Supplier Ordering System v1.0
Software Specification

Table of Contents

1.1 Purpose

This document provides a high-level overview describing the requirements and implementation of the Supplier Ordering system, a supplier relationship management solution designed to act as a portal for clients.

1.2 Scope

The proposed software solution will act as an intermediary between a supplier and client to reduce response times in order processing. The application will provide an interface for clients to connect with a supplier database, search and select available products, and compile an order of selected products. The application will also allow functionality for supplier staff to login and update the database with new products or remove items that are no longer available.

2. Overview

Due to a recent demand in business process automation, a retail supplier company requires a system where clients can browse and order products via a intermediary portal client. The system must allow customers to search, browse and select products. Selected products are saved to an order, and the remaining count of products needs to be reflected on the user interface. Administrators of the system must have additional access and be able to add, edit and delete products from the inventory.

3.1 User Stories

User story cards are completed to gather detailed information to be utilised when identifying use case requirements. Fig 1. Displays a selection of user stories.

User

As a client:
I want to search for products.
So, I can obtain further detail and select products before adding to an order.

Acceptance Criteria

- The client can select the find product button from main menu.
- The system will display a search form.
- The client can enter a product name or type.
- The system will query the inventory for a matching product.

User

As a customer:
I want to add a product to my order.
So, I can purchase a selected product when I have finished browsing.

Acceptance Criteria

- The customer can search and view a list of products.
- The customer can select the product.
- The system will add the product details and amount to order

User

As an administrator
I want to delete a product.
So, a product is no longer available from the catalogue.

Acceptance Criteria

- The administrator can search, select and view a product.
- The administrator can opt to delete a product.
- The system will delete the selected product from the catalogue.

Fig 1. Selection of user story cards.

3.2 Use Cases Specifications

Candidate use cases include login, find product, add to order, view order, add product and delete product. Selection of use case specifications included below:

Use Case: Add Product

Description: Admin adds a product to catalogue

1. Admin is on main menu
2. Admin clicks 'Add Product' button
3. System displays new product dialog box
4. Admin enters product details
5. Admin clicks 'Save' button
6. System creates new product record
7. System gets details from dialog and copies to new product
8. System stores product to Db
9. System displays confirmation message
10. Admin clicks 'OK' button to exit

Alternative Steps

1a. Admin clicks 'Back' button
2. System displays main menu

Use Case: Add to Order

Description: Customer adds product to order.

1. Customer has selected product from results
2. Customer clicks ‘Add to Order’ button
3. System generates Ordered Item ID
4. System prompts for amount of items
5. User specifies amount and clicks ‘OK’
6. System creates new ordered items
7. System stores a copy in the order
8. System reduces count in catalogue
9. Customer selects ‘OK’ button
10. System returns to search product UI

Alternative Steps

1a. User clicks ‘Back’ button

2. System displays search product UI

Use Case: Delete Product

Description: Admin deletes product from catalogue

1. Admin selected product from results
2. Admin clicks ‘Delete Product’ button
3. System prompts message ‘Are you sure?’
4. Admin clicks ‘Yes’ button
5. System deletes product from Db
6. System displays message to confirm product removed
7. Admin selects ‘OK’ button to exit

Alternative Steps

1a. Admin clicks ‘Back’ button

2. System displays main menu

3.3 Use Case Diagram

Figure 2 displays a use case diagram for the supplier ordering system, featuring client and administrator actors. Administrators inherit functionality from the client actor, such as login and find products as well as having specialist administrator use case functionalities, add and delete product.

