Point of Sale Application

Café Sanchez v1 (Java)

Case Study

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UCN 2022

# Introduction

A point of sale (POS) system is a combination of hardware and software that allows businesses to process sales transactions, track inventory, and manage customer information. POS systems can include a variety of components, such as a cash register, barcode scanner, receipt printer, and credit card reader. Modern POS systems also often can connect to the internet, allowing for real-time inventory updates and data analysis. Additionally, many POS systems can integrate with other business software, such as accounting or customer relationship management systems. Overall, a POS system is a key tool for businesses to manage sales and inventory effectively.

## Scenario

Café Sanchez is a small coffee shop that is operated by the owner. This means taking the customers’ orders, processing them, and handing them out from the counter. To help the owner in the day-to-day work, a system that can keep track of customer orders and support the workflow in the café, is desired.

A typical workflow is described by the owner like this:

*When a customer comes into the shop, she places an order for one or more beverages. The order is written onto a piece of paper with the customer’s name and is processed. When it is ready, the customer’s name is called and she steps up to the counter, pays, and get the beverages.*

Through meetings with the café owner, the following additional information about the system is documented:

* The system must be able to keep track of several orders simultaneously but does not keep records of the sales.
* When an order is finished and paid for, it is deleted from the system.
* Also, there is no need for handling payments.

## The Application

The application is implemented as a *desktop application* based on a three-tier open architecture (Figure 1). The individual tiers are implemented as packages in the Eclipse project.

You can download it from GitHub here: <https://github.com/UCN-LANY-CaseStudies/CafeSanchez_v0>

