

Relational Databases

A relational database is a collection of tables like the ones you viewed for TAL Distributors in Chapter 1. These tables also appear in Figure 2-1. You might wonder why this type of database is not called a “table” database or something similar, if a database is nothing more than a collection of tables. Formally, these tables are called relations, and this is where this type of database gets its name.

Figure 2-1.

Rep

RepNum	LastName	FirstName	Street	City	State	PostalCode	Commission	Rate
15	Campos	Rafael	724 Vinca Dr.	Grove	CA	90092	\$23,457.50	0.06
30	Gradey	Megan	632 Liatris St.	Fullton	CA	90085	\$41,317.00	0.08
45	Tian	Hui	1785 Tyler Ave.	Northfield	CA	90098	\$27,789.25	0.06
60	Sefton	Janet	267 Oakley St.	Congaree	CA	90097	\$0.00	0.06

Customer

CustomerNum	CustomerName	Street	City	State	PostalCode	Balance	CreditLimit	RepNum
126	Toys Galore	28 Laketon St.	Fullton	CA	90085	\$1,210.25	\$7,500.00	15
260	Brookings Direct	452 Columbus Dr.	Grove	CA	90092	\$575.00	\$10,000.00	30
334	The Everything Shop	342 Magee St.	Congaree	CA	90097	\$2,345.75	\$7,500.00	45
386	Johnson's Department Store	124 Main St.	Northfield	CA	90098	\$879.25	\$7,500.00	30
440	Grove Historical Museum Store	3456 Central Ave.	Fullton	CA	90085	\$345.00	\$5,000.00	45
502	Cards and More	167 Hale St.	Mesa	CA	90104	\$5,025.75	\$5,000.00	15
586	Almondton General Store	3345 Devon Ave.	Almondton	CA	90125	\$3,456.75	\$15,000.00	45
665	Cricket Gift Shop	372 Oxford St.	Grove	CA	90092	\$678.90	\$7,500.00	30
713	Cress Store	12 Rising Sun Ave.	Congaree	CA	90097	\$4,234.60	\$10,000.00	15
796	Unique Gifts	786 Passmore St.	Northfield	CA	90098	\$124.75	\$7,500.00	45
824	Kline's	945 Gilham St.	Mesa	CA	90104	\$2,475.99	\$15,000.00	30
893	All Season Gifts	382 Wildwood Ave.	Fullton	CA	90085	\$935.75	\$7,500.00	15

Orders

OrderNum	OrderDate	CustomerNum
51608	10/12/2015	126
51610	10/12/2015	334
51613	10/13/2015	386
51614	10/13/2015	260
51617	10/15/2015	586
51619	10/15/2015	126
51623	10/15/2015	586
51625	10/16/2015	796

OrderLine

OrderNum	ItemNum	NumOrdered	QuotedPrice
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51610	KL78	25	\$10.95
51610	TR40	10	\$13.99
51613	DL51	5	\$104.95
51614	FD11	1	\$124.95
51617	NL89	4	\$115.99
51617	TW35	3	\$116.95
51619	FD11	2	\$121.95
51623	DR67	5	\$29.95
51623	FH24	12	\$36.95
51623	KD34	10	\$13.10
51625	MT03	8	\$45.79

Item

ItemNum	Description	OnHand	Category	Storehouse	Price
AH74	Patience	9	GME	3	\$22.99
BR23	Skittles	21	GME	2	\$29.99
CD33	Wood Block Set (48 piece)	36	TOY	1	\$89.49
DL51	Classic Railway Set	12	TOY	3	\$107.95
DR67	Giant Star Brain Teaser	24	PZL	2	\$31.95
DW23	Mancala	40	GME	3	\$50.00
FD11	Rocking Horse	8	TOY	3	\$124.95
FH24	Puzzle Gift Set	65	PZL	1	\$38.95
KA12	Cribbage Set	56	GME	3	\$75.00
KD34	Pentominoes Brain Teaser	60	PZL	2	\$14.95
KL78	Pick Up Sticks	110	GME	1	\$10.95
MT03	Zauberkasten Brain Teaser	45	PZL	1	\$45.79
NL89	Wood Block Set (62 piece)	32	TOY	3	\$119.75
TR40	Tic Tac Toe	75	GME	2	\$13.99
TW35	Fire Engine	30	TOY	2	\$118.95

Sample data for TAL Distributors

How does a relational database handle entities, attributes of entities, and relationships between entities? Each entity is stored in its own table. For example, the TAL Distributors database has a table for reps, a table for customers, and so on. The attributes of an entity become the fields or columns in the table. In the table for reps, for example, there is a column for the rep number, a column for the rep's last name, and so on.

What about relationships? At TAL Distributors, there is a one-to-many relationship between reps and customers. (Each rep is related to the *many* customers he or she represents, and each customer is related to the *one* rep who represents it.) How is this relationship implemented in a relational database? The answer is through common columns in two or more tables. Consider Figure 2-1 again. The RepNum columns in the Rep and Customer tables implement the relationship between reps and customers. For any rep, you can use these columns to determine all the customers the rep represents; for any customer, you can use these columns to find the rep who represents the customer. If the Customer table did not include the rep number, you would not be able to identify the rep for a given customer and the customers for a given rep.

More formally, a relation is essentially just a two-dimensional table. If you consider the tables shown in Figure 2-1, however, you might see certain restrictions that you can place on relations. Each column in a table should have a unique name, and all entries in each column