




Department of Electrical, Computer, and Biomedical Engineering

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Instructor	Dr. Abdolreza Abhari

Report	Assignment 1: Application Description
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Name	Student ID	Signature
Ethan Soosaipillai	36374	
Hareesh Suresh	30145	
Ivan Wang	86429	

(Note: remove the first 4 digits from your student ID: xxxx12345)

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Point of Sale System for Shoppers Drug Mart

Introduction

The dedicated Point of Sale (POS) system designed for Shoppers Drug Mart is tailored exclusively to the retail segment. Its primary objectives are to enhance operational efficiency, provide a superior retail customer experience, ensure compliance within the retail context, and offer valuable business insights. This system serves as an indispensable tool for all locations.

Entity Relationship Analysis

Product

- ProductID (int, Primary Key)
- Name (string)
- Category (string)
- StockLevel (int)
- Price (float)
- Barcode (string)

Transaction

- TransactionID (int, Primary Key)
- Timestamp (datetime)
- PaymentMethod (string)
- TotalAmount (float)

Customer

- CustomerID (int, Primary Key)
- Name (string)
- Email (string)
- Phone (string)
- LoyaltyPoints (int)

Employee

- EmployeeID (int, Primary Key)
- Name (string)
- Role (string)
- Shift (string)
- PerformanceScore (float)

Manager

- ManagerID (int, Primary Key)
- Name (string)
- Email (string)
- Phone (string)

Supplier

- SupplierID (int, Primary Key)
- Name (string)
- ContactPerson (string)
- Email (string)
- Phone (string)

Promotion

- PromotionID (int, Primary Key)
- DiscountAmount (double)
- Description (string)
- StartDate (datetime)
- EndDate (datetime)

Attributes Analysis

Product

- ProductID: Unique identifier for products.
- Name: Name of the product.
- Category: The category to which the product belongs.
- StockLevel: Current stock level of the product.
- Price: The price of the product.
- Barcode: Unique barcode for the product.

Transaction

- TransactionID: Unique identifier for transactions.
- Timestamp: Date and time of the transaction.
- PaymentMethod: Method used for payment.
- TotalAmount: Total amount of the transaction.

Customer

- CustomerID: Unique identifier for customers.
- Name: Name of the customer.
- Email: Email address of the customer.
- Phone: Phone number of the customer.
- LoyaltyPoints: Loyalty points accumulated by the customer.

Employee

- EmployeeID: Unique identifier for employees.
- Name: Name of the employee.
- Role: The role or position of the employee.
- Shift: The shift in which the employee works.
- PerformanceScore: Score representing employee performance.

Manager

- ManagerID: Unique identifier for managers.
- Name: Name of the manager.
- Email: Email address of the manager.
- Phone: Phone number of the manager.

Supplier

- SupplierID: Unique identifier for suppliers.
- Name: Name of the supplier.
- ContactPerson: Name of the contact person at the supplier.
- Email: Email address of the supplier.
- Phone: Phone number of the supplier.

Promotion

- PromotionID: Unique identifier for promotions.
- DiscountAmount: The amount of discount offered.
- Description: Description of the promotion.
- StartDate: Start date of the promotion.
- EndDate: End date of the promotion.

Data Types and Length Definitions

- int: Integer
- string: String
- float: Floating-point number
- datetime: Date and time
- double: Double-precision floating-point number

Data type and length definitions for attributes have been provided in the attributes analysis section.

Cardinality

- Each Transaction links to multiple Product records (1 to N).
- Each Transaction is associated with one Customer (1 to 1).
- Each Employee may perform multiple Transactions (1 to N).
- Each Manager may oversee multiple Employees (1 to N).
- Each Supplier may provide multiple Products (1 to N).
- Each Promotion may be linked to multiple Products (M to N).

Keys Analysis

- Primary keys have been identified for each entity to ensure unique identification.
- Primary keys are denoted in the attributes analysis section.