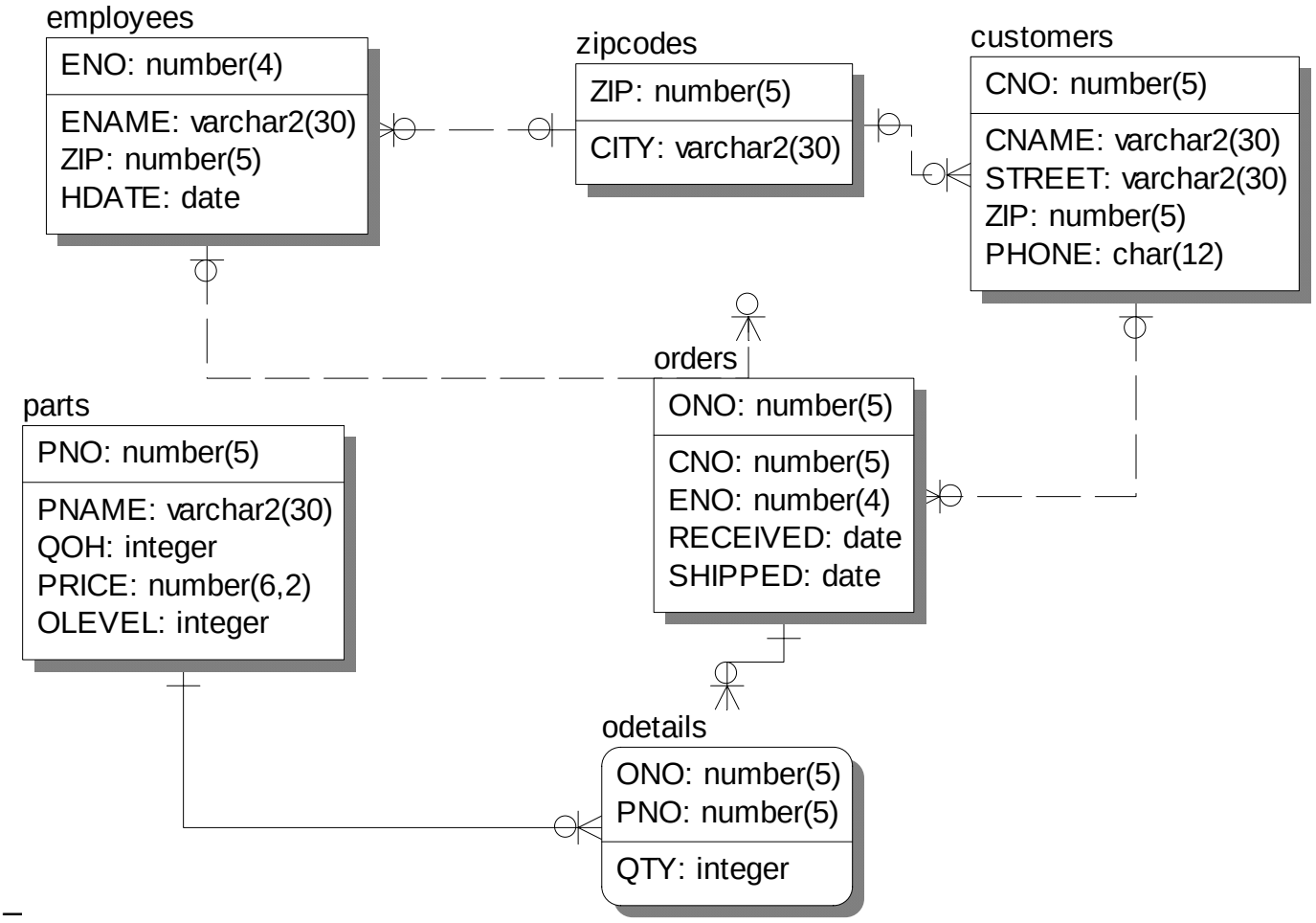
Practicing SQL

A refresher course

The schema TENNIS on Ferdia has been set up with the following data model…



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Do the following…

–Populate the tables, as directed below.

–Answer the queries listed.

–If you do not have sufficient data to satisfy the queries, add more.

Mail-Order Database Sunderraman, R., 2003, Oracle 9I Programming A Primer.

The mail-order database consists of the relations defined in the six schemes shown in Figure 1.3.

Figure 1.3 Mail-order database schemes.

```
EMPLOYEES(ENO,ENAME,ZIP,HDATE)
PARTS(PNO,PNAME,QOH,PRICE,LEVEL)
CUSTOMERS(CNO,CNAME,STREET,ZIP,PHONE)
ORDERS(ONO,CNO,ENO,RECEIVED,SHIPPED)
ODETAILS(ONO,PNO,QTY)
ZIPCODES(ZIP,CITY)
```

- The `EMPLOYEES` relation contains information about the employees of the company The `ENO` attribute is the primary key The `ZIP` attribute is a foreign key referring to the `ZIPCODES` table.
- The `PARTS` relation keeps a record of the inventory of the company The record for each part includes its number and name as well as the quantity on hand, the unit price, and the reorder level. `PNO` is the primary key for this relation.
- The `CUSTOMERS` relation contains information about the customers of the mail-order company Each customer is assigned a customer number, `CNO`, which serves as the primary key The `ZIP` attribute is a foreign key referring to the `ZIPCODES` relation.