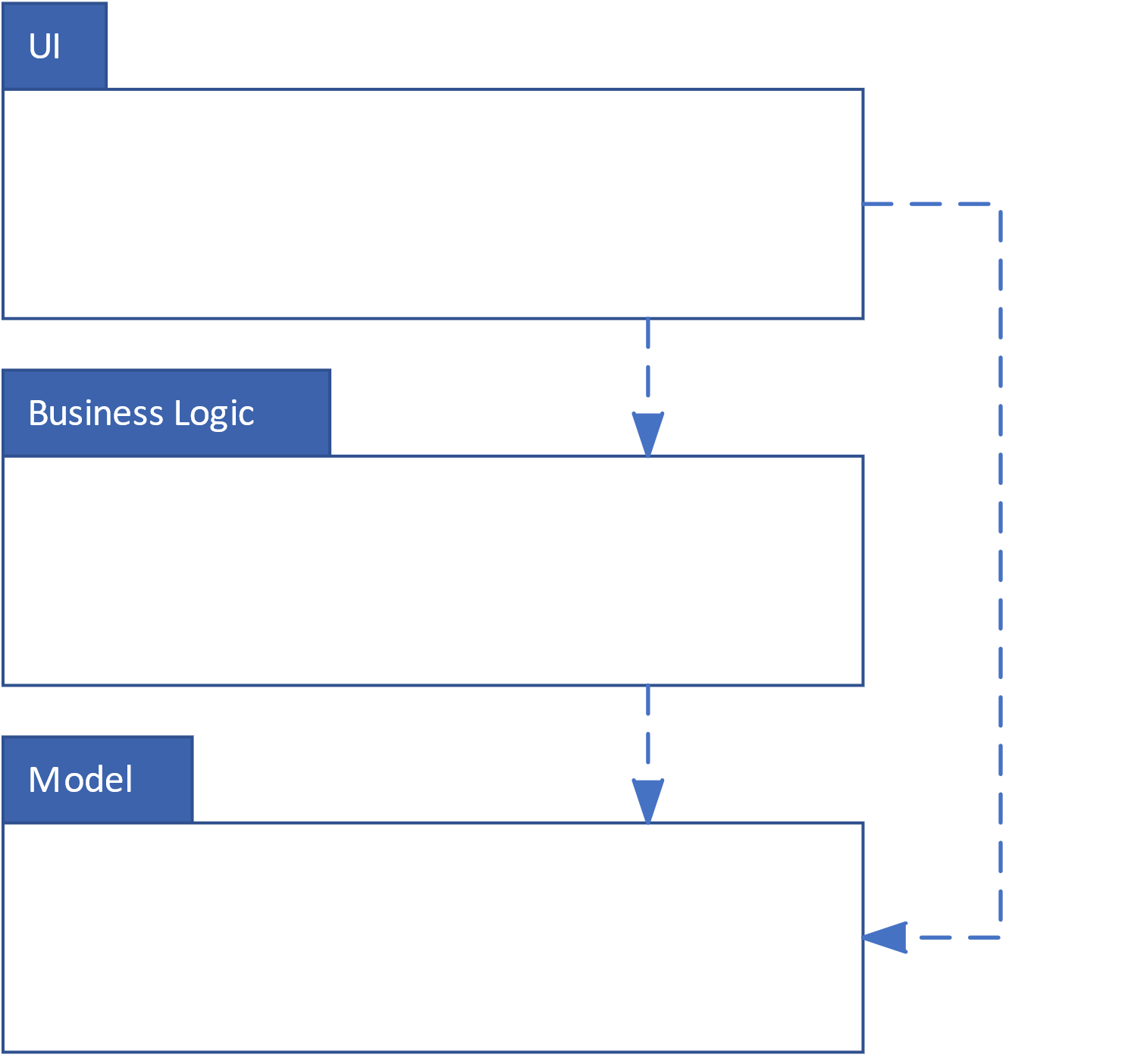


Figure 1: Three-tier open architecture

### UI

The user interface is designed to satisfy the Use Cases shown in Appendix A and consists of two screens; a main window (Figure 2) that shows the active orders that are currently being processed, and a modal window (Figure 3) where details about a new customer order can be entered.

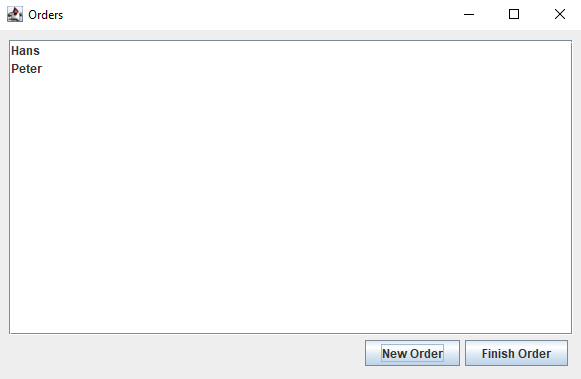


Figure 2: Main window with list of active orders

Graphical user interface

Description automatically generated

Figure 3: Modal window for creating new orders

### Business Logic

To support the use cases, a single controller for handling orders is implemented. This implements methods to fulfill the two use cases and is also responsible for holding operation data and load master product data from a file. The master data is loaded once on startup, so the system does not support adding new products runtime. In other words, if new products are added to the assortment, a restart is required. Also, since there is no requirement of keeping records of the sale, all data is stored in memory and will disappear when the system is shut down or restarted.

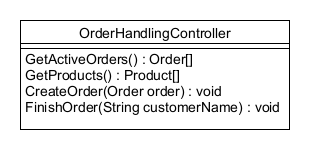


Figure 4: Controller supporting the use cases

### Model

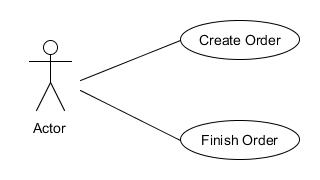
The domain model represents the data used to operate the system

Diagram

Description automatically generated

Figure 5: Domain model

## Appendix A – Use Cases



Use Case 1: Create Order

|  |  |
| --- | --- |
| Scope | The Coffee Break POS |
| Level |  |
| Primary Actor | Barista |
| Stakeholders and Interests | Cashier:  Barista:  Customer:  Shop Owner: |
| Preconditions | Products are registered in the system |
| Success Guarantee | Customer order is processed and the correct price for the total order is calculated and settled. |
| Main Success Scenario | 1. Customer arrives at POS 2. Cashier starts a new sale by entering the customer’s name 3. Cashier selects the beverage and quantity the customer orders 4. System records beverage and quantity, calculates total price, and presents information on screen 5. Cashier repeats step 3-4 for every type of beverage the customer orders. 6. Customer pays and Barista produces order 7. Customer leaves with products |
| Extensions |  |

Use Case 2: Finish Order

|  |  |
| --- | --- |
| Scope | The Coffee Break POS |
| Level |  |
| Primary Actor | Barista |
| Stakeholders and Interests | Cashier:  Barista:  Customer:  Shop Owner: |
| Preconditions | The system has an active order |
| Success Guarantee | The order is marked as finished and removed from the screen. |
| Main Success Scenario | 1. Ordered beverages is ready 2. The Customer collects the beverages 3. Cashier marks order ad finished 4. The order is no longer visible on the screen |
| Extensions |  |