

# CRM Database Design

Sarra HAMMOUDI

February 2025

## Introduction

This document outlines the design of a CRM (Customer Relationship Management) database. The database is structured to handle the information related to employees, customers, leads, tickets, opportunities, activities, campaigns, and accounts. Each of these entities has relationships with one another, ensuring a comprehensive structure for managing customer relationships, sales opportunities, marketing campaigns, and customer service activities.

## 1. Person Table

**Purpose:** The **Person** table stores personal information for both employees and customers.

**Key Fields:**

- **person\_id:** Primary key and auto-incremented.
- **first\_name:** First name of the person.
- **last\_name:** Last name of the person.
- **email:** Email address of the person.
- **phone:** Phone number of the person.
- **address:** Address of the person.

## 2. Employee Table

**Purpose:** Stores employee-specific information, such as job title, department, salary, and hire date.

**Key Fields:**

- `employee_id`: Primary key and auto-incremented.
- `person_id`: Foreign key referencing `Person.person_id`, linking each employee to their personal information.
- `job_title`: Job title of the employee.
- `department`: Department where the employee works.
- `salary`: Employee's salary.
- `hire_date`: Date when the employee was hired.

**Relationships:**

- `person_id` references `Person.person_id` with `ON DELETE CASCADE`.

## 3. Customer Table

**Purpose:** Stores customer-specific information, such as company name, registration date, and total spending.

**Key Fields:**

- `customer_id`: Primary key and auto-incremented.
- `person_id`: Foreign key referencing `Person.person_id`.
- `company_name`: Name of the customer's company.
- `registration_date`: Date when the customer registered.
- `total_spent`: Total amount spent by the customer.

**Relationships:**

- `person_id` references `Person.person_id` with `ON DELETE CASCADE`.

## 4. Leads Table

**Purpose:** Stores potential customers who have shown interest but have not yet become paying customers.

**Key Fields:**

- `lead_id`: Primary key and auto-incremented.
- `name`: Name of the lead.
- `email`: Contact email of the lead.
- `phone`: Contact phone number.
- `source`: The source from which the lead was generated.
- `status`: Current status of the lead (e.g., 'New', 'Contacted', 'Qualified', 'Lost').
- `employee_id`: The employee who is responsible for the lead, referencing the `Employee` table.

**Relationships:**

- `employee_id` references `Employee.employee_id` with `ON DELETE CASCADE`.

## 5. Campaigns Table

**Purpose:** Tracks marketing campaigns managed by employees.

**Key Fields:**

- `campaign_id`: Primary key and auto-incremented.
- `name`: Name of the campaign.
- `start_date`: Start date of the campaign.
- `end_date`: End date of the campaign.
- `budget`: Budget allocated for the campaign.
- `employee_id`: The employee responsible for the campaign, referencing the `Employee` table.

**Relationships:**

- `employee_id` references `Employee.employee_id` with `ON DELETE CASCADE`.

## 6. Tickets Table

**Purpose:** Stores customer service tickets related to specific customers and their issues.

**Key Fields:**

- `ticket_id`: Primary key and auto-incremented.
- `customer_id`: Foreign key referencing `Customer.customer_id`.
- `issue_description`: Description of the customer issue.
- `status`: Current status of the ticket (e.g., 'Open', 'In Progress', 'Closed').
- `created_date`: Date when the ticket was created.

**Relationships:**

- `customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.

## 7. Opportunities Table

**Purpose:** Stores sales opportunities with potential customers.

**Key Fields:**

- `opportunity_id`: Primary key and auto-incremented.
- `customer_id`: Foreign key referencing `Customer.customer_id`.
- `description`: Description of the opportunity.
- `estimated_value`: Estimated value of the opportunity.
- `stage`: Stage of the opportunity (e.g., 'Prospecting', 'Qualification', 'Proposal', 'Negotiation', 'Closed Won', 'Closed Lost').
- `created_date`: Date when the opportunity was created.

**Relationships:**

- `customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.

## 8. Activities Table

**Purpose:** Tracks customer interactions, whether related to opportunities, campaigns, tickets, or leads.

**Key Fields:**

- `activity_id`: Primary key and auto-incremented.
- `related_type`: Type of related entity, such as `Opportunity`, `Campaign`, `Ticket`, or `Lead`.
- `related_id`: ID of the related entity, depending on the `related_type`.
- `activity_type`: Type of activity, such as `Call`, `Email`, `Meeting`, or `Task`.
- `activity_date`: Date when the activity took place.
- `notes`: Additional notes or details regarding the activity.

**Relationships:**

- `related_id` references:
  - `Opportunities.opportunity_id` with `ON DELETE CASCADE`.
  - `Campaigns.campaign_id` with `ON DELETE CASCADE`.
  - `Tickets.ticket_id` with `ON DELETE CASCADE`.
  - `Leads.lead_id` with `ON DELETE CASCADE`.

## 9. Accounts Table

**Purpose:** Tracks customer accounts, including account number, type, and balance.

**Key Fields:**

- `account_id`: Primary key and auto-incremented.
- `customer_id`: Foreign key referencing `Customer.customer_id`.
- `account_number`: Unique account number for the customer.

- `creation_date`: Date when the account was created.
- `account_type`: Type of the account (e.g., 'Standard', 'Premium').
- `balance`: Current balance in the account.

#### Relationships:

- `customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.

## 10. Foreign Key Constraints with ON DELETE CASCADE

The database ensures referential integrity by using the `ON DELETE CASCADE` action for various foreign key relationships. This ensures that when a referenced entity (such as a person, employee, or customer) is deleted, all related records in dependent tables (such as leads, campaigns, tickets, and opportunities) are automatically deleted, avoiding orphaned records. The following foreign keys are set with `ON DELETE CASCADE`:

- `Employee.person_id` references `Person.person_id` with `ON DELETE CASCADE`.
- `Leads.employee_id` references `Employee.employee_id` with `ON DELETE CASCADE`.
- `Campaigns.employee_id` references `Employee.employee_id` with `ON DELETE CASCADE`.
- `Opportunities.customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.
- `Tickets.customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.
- `Accounts.customer_id` references `Customer.customer_id` with `ON DELETE CASCADE`.
- `Activities.related_id` references `Opportunities.opportunity_id`, `Campaigns.campaign_id`, `Tickets.ticket_id`, and `Leads.lead_id` with `ON DELETE CASCADE`.