Databázové systémy (IDS) – 1. část
Datový model a model případů užití

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Introduction

This document presents a comprehensive overview of the data and use case models for a proposed bakery information system. The system is designed to manage and facilitate the bakery's operations, from production to distribution. It aims to optimize the workflow by tracking the production materials, costs, and sales. The models delineate the structural and behavioral aspects of the system, ensuring that the bakery's offerings, from ingredients to delivery, are meticulously organized and managed. This will assist the bakery in planning production based on orders and provide essential information for delivery logistics.
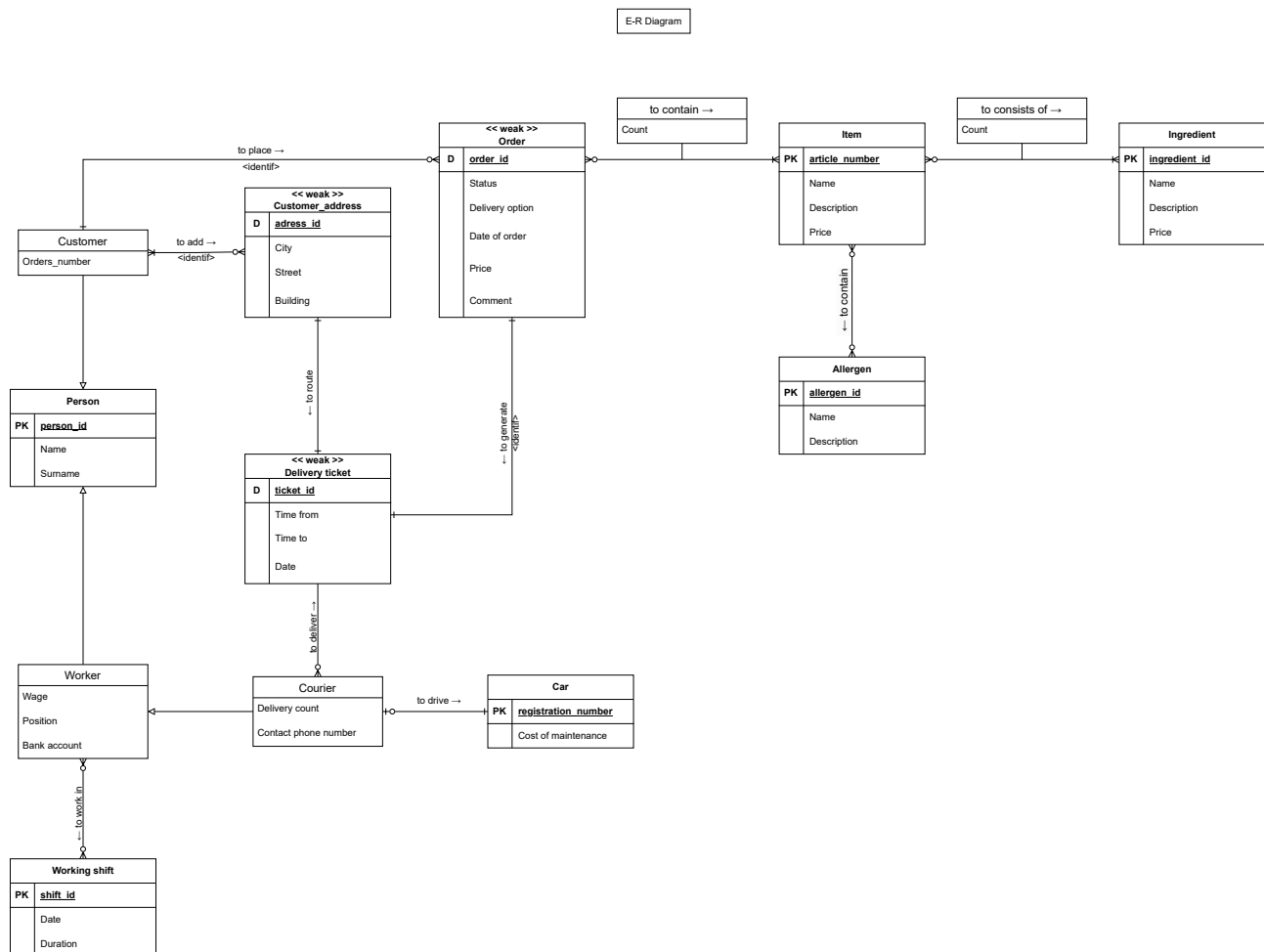
1 ER Diagram Description

Figure 1: ER Diagram

Person

Represents an individual related to the bakery, with attributes such as a unique identifier (person_id), name, and surname.

Customer

A specialization of Person, representing a person who places orders. They are associated with orders and have a relationship with the customer address for delivery purposes.

Customer Address

Holds address details for the customer, including address ID, city, street, and building. It is a weak entity that depends on the Customer entity.

Worker

A specialization of Person, representing an employee in the bakery. Attributes include wage, position, and bank account details.

Courier

A specialization of Worker, representing an employee responsible for delivering orders. They are linked to delivery tickets and cars.

Car

Represents the vehicles used for delivery. Attributes include the registration number and cost of maintenance.

Working Shift

Represents the shifts that workers have. Attributes include a unique shift ID, date, and duration.

Delivery Ticket

Represents a delivery task for a courier, with attributes like ticket ID, time from, time to, and date.

Order

Holds details about customer orders, including a unique order ID, status, delivery option, date of order, price, and comment.

Item

Represents the bakery items for sale, with attributes such as article number, name, description, and price.

Ingredient

Represents ingredients used in the bakery items. Attributes include ingredient ID, name, description, and price. Ticket is routed with the Customer Address.

