IT314 – Software Engineering

Lab: 06

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Lab Group: 3

1). Develop Use Case Textual Description for "Process Sale" and "Handle Return" use cases.

Use Case: Process Sale

Primary Actor: Cashier
Objective: To complete a customer's purchase and finalize the transaction.

Preconditions:

- The customer has selected products for purchase.
- The cashier is logged into the POS system.

Main Flow:

1. The cashier initiates a new transaction by scanning each product's barcode.
2. The POS system retrieves product details (such as price and description) by interacting with the catalogue system.
3. Each scanned item is added to the current transaction within the POS system.
4. This step is repeated for all products the customer wishes to purchase.
5. The cashier selects the customer's chosen payment method (e.g., cash, credit card).
6. The system calculates the total cost and updates the inventory to reflect the items sold.
7. The chosen payment method is processed.
8. A receipt is generated and provided to the customer.

Postconditions:

- The transaction is successfully completed.
- The inventory is adjusted accordingly.

Alternative Flow:

- If the payment process fails, the system will prompt the cashier to try another payment method or give the option to cancel the sale.

Use Case: Handle Return

Primary Actor: Cashier
Objective: To process the return of items previously purchased.

Preconditions:

- The customer provides a valid receipt for the items.
- The cashier is logged into the POS system.

Main Flow:

1. The cashier selects the return function in the POS system.
2. The system prompts for receipt information or the transaction ID from the original purchase.
3. The cashier scans the items the customer wishes to return.
4. The system communicates with the inventory system to add the returned items back to stock.
5. The system calculates the refund amount based on the items returned.
6. The cashier finalizes the return, either issuing a cash refund or processing a credit card refund.
7. The inventory is updated and a receipt for the return is printed for the customer.

Postconditions:

- The return is successfully processed.
- Inventory is adjusted to account for the restocked items.

Alternative Flow:

- If the receipt is invalid or the item cannot be returned, the system shows an error message and the return process is aborted.

2). Identify Entity/Boundary Control Objects

Entity Object

Sale	Product	Customer
Payment	Receipt	Return Transaction

Boundary Object

Cashier UI	UI for scanning and entering details of product/item
Catalogue System	Provides product details
Inventory System	Updates product stock
Payment System	Handles Cash/Cards Payment

