

The Book Shop Scenario

In carrying out your analysis you may find it useful to highlight each part of the text to ensure you have covered it in your model and that it is clear to you what type of information it is. Some BIG hints are already provided.

Here is a suggested key.

| TEXT | BOLD: ENTITY, <u>Attribute</u> , Nullability, Data Type, Key Information | | | RED: Unaddressed Constraint or Business Rule | | |
|-----------|--------------------------------------------------------------------------|----------------------|---------|----------------------------------------------|----------|-------|
| HIGHLIGHT | ENTITY DEFINITION | ATTRIBUTE CONSTRAINT | TRIGGER | DATA CONTENT GROWTH | SECURITY | NOISE |

1. The manager of a small book shop has asked you to design and implement a database that centralizes information so that it is easier and more efficient to man-age inventory and track orders and sales.
2. The shop handles rare and out-of-print books and tends to carry only a few thousand titles at any one time.
3. Currently, the manager tracks all of the sales and inventory on paper.
4. For each BOOK, the manager records the title, author, publisher, publication date, edition, cost, suggested retail price, and a rating that indicates the condition of the book.
5. Each book is assigned one of the following RATINGS: *superb, excellent, good, fair, poor, or damaged*.
6. The manager would like to be able to add a description to each rating (just a couple of sentences), but the description should not be required.
7. The information about each BOOK must include the title, author, cost, suggested retail price, and rating.
8. The publisher, publication date, and edition are not always available.
If the year a book was published is available, the year will never be before 1600.
And for purposes of the new database system, the publication date will never fall after the year 2099.
9. Because these books are rare, each title must be tracked individually—even if they are the same book (identical title, author, publisher, publication date, and edition).
10. Currently, the manager assigns a unique ID to each book so that identical titles can be differentiated. This ID must be included with the book information.
11. The book ID assigned by the manager is an eight-character ID made up of numbers and letters.
12. The manager also maintains limited information about each author whose books the store has carried or is carrying.
13. The store might carry more than one book by an author, and sometimes more than one author will have written a book.
14. The manager currently maintains information about approximately 2500 authors.
15. The information includes the AUTHOR's first name, last name, year of birth, and year of death (if applicable).
16. The information must include—at the very least—the author's last name.
17. The manager would like to include a brief description of each author, if available, when the author is added to the list.
18. The description will usually be no longer than one or two sentences.
19. The bookstore has 12 employees (including the manager and assistant manager).
20. The manager expects to hire an additional employee every year for the next few years.
21. Both the manager and the assistant manager must be able to access and modify information about each employee as necessary.
22. EMPLOYEE information must include each employee's first name, last name, address, phone number, date of birth, hire date, and position in the store.
23. POSITIONS include Manager, Assistant Manager, Full Time Sales Clerk, and Part Time Sales Clerk.
24. The manager might at some point want to add new job titles to the list or change existing ones and would eventually like to add a brief description of job duties to each title (at least, to some of the titles).

25. An employee can hold only one position at any one time.
26. No employee—other than the two managers—should have access to the employee information.
27. *The manager also likes to track how many books and which books each employee is selling.*
28. The bookstore currently maintains information about customers.
29. For each CUSTOMER, the information includes the customer's first name, last name, telephone number, mailing address, books that the customer has purchased, and when the purchase was made.
30. Because some customers do not like to give out personal information, only a first name or a last name is required.
31. The manager currently has a list of about 2000 customers.
32. Not all customers who are included in the list have bought books, although most have.
33. The manager maintains a record of sales by tracking each order from when a sales clerk *takes the order* to when the sale is *complete*.
34. In some cases, such as for walk-in customers, these two events occur concurrently.
35. Each ORDER must include information about the book sold, the customer who bought the book, the salesperson who sold the book, the amount of the sale, and the date of the order.
36. The order must also include the delivery or pickup date, which is added after the merchandise is actually picked up or delivered.
37. An *order is completed* when a book has been paid for and picked up at the store or paid for and shipped to the customer.
38. A book cannot be taken out of the store or shipped unless it is paid for.
39. Each order includes the payment method and the status of the order.
40. PAYMENT METHODS include cash, check, and credit cards.
41. The STATUS of an order must be one of the following: (1) to be shipped, (2) customer will pick up, (3) shipped, or (4) picked up.
42. An order can contain only one customer, salesperson, order date, delivery date, payment method, and order status; however, an order can contain one or more books.
43. Currently, orders are generated, tracked, and modified on paper order forms.
44. The forms are used to make sure that the orders get shipped (if applicable) and to maintain a record of sales.
45. Whenever a book is added to an order, it is removed from the inventory list.
46. This process has been very tedious and not always very efficient.
47. This situation can also lead to confusion and mistakes.
48. Ideally, the manager would like sold books to remain in the list of books but be marked somehow to show that the book has been sold.
49. The store sells about 20 books a day.
50. The store is open five days a week for about 10 hours a day.
51. There are *one to two salespeople* working at the *same time*, and there are two sales counters where people pick up and pay for books and where salespeople process orders.
52. At least *one manager* is in the store *at one time*.
53. The manager expects sales to increase by about 10 percent each year.
54. As a result, the number of books on hand, authors, and customers should all increase at about the same rate.
55. In order to serve customers effectively, each employee must be able to access a centralized source of information about authors, books in stock, customers, and orders.
56. Currently, employees access this information from index cards and lists.
57. Often, these lists are not up-to-date, and errors are made.
58. In addition, each employee should be able to create, track, and modify orders online, rather than having to maintain paper order forms.
59. Only the managers should be able to modify information about authors, books, and customers, however.