3.3 Using a Database

▶ **GOAL**

Use a database to sort and locate data.

Learn about the Math

Marianne coaches a girls' softball team. She is using a **database** to store data about the players. She is looking at each player's **record** to determine who is the best batter on the team.

- The orange row is a single record: all the data about one player.
- The yellow column is a single **field** : one type of data about all the players.
- The green cell is the position. The number in it is the **entry** . This entry is in a numeric field because it uses numbers.

? **How can you use this database to find the best batter on the team?**

A. In a database, each field should serve a particular purpose, or have a reason for being included. What fields are shown above?

B. A field can be a text field, a numeric field, a date field, or a memo field. Which type of field is each field in Marianne's database?

C. Which field has Marianne used to **sort** the information above?

D. State the name that would appear first if you sorted the information in the database by each of the following.

a) last name   **c)** times at bat

b) first name   **d)** phone number

E. Marianne wants her best batter to be up third. How should she sort the database to find her best batter? Which player should she choose to bat third? Why might someone disagree?

database

an organized set of information, often stored on a computer

record

all the data about one item in the database; for example, one player (see orange row)

field

a category used as part of a database; for example, last name (see yellow column)

entry

a single piece of data in a database; for example, home runs for one player (see green cell)

sort

order information from greatest (or first) to least (or last); a database can be sorted by fields
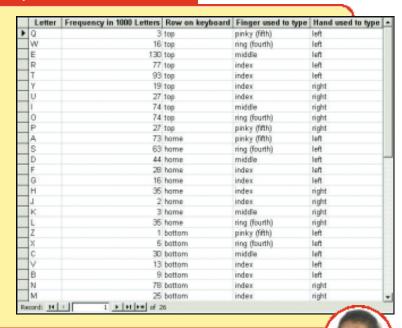
Reflecting

1. a) Why would it not make sense for Marianne to rank her players by sorting the database using "Phone #"? Why is it useful to have this field anyway?

b) What other fields might a coach find useful? Explain.

2. Marianne's database contains information for only 9 players. Suppose it is changed to hold the data for all 15 players on the team. How might the revised database be used?

3. Who might have information about you or your family in a database? Give two examples.

Work with the Math

Example 1: Sorting a database for letter frequencies

Indira decides to create a database for the information about the QWERTY keyboard and letter frequencies in lesson 3.1. Her database is shown. How can Indira sort her database to find out how many of the 10 most frequent letters are typed with the left hand?
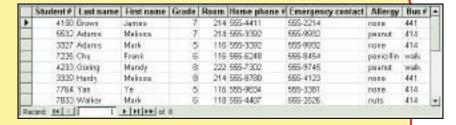
Letter	Frequency in 1000 Letters	Row on keyboard	Finger used to type	Hand used to type
Q	3	top	pinky (fifth)	left
W	16	top	ring (fourth)	left
E	130	top	middle	left
R	77	top	index	left
T	93	top	index	left
Y	19	top	index	right
U	27	top	index	right
I	74	top	middle	right
O	74	top	ring (fourth)	right
P	27	top	pinky (fifth)	right
A	73	home	pinky (fifth)	left
S	63	home	ring (fourth)	left
D	44	home	middle	left
F	28	home	index	left
G	16	home	index	left
H	35	home	index	right
J	2	home	index	right
K	3	home	middle	right
L	35	home	ring (fourth)	right
Z	1	bottom	pinky (fifth)	left
X	5	bottom	ring (fourth)	left
C	30	bottom	middle	left
V	13	bottom	index	left
B	9	bottom	index	left
N	78	bottom	index	right
M	25	bottom	index	right

Record: 14 ◀ 1 ▶ ▶I ▶* of 26

Indira's Solution

Letter	Frequency in 1000 letters	Row on keyboard	Finger used to type	Hand used to type
E	130	top	middle	left
T	93	top	index	left
N	78	bottom	index	right
R	77	top	index	left
I	74	top	middle	right
O	74	top	ring (fourth)	right
A	73	home	pinky (fifth)	left
S	63	home	ring (fourth)	left
D	44	home	middle	left
H	35	home	index	right

Record: 14 ◀ 10 ▶ ▶I ▶* of 26

I sorted by the field "Frequency in 1000 letters." I used the "sort" button and chose "descending" instead of "ascending" to list the letters from greatest to least frequent. I see the letters in descending order of frequency. Six of these letters are typed with the left hand.

Data Management **89**

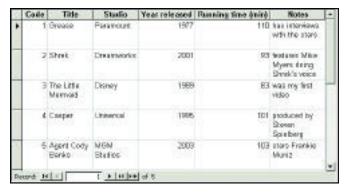## Ⓐ Checking

4. State which name will appear last if Mrs. Cooper sorts the database by the following information.

a) grade, from highest to lowest

b) grade, from lowest to highest

c) room number, from greatest to least

d) room number, from least to greatest

5. Which kind of field (text, numeric, date, or memo) should you choose if you want to sort the following data?

a) e-mail addresses

b) math marks

c) shoe sizes

d) comments about student effort

e) days when deliveries are expected
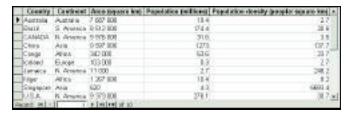
f) ingredients in cereal

Ⓑ Practising

6. So far, Anthony has input the following data in a database of all the videos his family owns.

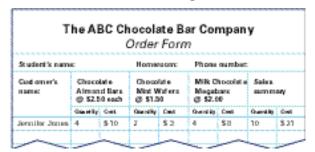| Code	Title	Studio	Year released	Running time (min)	Notes
1	Grease	Paramount	1977	110	has interviews with the stars
2	Shrek	Dreamworks	2001	93	features Mike Myers doing Shrek's voice
3	The Little Mermaid	Disney	1989	83	was my first video
4	Casper	Universal	1995	101	produced by Steven Spielberg
5	Agent Cody Banks	MGM Studios	2003	103	stars Frankie Muniz

Record: |◄ ◄| 1 |► ►| ►*| of 5

a) Identify which fields are numeric, text, date, or memo.

b) If Anthony sorts his database by "Year released" (from most recent to least recent), which movie will be third?

7. The following database lists information about different countries in the world.

a) How is the data sorted in this database?

b) If you sorted this database by population, which country would appear first?

c) If Iceland appeared last, which field would you have used to sort?

d) If Singapore appeared first, which field would you have used to sort?

e) If you sorted this database in increasing order by area, what would be the first five countries?

8. As a school fundraiser, students are selling chocolates. This is a sample order form.

a) How is an order form the same as a record in a database?

b) Explain how you could use the information in the order form to create a database for the school.

c) Use a computer to create a sample database from the order form.

9. Not all databases are computerized. You use a database every time you look up a phone number in the phone book. What databases would you use to find the following information?

a) what to order in a restaurant

b) how to spell a word

c) tomorrow's weather conditions

d) an alternate word for "good"

e) the area of a country

10. Katya wants to get some information for a project on probability. She goes to the school library and uses the library's database to find the following information.

Identify which field Katya should use for each situation.

a) if she wants the most recent book

b) before she looks for the book on the shelves

c) when she is trying to find the book on the shelves

d) if she wants to find other books by the same author

Extending

11. Describe how each worker might use a database.

a) a family doctor   c) a police officer

b) a veterinarian   d) a real estate agent