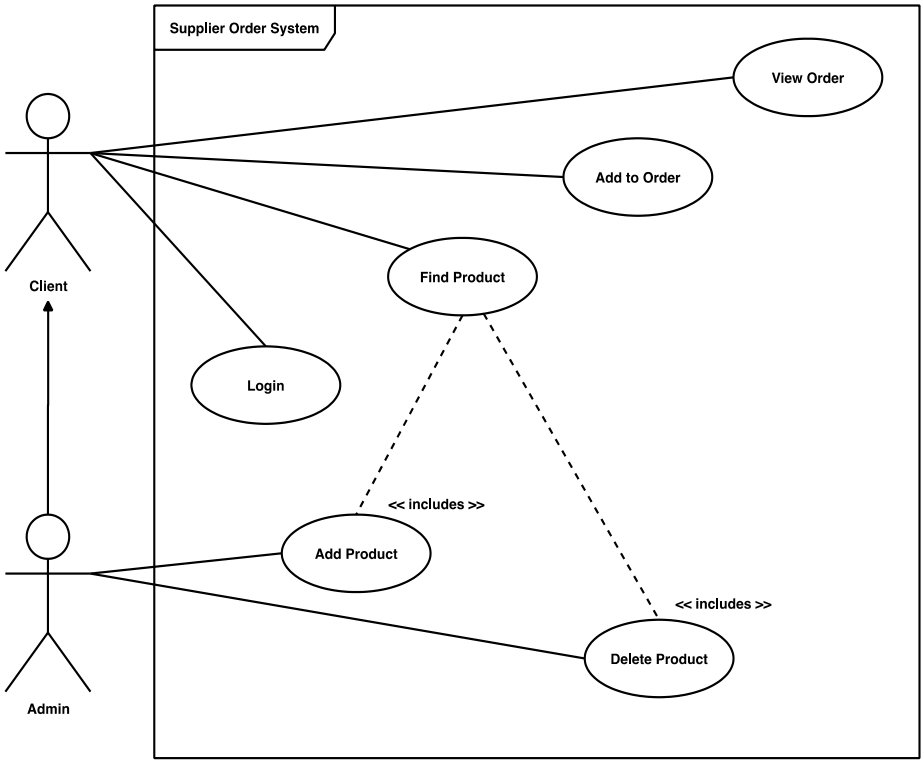


Fig 2. Use case diagram for supplier ordering system.

3.4 Use Case Realization

Requirements analysis of user story cards and use case specifications highlights candidate static classes, these include but are not limited to Customer, Staff User, Product, Order. Use cases are realisation is conducted using collaboration, communication and related class diagrams. Figures 3 – 11 display collaboration, communication and class diagrams.

