System Design – Mid-Module Assignment

Course: MSc Computer Science

Module: Object-Oriented Information Systems

Assignment: Mid-Module Assignment

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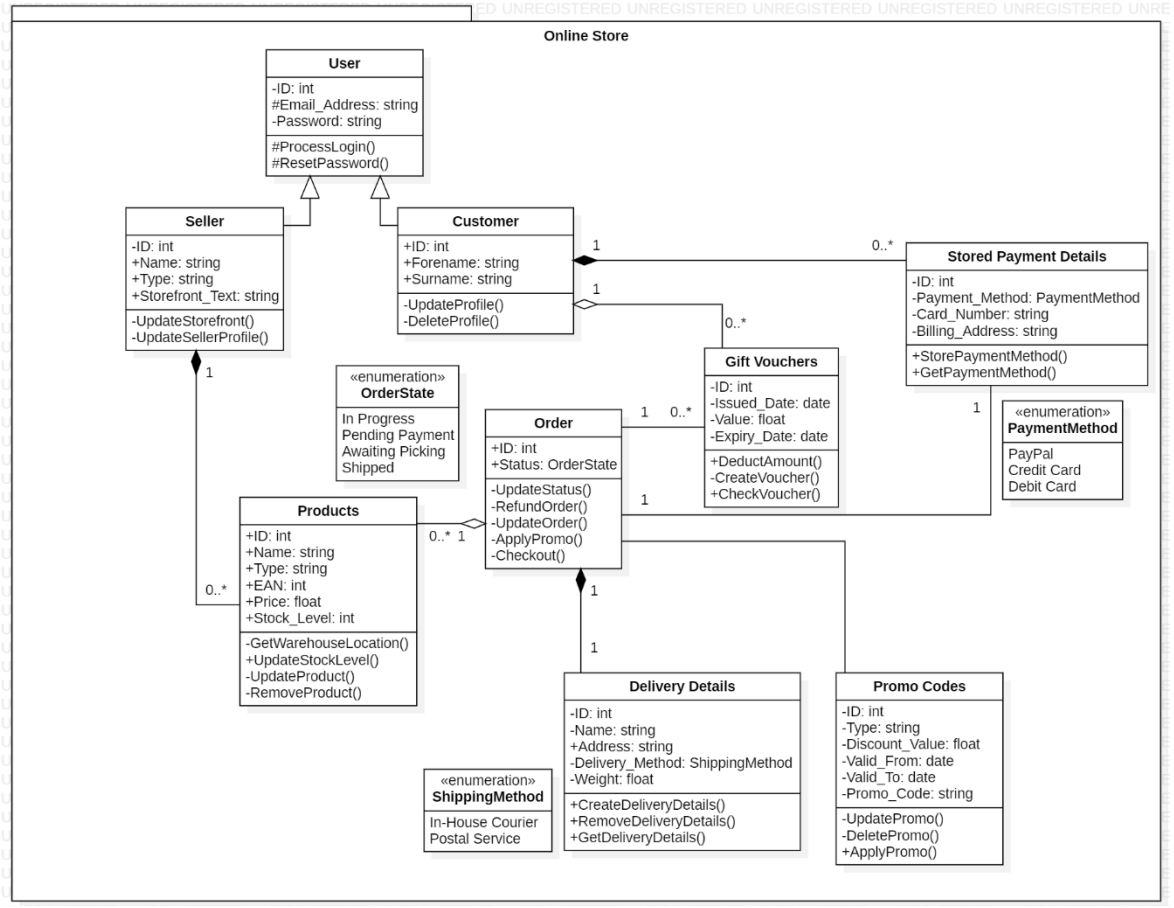
Contents

Class Diagram:



The UML Class Diagram above details the classes and enumerable values used (For example, Order States).