3). Sequence Diagram

Process Sale
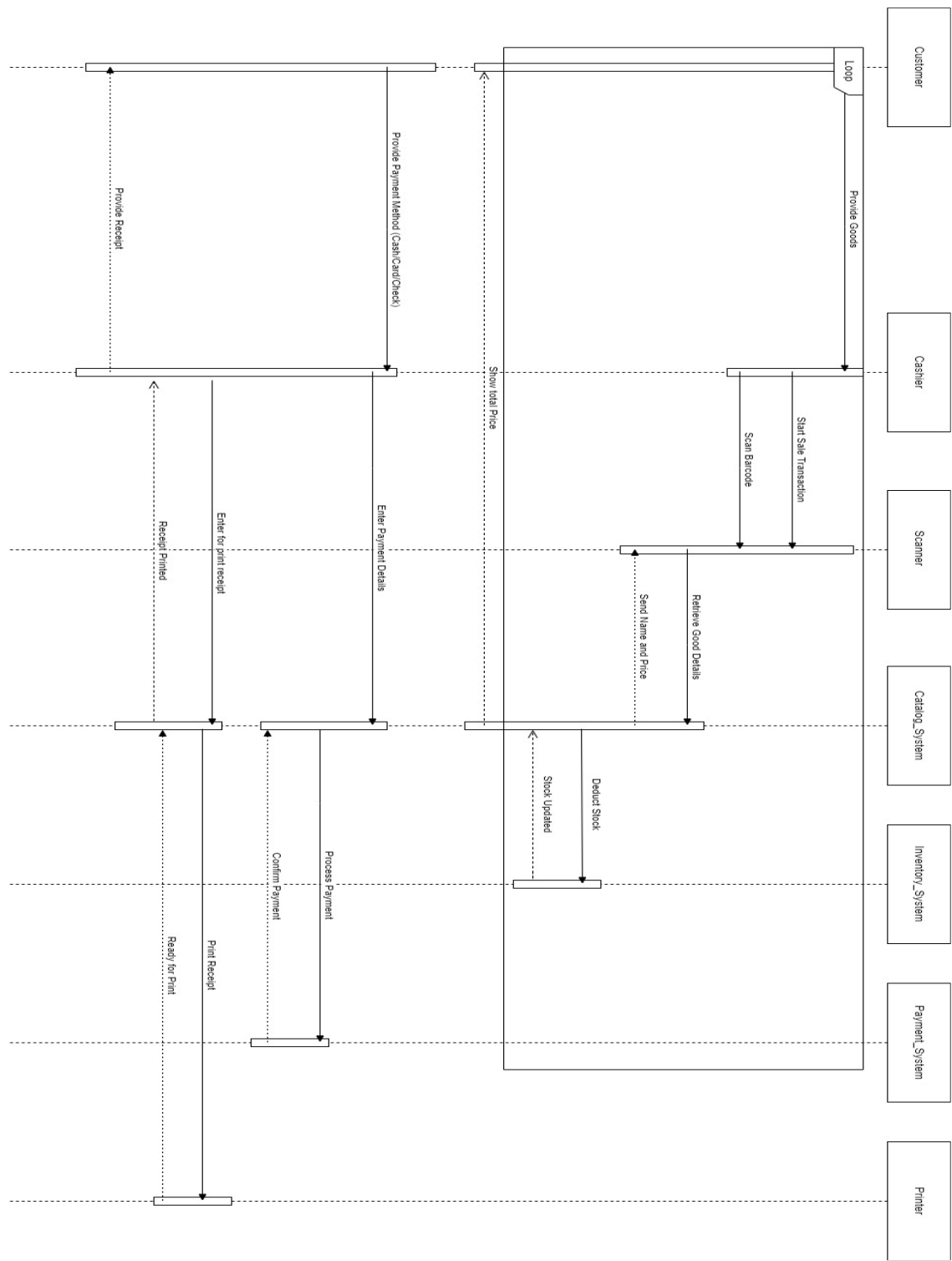
Handle Return
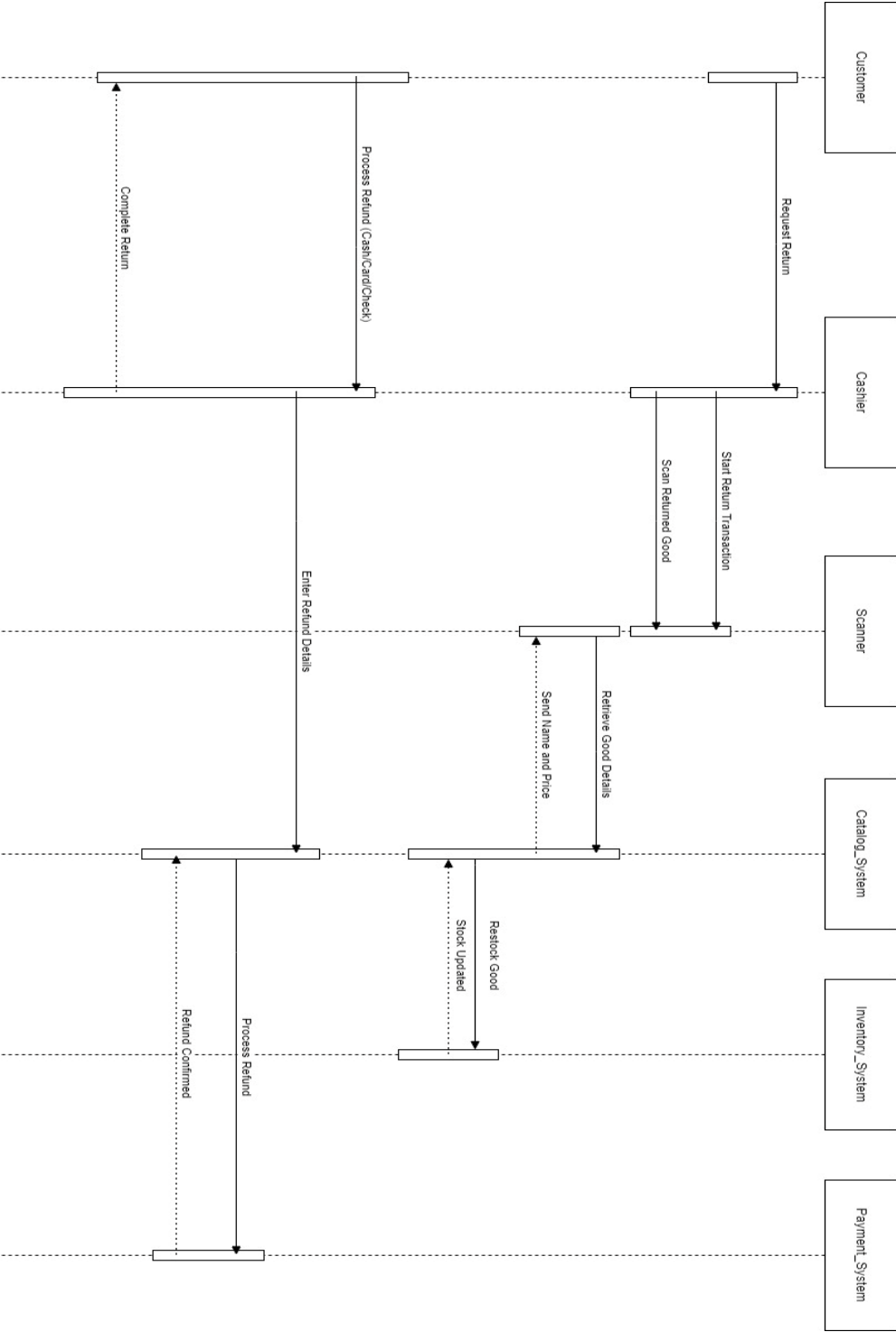