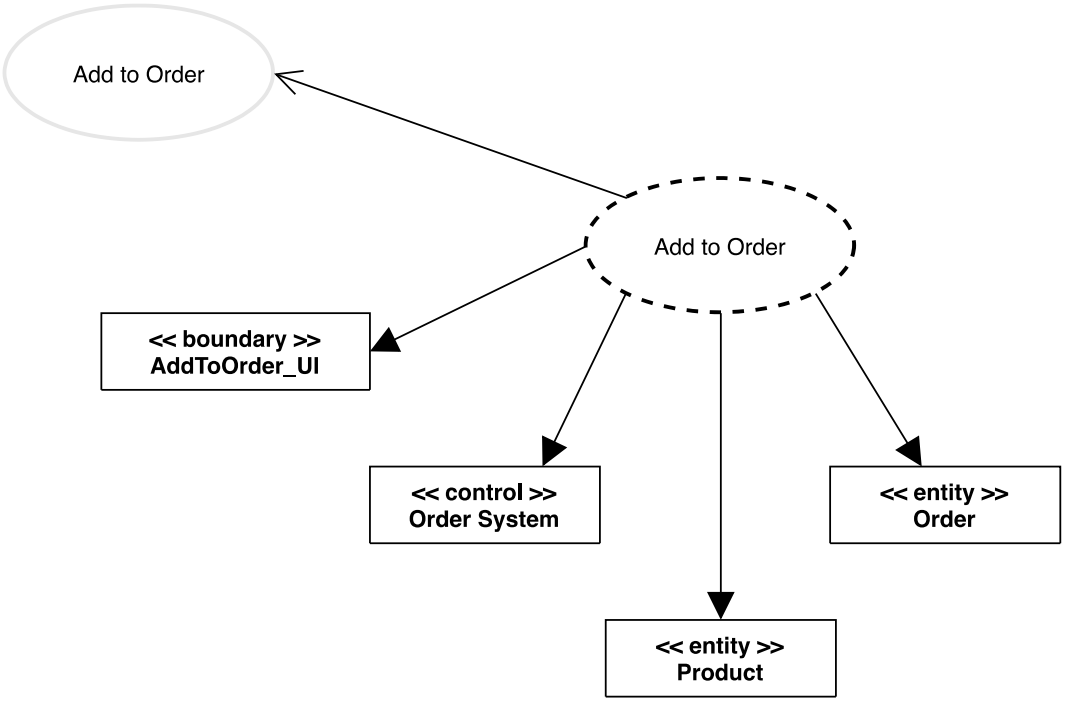


Figure 3. Add to order Collaboration Diagram

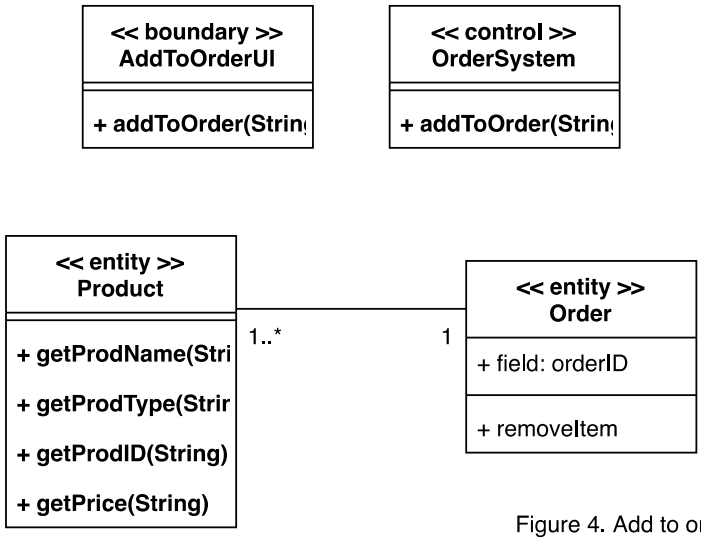


Figure 4. Add to order Class Diagram

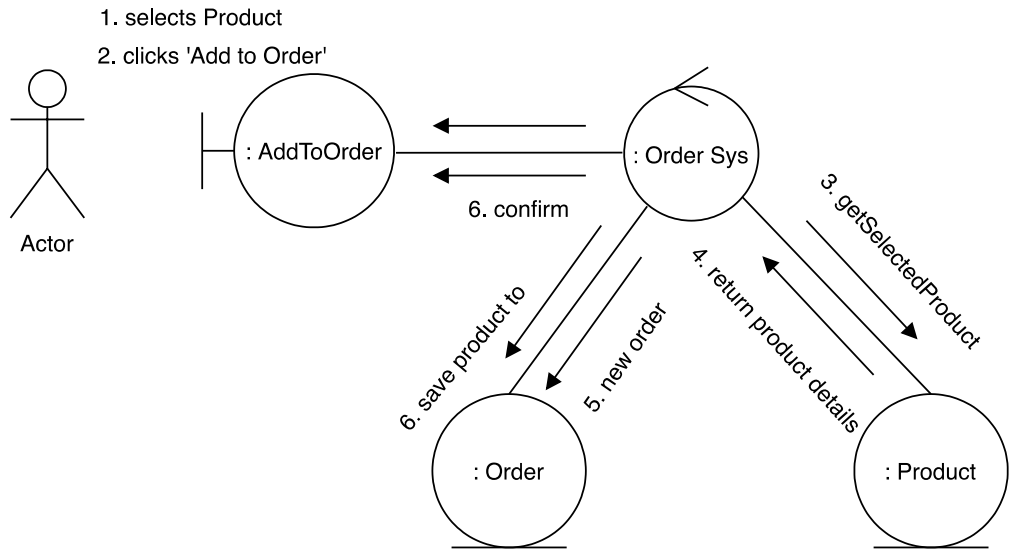


Figure 5. Add to order Communication Diagram

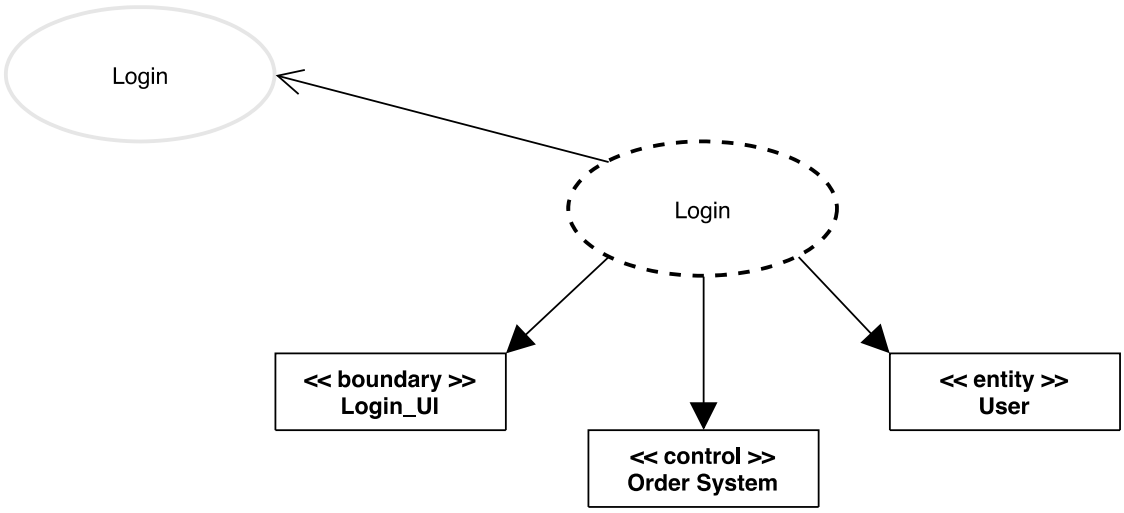


Figure 6. Login Collaboration Diagram

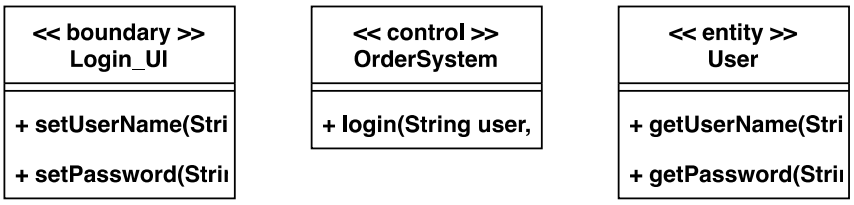