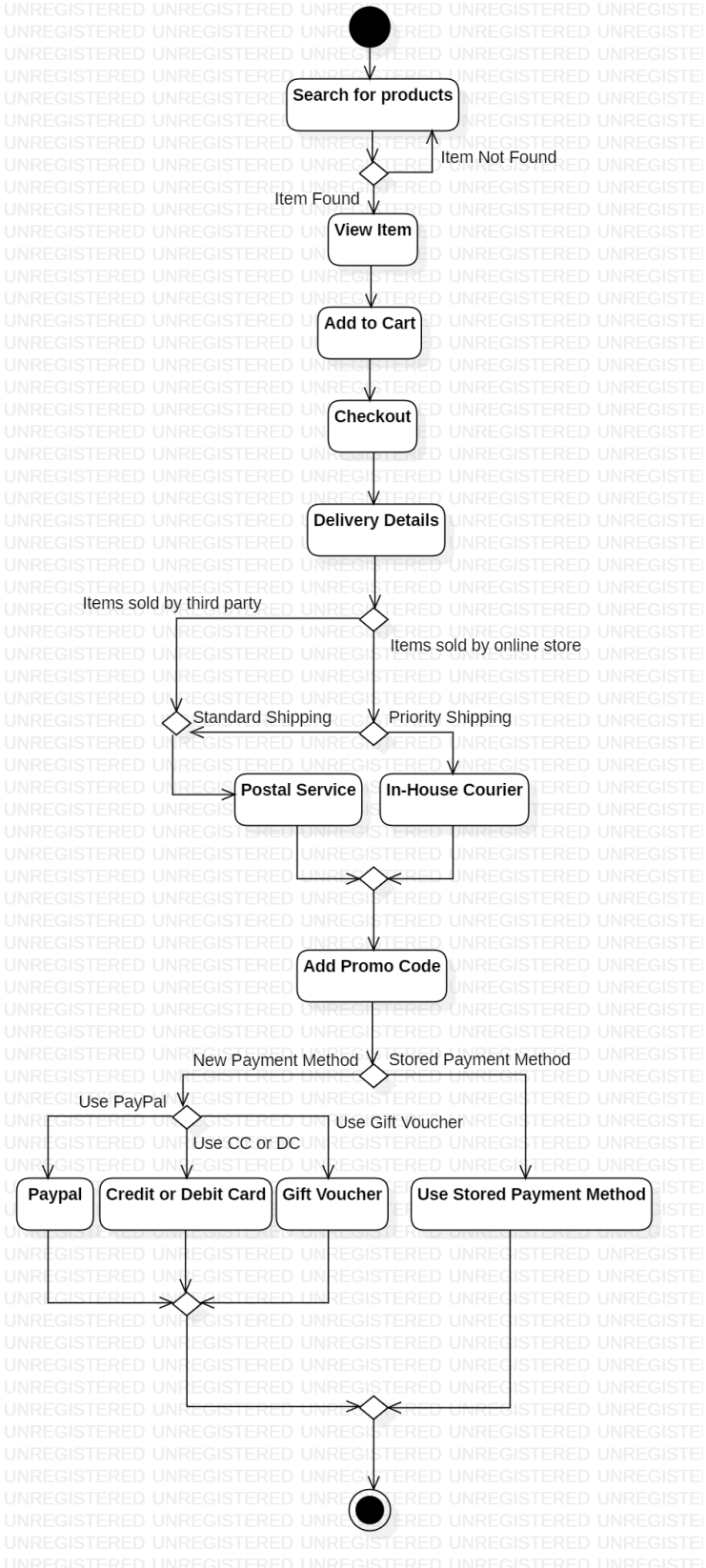
The diagram includes a "User" class, which contains the attributes/methods required to facilitate a login/account system for customers and Sellers. This class uses Protected attributes/functions so that the inheriting classes can access them.

Regarding stored payment methods, I have included "getter" methods that will return the appropriate information for the selected payment provider. Attribute-wise, I have demonstrated the functionality of this class by including a "card_number" field; however, I understand that this approach in its current form would not be PCI-DSS

compliant, nor would it conform to specifications from payment providers. In a delivered solution, this would be adapted to the payment providers specifications.