4). Develop Analysis Domain Model
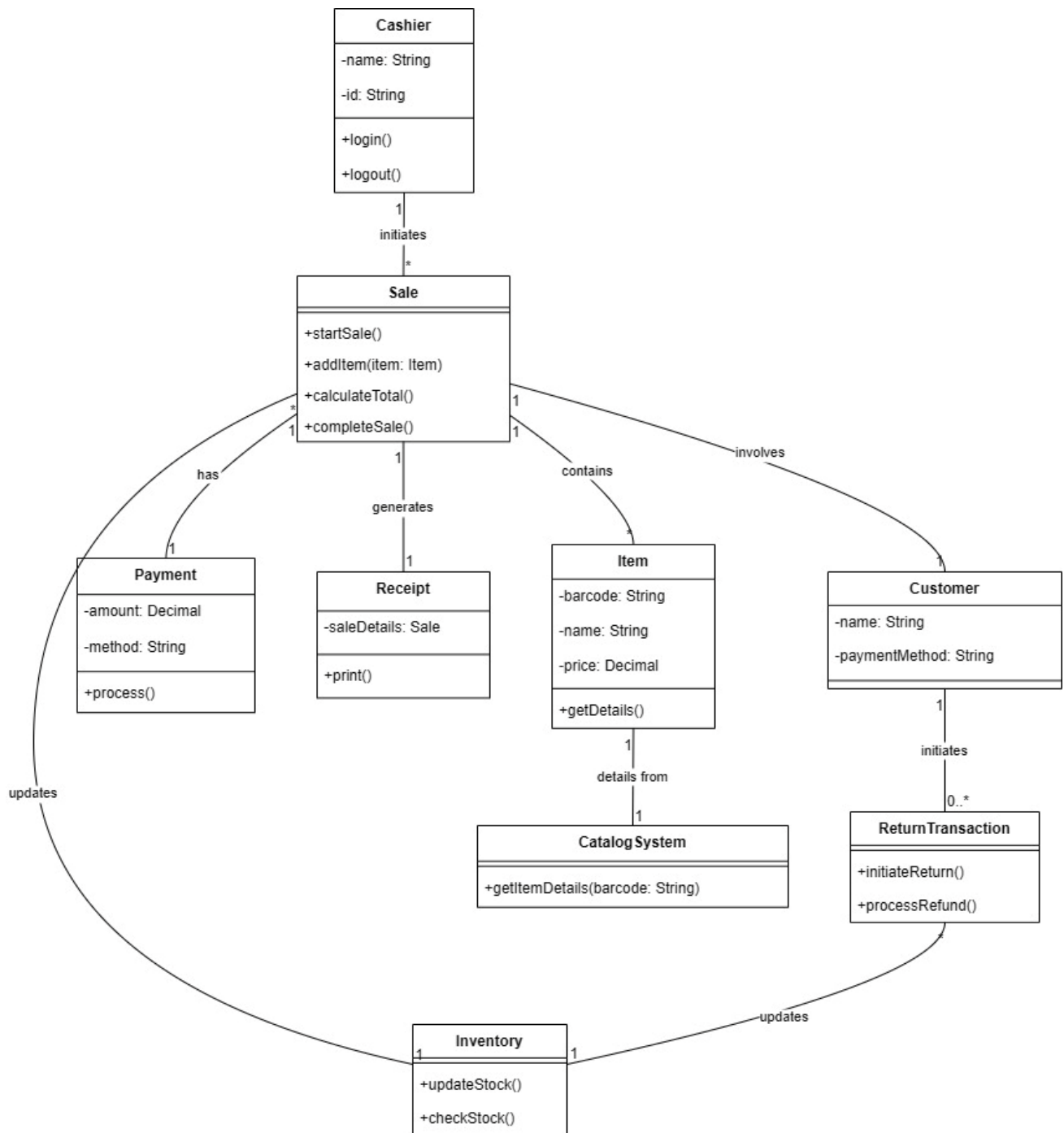
5). Develop activity diagram for "Process Sale" and "Handle Return" use cases.