Figure 7. Login Collaboration Diagram

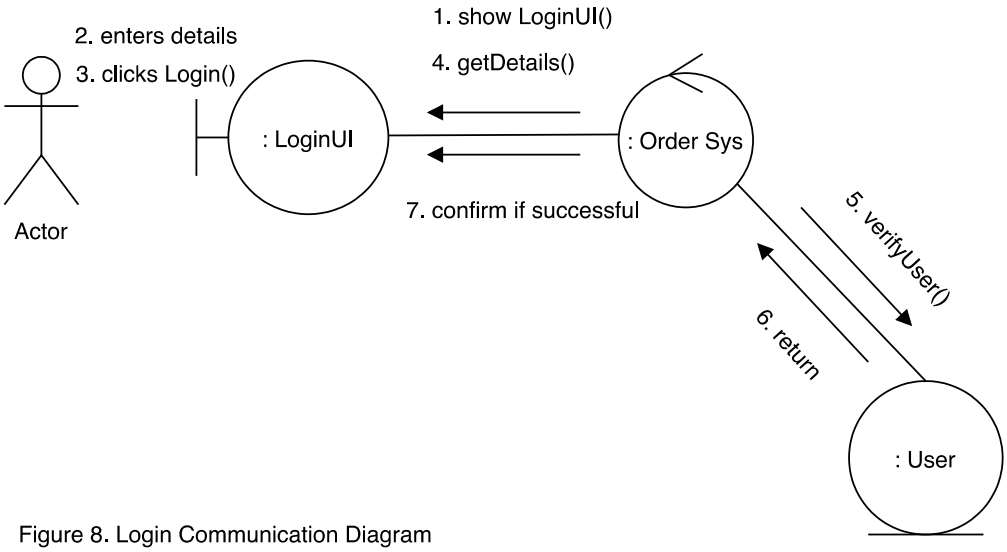


Figure 8. Login Communication Diagram

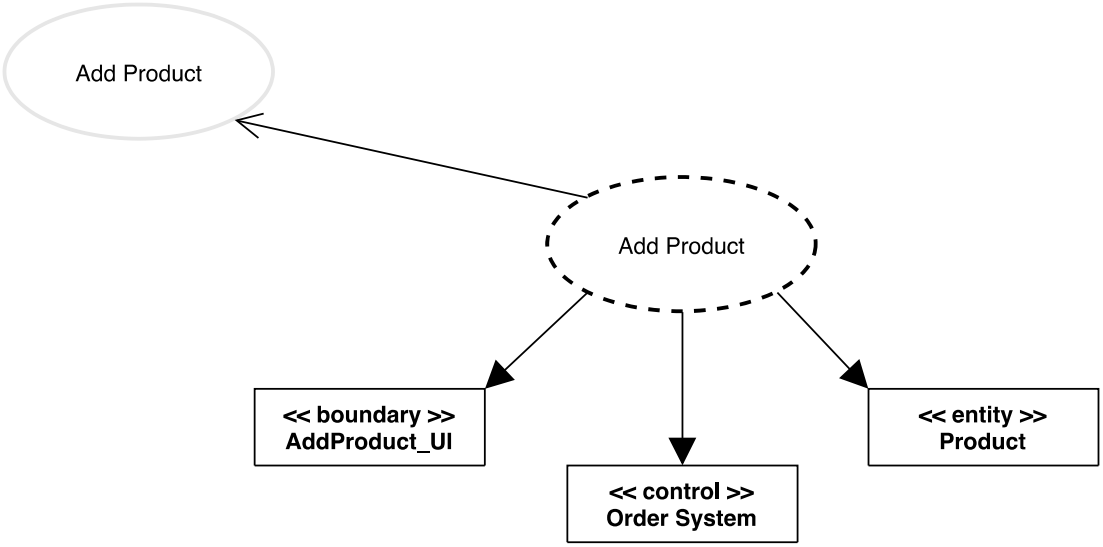


Figure 9. Add Product Collaboration Diagram

Note.
Associations between boundary and control classes are not shown as these are transient and not required for the analysis class diagram.