Within the Order Class, I have used the enumeration sub-type to demonstrate the order states (In Progress, Awaiting Picking, etc.) represented in the attribute named "Status". This approach has also been used within the Payment Method (Stored Payment Method) and Shipping Method (Delivery Details) classes.

Activity Diagram:

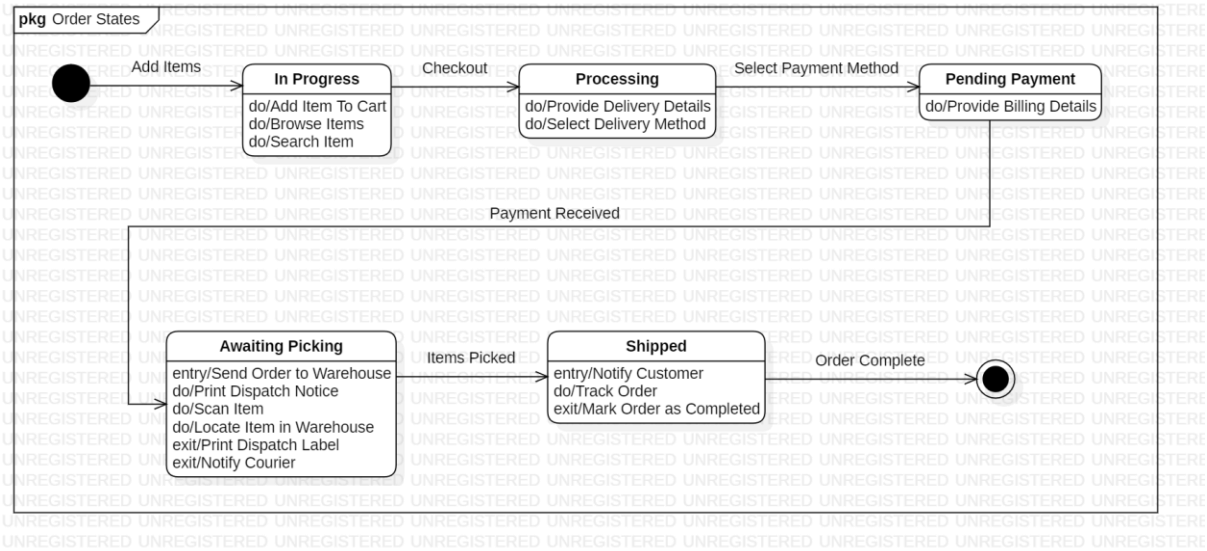


The UML State Diagram displayed above covers the whole user process, from searching for an item to payment/authorising payment with stored details. First, the functionality for users to add items to their cart and proceed to the checkout has been implemented, followed by the basic data-gathering processes, such as the "Delivery Details" and "Promo Codes" activities.

The system then decides which shipping method should be displayed to the user. As the standard postal shipping method is the only service available to third-party sales, the customer is directed to this method. However, for first-party sales, the option for the in-house courier is also displayed.

Following this, the user is provided with the options of either making a new payment or using their stored details (For example, Paypal or Card). Once the customer has selected their desired payment method, the activity diagram reaches its final state, as the rest of the process is to be completed by the seller/warehouse.

State Diagram:



The UML State Diagram displayed above shows the unique order states which were provided in the assignment brief. In addition, a selection of the internal activities and entry/exit activities have been included. Finally, a list of the individual states has been included in the table below, with a brief description of what can occur at each state.

Order State	Description
In Progress	This state is active whilst a user is adding items to their cart. Internal activities include searching for items and adding them to the cart.
Processing	This stage becomes active after the "Checkout" transition. At this stage, the user can select their delivery method and provide delivery details.

Pending Payment	This stage becomes active when the user selects their payment method (Paypal, Gift Card, Credit/Debit Card).
Awaiting Picking	At this stage, the order has been placed, and the warehouse needs to pick the items. Various internal actions are available, including product locating and printing despatch notices.
Shipped	At this stage, the customer is notified, and the order process is completed.

Bibliography:

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