



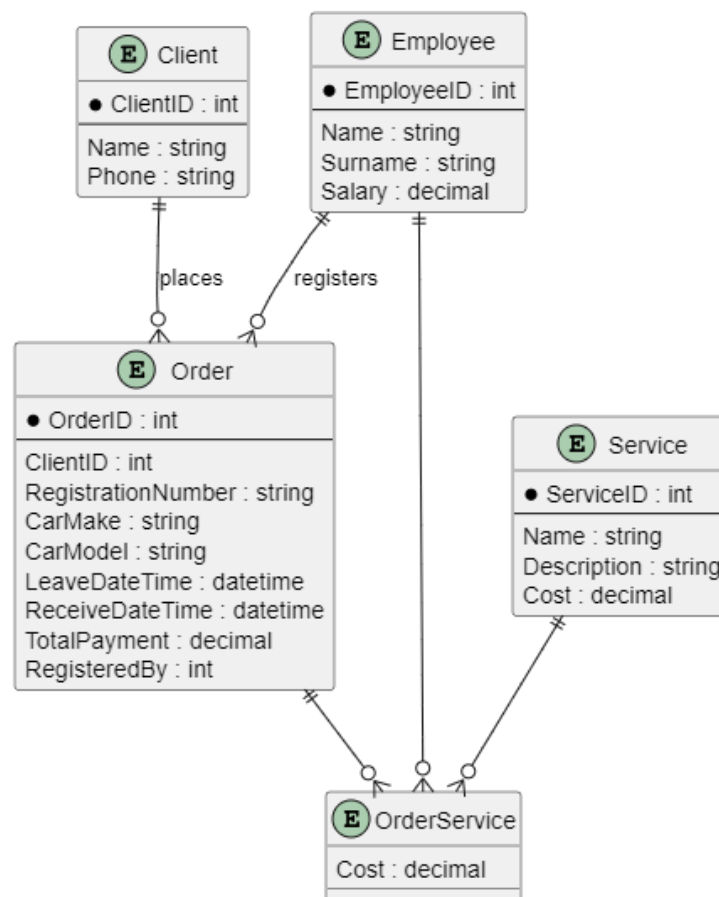
Laboratory 5 - ERD

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Task 3 - Car Service

ERD model



A **chen** notation diagram was created to model **clients**, **employees**, **orders**, and **services**.

- many-to-many relationship between **Order** and **Service**
- shows who placed and who registered an order
- shows which employee is doing which **service**

Conceptual model

```
Client(ClientID, Name, Phone)
```

```
Employee(EmployeeID, Name, Surname, Salary)
```

```
Service(ServiceID, Name, Description, Cost)
```

```
Order(OrderID, ClientID, RegistrationNumber, CarMake, CarModel,  
      LeaveDateTime, ReceiveDateTime, TotalPayment, RegisteredBy)
```

```
OrderService(OrderID, ServiceID, EmployeeID, Cost)
```