Figure 10. Add Product Class Diagram

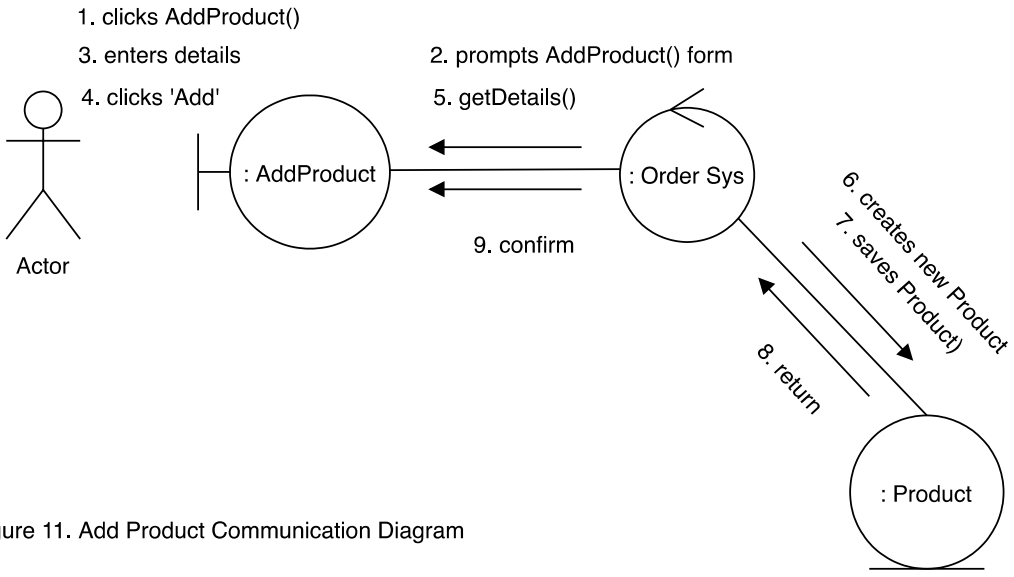


Figure 11. Add Product Communication Diagram

4. Delete Product Activity Diagram

Figure 12 displays UML activity diagram modelling the algorithm that realises the delete product use case. The system will use a get method to obtain the product name from the selected row of the result set table, this value is then set to the name property of a new product object and passed as an argument to the delete product control class. If no row is selected an exception is caught and user is advised to make a selection, SQL exceptions are also caught if a database connection issue arises. When the product record is successfully deleted from the database a select query of the initial inputted values is executed and the results are displayed in the result set table, providing real time display of the updated search results.

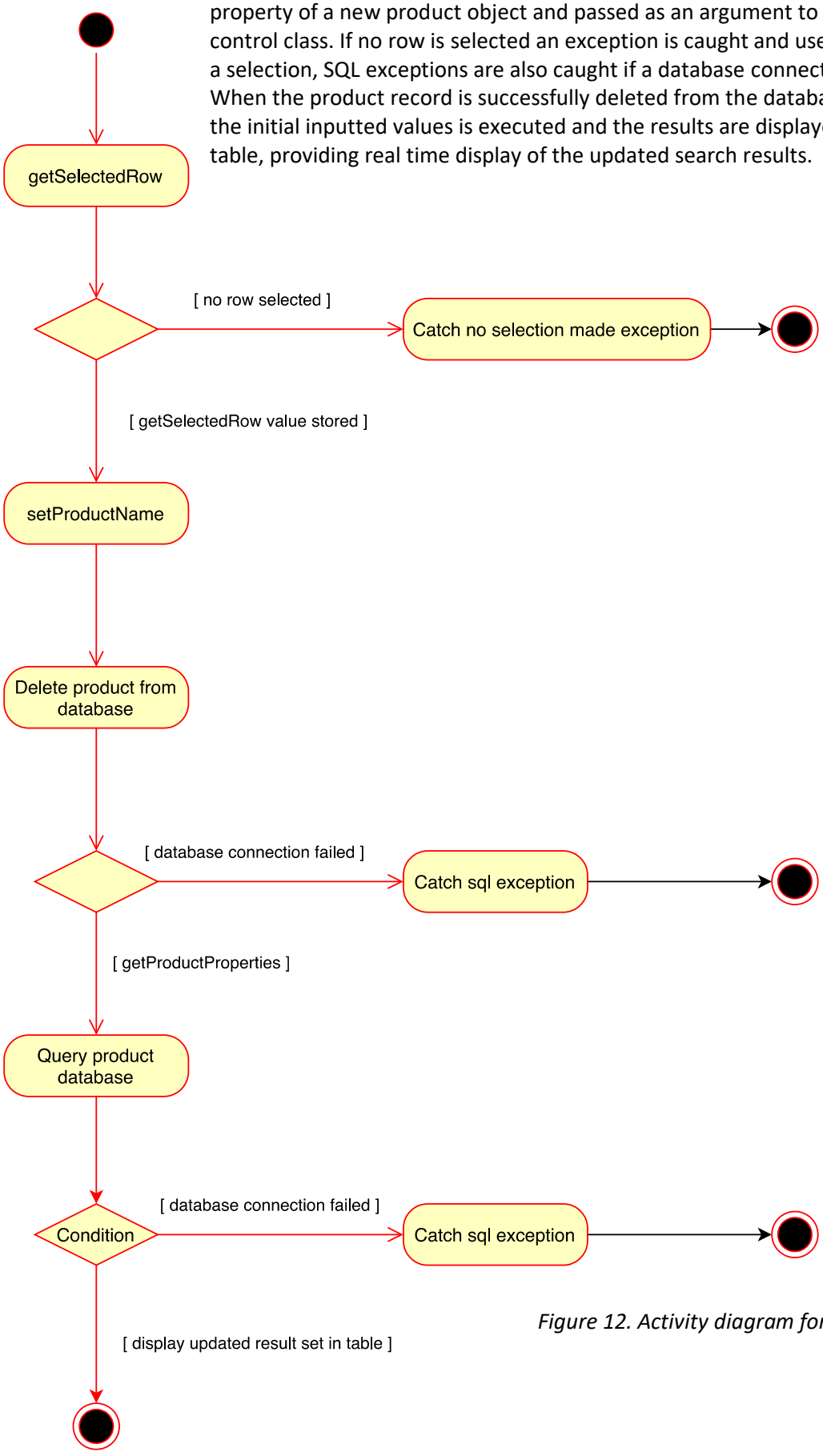


Figure 12. Activity diagram for delete product.