  The `ORDERS` relation contains information about the orders placed by customers, the employees who took the orders, and the dates the orders were received and shipped. `ONO` is the primary key The `CNO` attribute is a foreign key referring to the `CUSTOMERS` relation, and the `ENO` attribute is a foreign key referring to the `EMPLOYEES` table.
- The `ODETAILS` relation contains information about the various parts ordered by the customer within a particular order. The combination of the `ONO` and `PNO` attributes forms the primary key. The `ONO` attribute is a foreign key referring to the `ORDERS` relation, and the `PNO` attribute is a foreign key referring to the `PARTS` relation.
- The `ZIPCODES` relation maintains information about the zip codes for various cities. `ZIP` is the seleprimary key

  A sample from a mail-order database is shown in Figure 1.4.

Employees

ENO	ENAME	ZIP	HDATE
1000	Jones	67226	12-DEC-95
1001	Smith	60606	01-JAN-92
1002	Brown	50302	01-SEP-94

Parts

PNO	PNAME	QOH	PRICE	LEVEL
10506	Land Before Time I	200	19.99	20
10507	Land Before Time II	156	19.99	20
10508	Land Before Time III	190	19.99	20
10509	Land Before Time IV	60	19.99	20
10601	Sleeping Beauty	300	24.99	20
10701	When Harry Met Sally	120	19.99	30
10800	Dirty Harry	140	14.99	30
10900	Dr. Zhivago	100	24.99	30

Customers

CNO	CNAME	STREET	ZIP	PHONE
1111	Charles	123 Main St.	67226	316-636-5555
2222	Bertram	237 Ash Ave.	67226	316-689-5555
3333	Barbara	111 Inwood St.	60606	316-111-1234

Orders

ONO	CNO	ENO	RECEIVED	SHIPPED
1020	1111	1000	10-DEC-94	12-DEC-94
1021	1111	1000	12-JAN-95	15-JAN-95
1022	2222	1001	20-FEB-95	20-FEB-95
1023	3333	1000	20-JUN-97	null

Odetails

ONO	PNO	QTY
1020	10506	1
1020	10507	1
1020	10508	2
1021	10509	3
1022	10601	4
1023	10601	1

Zip codes

ZIP	CITY
67226	Wichita
60606	Fort Dodge
50302	Kansas City
54444	Columbia
66002	Liberal
61111	Fort Hays1023

Exercises

2.1 To get interesting answers to queries in subsequent exercises, populate the mail-order database, using

SQL `insert` statements, with at least 30 customers, 10 employees, 5 zip codes, and 50 parts. Also insert around 100 orders (an average of about 3 per customer), with each order containing an average of 2 parts.

2.2 Populate the grade book database, using SQL `insert` statements, with at least 50 rows in the `students` table, 10 rows in the `catalog` table, 12 rows in the `courses` table, 40 rows in the `components` table (resulting in an average of between three and four components per course), 120 rows in the `enrolls` table (resulting in an average of about 10 students in each course), and the appropriate number of rows in the `scores` table to complete the database.

2.3 Consider the following relations of the mail-order database:

```
EMPLOYEES(ENO,ENAME,ZIP,HDATE)
PARTS (PNO,PNAME,QOH,PRICE,LEVEL)
CUSTOMERS(CNO,CNAME,STREET,ZIP,PHONE)
ORDERS(ONO,CNO,ENO,RECEIVED,SHIPPED)ODETAILS(ONO,PNO,QTY)
ZIPCODES(ZIP,CITY)
```

Write SQL expressions that answer the following queries:

(a) Get the names of parts that cost less than $20.00.

(b) Get the names and cities of employees who have taken orders for parts costing more than $50.00.

(c) Get the pairs of customer number values of customers having the same zip code.

(d) Get the names of customers who have ordered parts from employees living in Wichita.

(e) Get the names of customers who have ordered parts *only* from employees living in Wichita.

(f) Get the names of customers who have ordered *all* parts costing less than $20.00.

(g) Get the names of employees along with their total sales for the year 1995.

(h) Get the numbers and names of employees who have never made a sale to a customer living in the same zip code as the employee.

(i) Get the names of customers who have placed the highest number of orders.

(j) Get the names of customers who have placed the most expensive orders.

(k) Get the names of parts that have been ordered the most (in terms of quantity ordered, not number of orders).

(1) Get the names of parts along with the number of orders they appear in, sorted in decreasing order of the number of orders.

(m) Get the average waiting time for all orders in number of days. The waiting time for an order is defined as the difference between the shipped date and the received date. *Note:* The dates should be truncated to `12:00 AM` so that the difference is always a whole number of days.

(n) Get the names of customers who had to wait the longest for their orders to be shipped.

(o) For all orders greater than $100.00, get the order number and the waiting time for the order.