Process of Sale

Cashier starts new sale

Scan item barcode

Retrieve item details from catalog

Add item to sale

More items?

Yes

No

Calculate total

Select payment method

Process payment

Payment successful?

Yes

No

Update inventory

Prompt for alternative payment

Print receipt

End

Handle Return

```
                        ┌──────────┐
                        │  Start   │
                        └────┬─────┘
                             │
                             ▼
              ┌────────────────────────────┐
              │ Cashier selects return option │
              └──────────────┬─────────────┘
                             │
                             ▼
              ┌────────────────────────────┐
              │     Enter receipt details    │
              └──────────────┬─────────────┘
                             │
                             ▼
              ┌────────────────────────────┐
              │     Scan items for return    │
              └──────────────┬─────────────┘
                             │
                             ▼
              ┌────────────────────────────┐
              │    Verify return eligibility  │
              └──────────────┬─────────────┘
                             │
                             ▼
                        ◇ Items eligible? ◇
                      Yes  /        \  No
                         /            \
                        ▼              ▼
        ┌────────────────────┐   ┌────────────────────────┐
        │ Calculate refund amount │   │  Display error message  │
        └──────────┬─────────┘   └───────────┬────────────┘
                   │                          │
                   ▼                          ▼
        ┌────────────────────┐   ┌────────────────────────┐
        │   Update inventory   │   │      Cancel return      │
        └──────────┬─────────┘   └───────────┬────────────┘
                   │                          │
                   ▼                          │
        ┌────────────────────┐                │
        │    Process refund    │                │
        └──────────┬─────────┘                │
                   │                          │
                   ▼                          │
        ┌────────────────────┐                │
        │ Generate return receipt │             │
        └──────────┬─────────┘                │
                    \                        /
                     \                      /
                      ▼                    ▼
                        ┌──────────┐
                        │   End    │
                        └──────────┘
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