5. Add Product Sequence Diagram

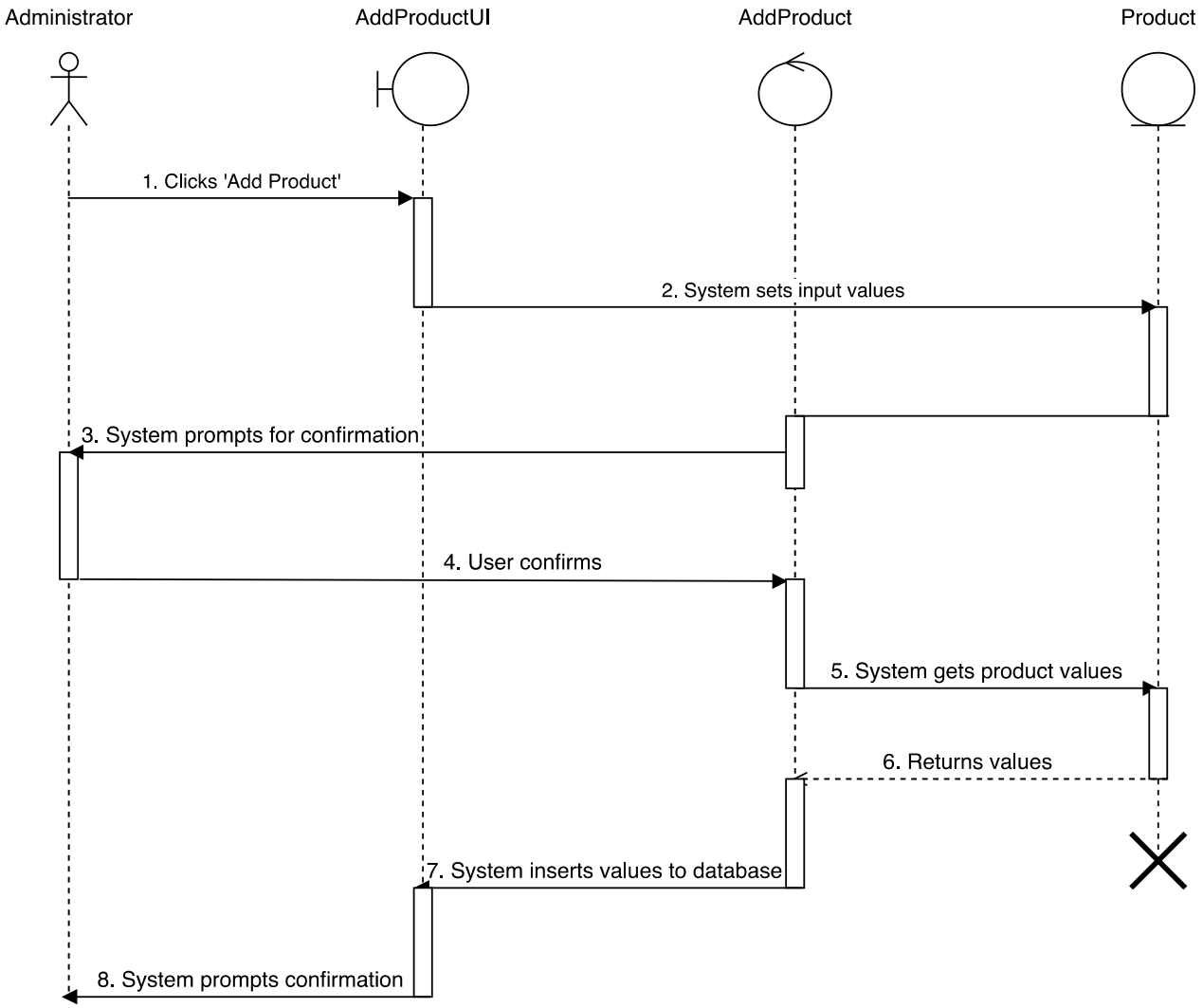
