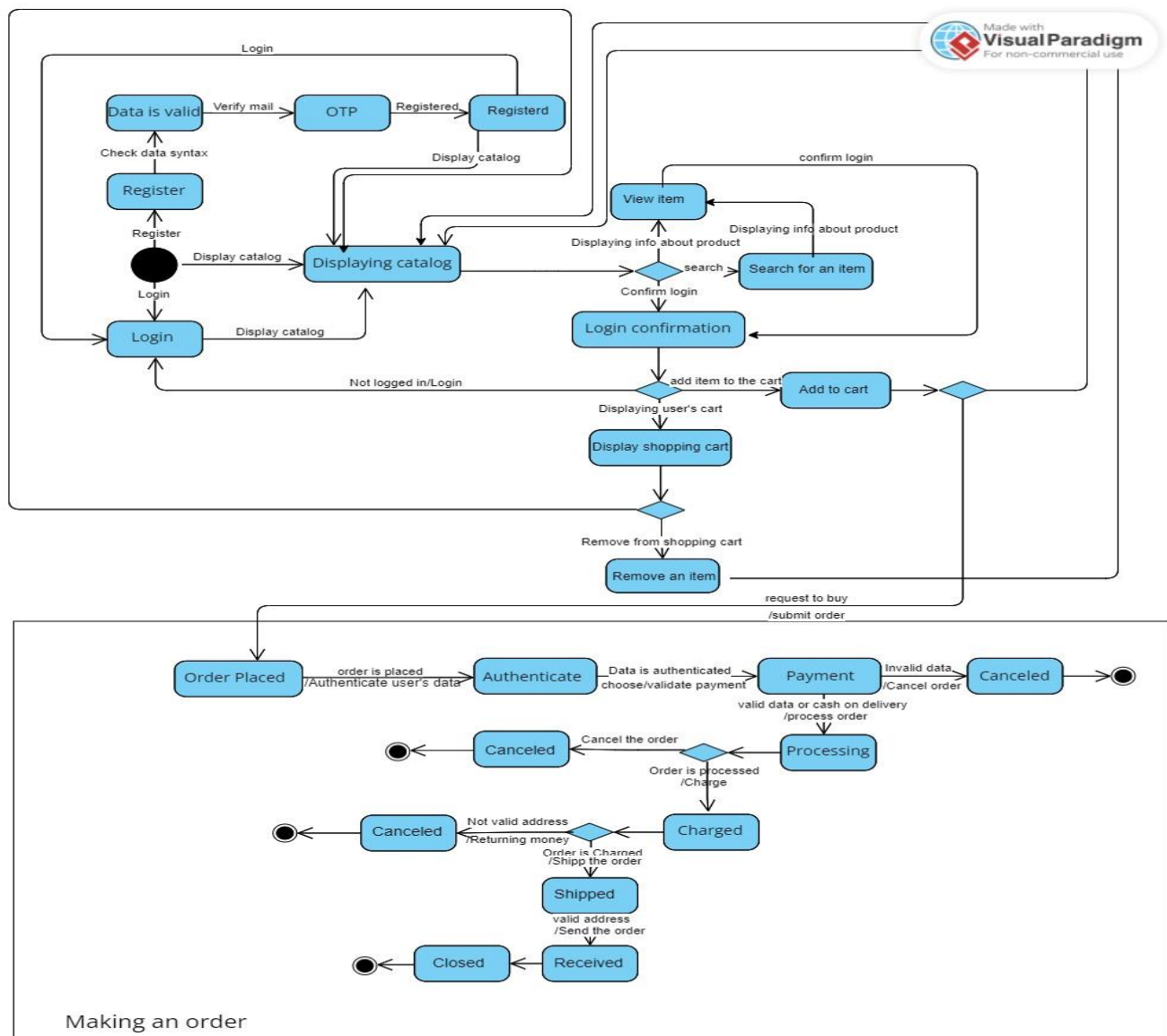
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V. State Diagram

- User State

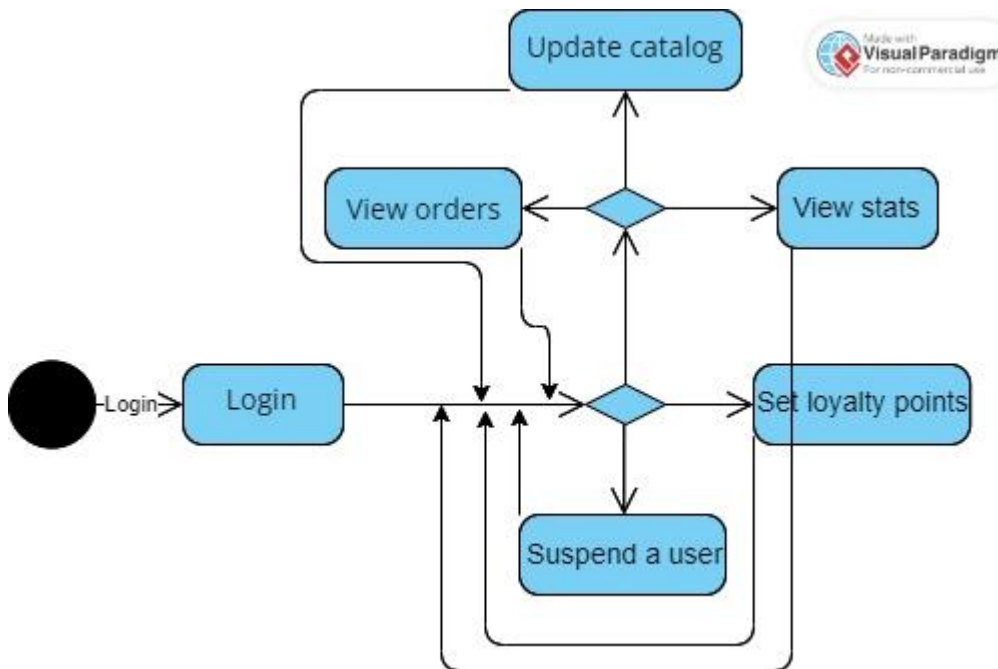




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- Admin state



Tools

- Visual paradigm

Ownership Report

Item	Owners
Class diagram and Class description	Asem Emad, Ziad Ayman
Sequence diagrams	Youssef Ehab, Ziad ayman
Software architecture	Asem Emad
State diagrams	Asem emad