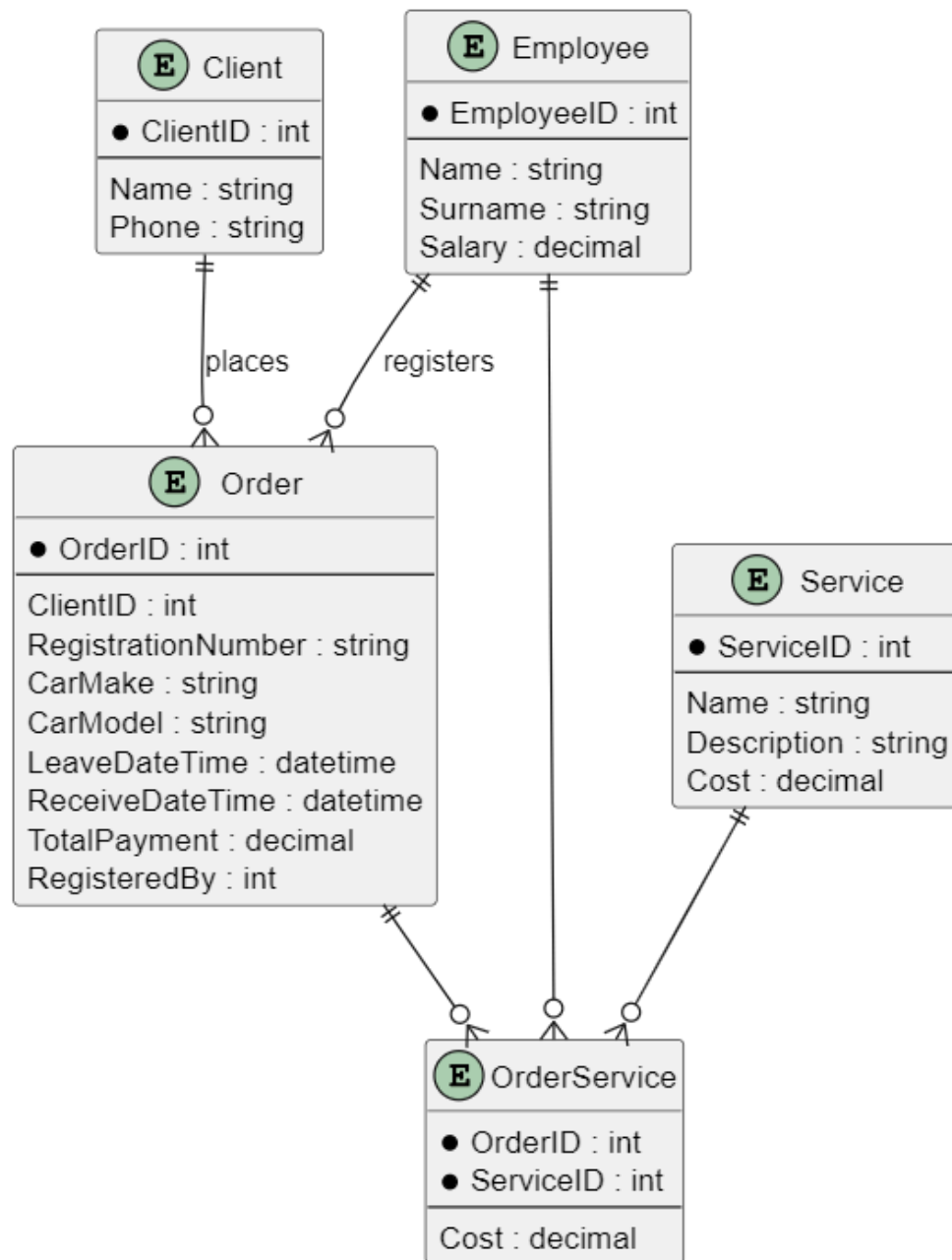
```
Places(ClientID, OrderId)
```

```
Registers(EmployeeId, OrderID)
```

A conceptual schema was defined using simplified entity-attribute notation.

- entities are described with key attributes.
- relations such as `Places`, `Registers`, and the associative `OrderService` entity describe how data relates logically.

ERD model with foreign keys



Optimized physical model

```
CREATE TABLE Client (  
  ClientID INT PRIMARY KEY,  
  Name VARCHAR(100),  
  Phone VARCHAR(20));
```

```
CREATE TABLE Employee (  
  EmployeeID INT PRIMARY KEY,  
  Name VARCHAR(100),  
  Surname VARCHAR(100),  
  Salary DECIMAL(10, 2));
```

```
CREATE TABLE Service (  
  ServiceID INT PRIMARY KEY,  
  Name VARCHAR(100),  
  Description TEXT,  
  Cost DECIMAL(10, 2));
```

```
CREATE TABLE `Order` (  
  OrderID INT PRIMARY KEY,  
  ClientID INT,  
  RegistrationNumber VARCHAR(20),  
  CarMake VARCHAR(50),  
  CarModel VARCHAR(50),  
  LeaveDateTime DATETIME,  
  ReceiveDateTime DATETIME,  
  TotalPayment DECIMAL(10, 2),  
  RegisteredBy INT,  
  FOREIGN KEY (ClientID) REFERENCES Client(ClientID),  
  FOREIGN KEY (RegisteredBy) REFERENCES Employee(EmployeeID));
```

```
CREATE TABLE OrderService (  
  OrderID INT,  
  ServiceID INT,  
  EmployeeID INT,  
  Cost DECIMAL(10, 2),  
  DiscountedCost DECIMAL(10, 2) NULL,  
  PerformedAt DATETIME DEFAULT CURRENT_TIMESTAMP,  
  PRIMARY KEY (OrderID, ServiceID, EmployeeID),  
  FOREIGN KEY (OrderID) REFERENCES `Order` (OrderID),  
  FOREIGN KEY (ServiceID) REFERENCES Service(ServiceID),  
  FOREIGN KEY (EmployeeID) REFERENCES Employee(EmployeeID),  
  INDEX idx_order (OrderID),  
  INDEX idx_service (ServiceID),  
  INDEX idx_employee (EmployeeID));
```