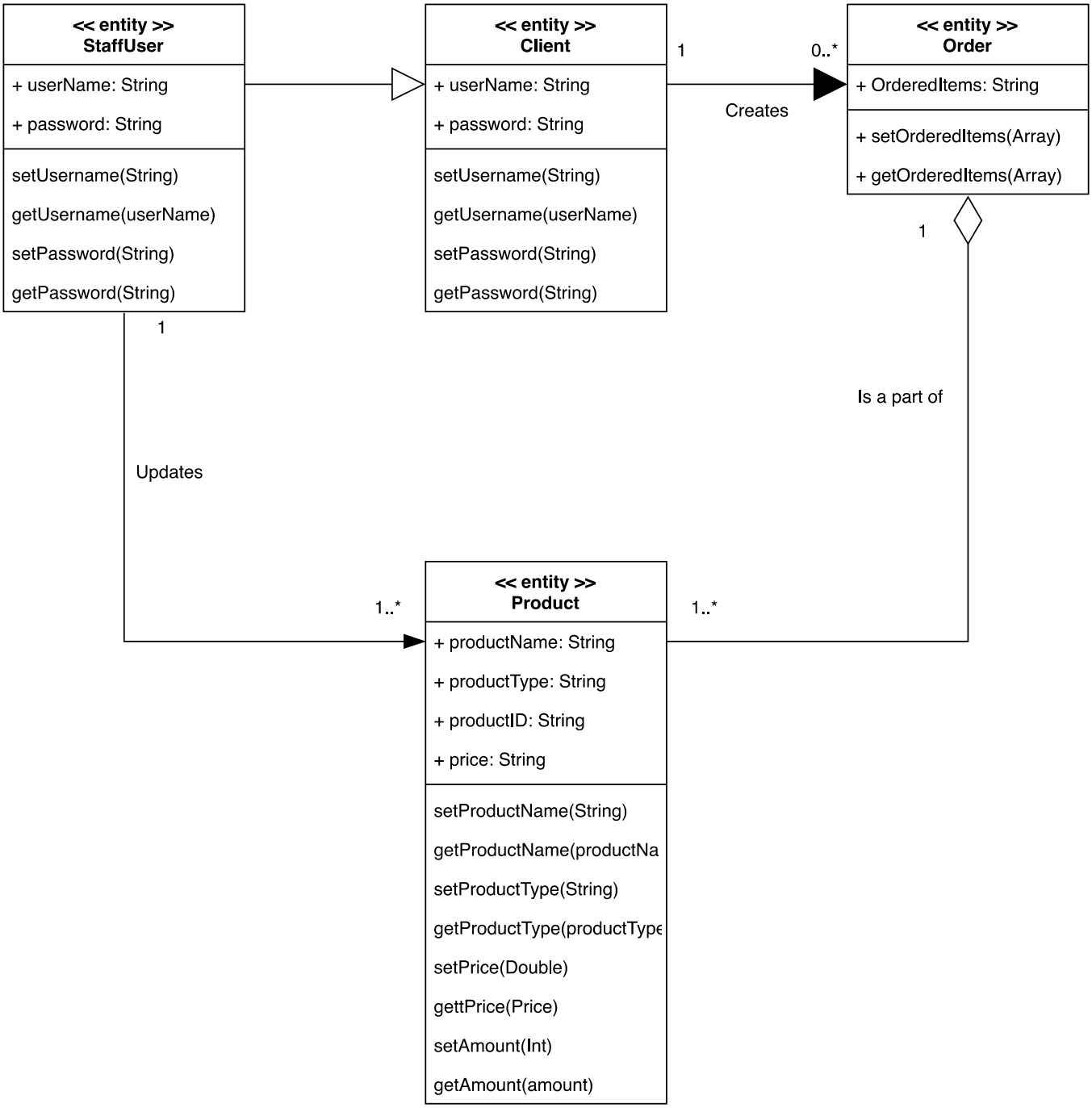