Allergen

Represents allergens that may be present in the items. Attributes include allergen ID, name, and description.

Relationships

A *Customer* places *Orders*. If the delivery method "courier delivery" is selected for *the Order*, then *the Delivery Ticket* is created for *that Order*. *The Delivery Ticket* is bounded to the particular*Courier* and provide *the Customer Address* (where *the Order* should be delivered by *Courier*). If "self-pickup" method is selected *the Delivery Ticket* is not needed. The *Order* contains *Items*, and *Items* consist of *Ingredients*. *Items* may contain a set of *Allergens*. A *Worker* is linked to *Working Shifts* and, if they are a *Courier* type of *Worker*, to *Delivery Tickets* and *Cars*.
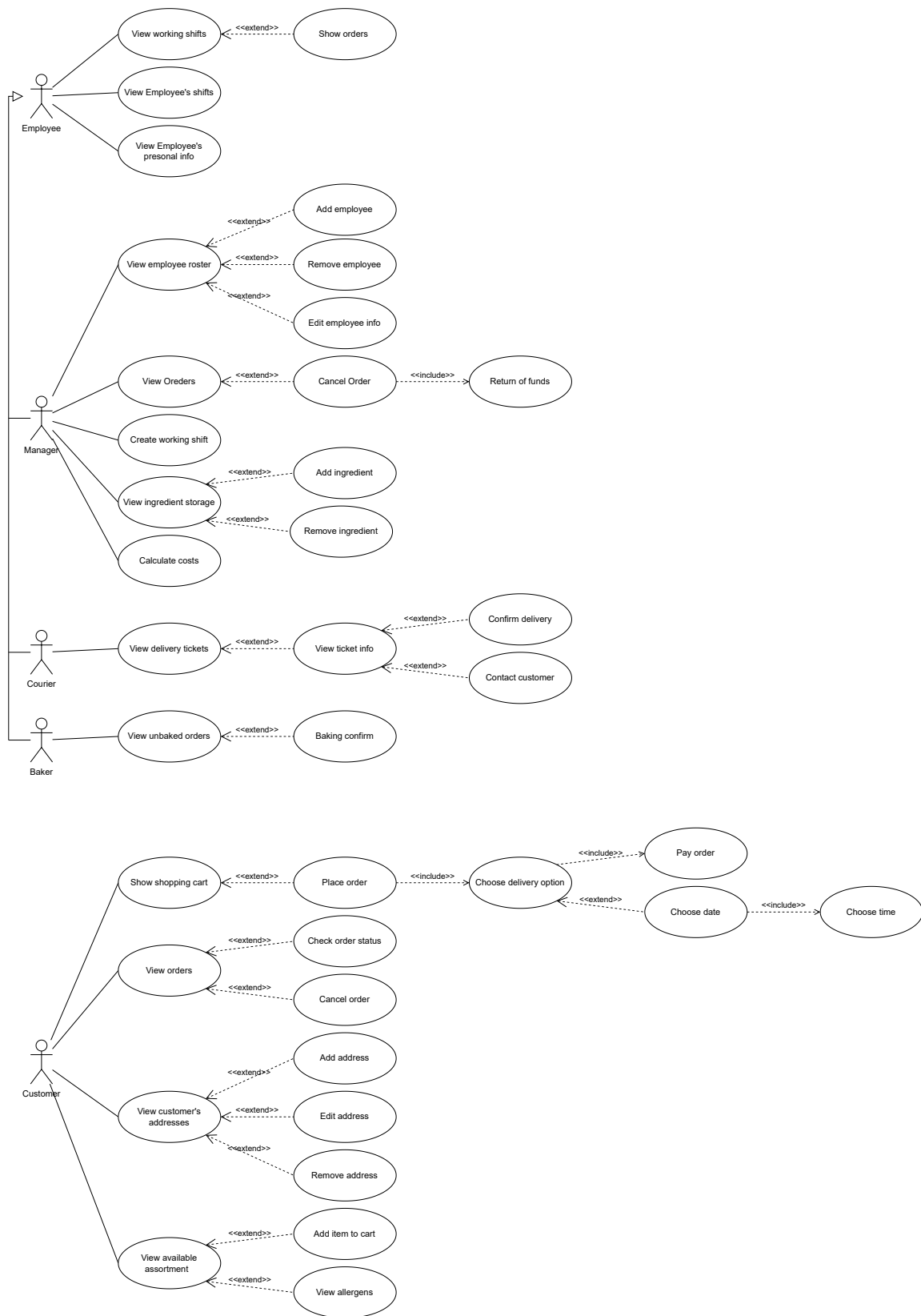
2 Use Case Diagram Description

Figure 2: Use Case Diagram

Customer

Can view orders, place orders, check order status, cancel orders, add, edit, or remove addresses, add items to cart, view the shopping cart, view available assortment, and view allergens.

Baker

Can view unbaked orders and confirm the baking process.

Courier

Responsible for viewing delivery tickets, viewing ticket info, contacting the customer, and confirming delivery.

Manager

Can view orders, create working shifts, view employee rosters, add or remove employees, edit employee information, cancel orders, view ingredient storage, add or remove ingredients, calculate costs, and handle the return of funds.

Employee

Can view their working shifts, personal info, and orders.

The use case diagram essentially outlines the functionality available to different types of users within the system.

Conclusion

In summary, the data models and use cases provide a basic framework for developing a bakery information system. The diagrams provide a detailed understanding of the relationships between different data objects and the interactions between users and the system. These models serve as a foundation for developers and other stakeholders, ensuring that the system is robust, efficient and responsive to the needs of the bakery. Through careful planning and implementation, based on these principles, the bakery can improve its operational efficiency and meet the expectations of customers.