Figure 13. Add product sequence diagram.

Figure 13 highlights the steps required to realise the add product use case:

1. User clicks ‘Add Product’.
2. System sets inputted values to new product entity object.
3. Add product control class prompts user for confirmation.
4. User confirms.
5. Add product control class gets values from product entity class.
6. Product entity class returns values.
7. Add product control class inserts values to database.
8. Add product UI class displays confirmation dialog.

6. Analysis Class Diagram



7.1 User Interfaces

Below is a selection of user interface designs, on the left is the customer flow, the administrator flow is displayed on the right:

Figure 14. Client Login UI

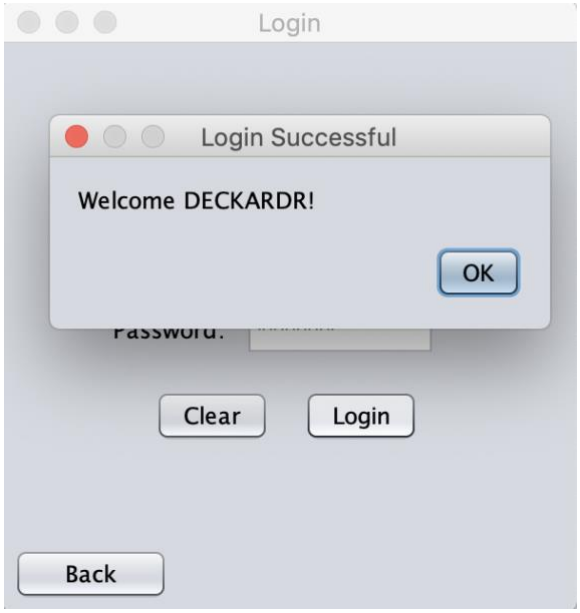


Figure 15. Admin Login UI

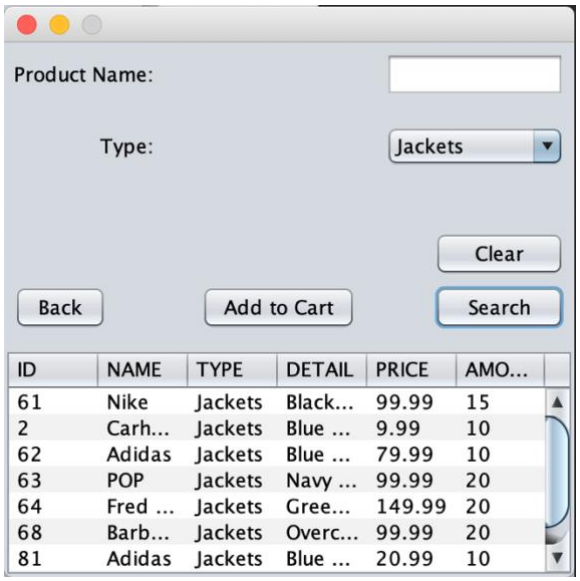


Figure 16. Client Search UI

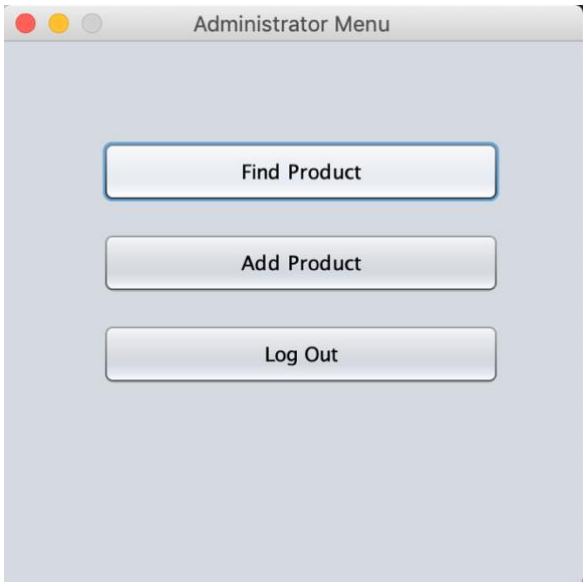
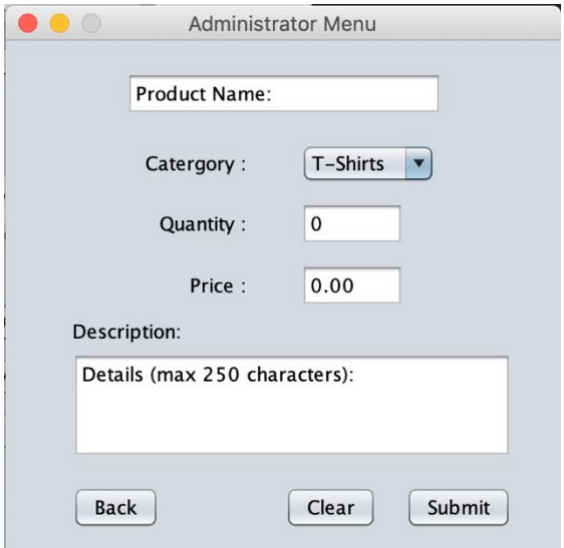


Figure 17. Admin Main Menu UI



7.2 Databases

The data repository layer of the supplier ordering system consists of a SQL database, including tables for products, staff, client and order. Tables were initially created using SQL Developer, with insert and update statements being executed from within the business logic layer classes. Entity classes are used to store properties of product, staff, client and order.

Figure 18. Add Product UI

7.3 Application Logic

The business logic layer consists of various control classes featuring combinations of if-else statements, JDBC SQL statements, set methods and get methods. When collaborating with entity and boundary classes, the control classes command algorithms realise use cases and meet functional requirements of the application.

Control classes include:
AddProduct.java
AddToOrder.java
DeleteProduct.java
LoginControl.java
SupplierOrderSystem.java (main)

8. Bibliography

Bennett S, McRobb S & Farmer R, 2006, "Object-Oriented Systems Analysis and Design Using UML", 3rd Edition, McGraw-Hill, ISBN 0-07-711000-1

Wood D, Loy M, Eckstein R, 1998, "Java Swing", 2nd Edition, O'Reilly Media, 156592455X

Bales D, 2001, "Java Programming with Oracle JDBC", O'Reilly Media, 059600088X

How to Use CardLayout (The Java™ Tutorials > Creating a GUI with JFC/Swing > Laying Out Components Within a Container),
Docs.oracle.com,
https://docs.oracle.com/javase/tutorial/uiswing/layout/card.html

JTable (Java Platform SE 7),
Docs.oracle.com,
https://docs.oracle.com/javase/7/docs/api/javax/swing/JTable.html