Here is an example to illustrate the algorithm. Suppose a credit card statement showed a previous balance of $850. Eleven days before the end of the billing cycle, a payment of $400 is made. The billing cycle for the month is 31 days, and the monthly interest rate is 1.32%. The calculation of the interest charge is as follows:

Step 1. $850 × 31 = $26,350
Step 2. $400 × 11 = $4,400
Step 3. $26,350 – $4,400 = $21,950
Step 4. $21,950 ÷ 31 = $708.06
Step 5. $708.06 × 0.0132 = $9.34

Write a program that computes the monthly interest charge on a credit card account. Your program should acquire as input the previous balance, the payment amount, the number of days in the billing cycle, the day of the billing cycle the payment was made, and the monthly interest rate.

2.40   Suppose a, b, and c are **int** variables initialized respectively to 1, 2, and 3. What values are assigned to e, f, and g?

a) **int** e = ++a;
b) **int** f = b++;
c) **int** g = ++c + c++;

2.41   Write a code segment that defines a Scanner variable stdin that is associated with System.in. The code segment should then define two **int** variables a and b such that they are initialized with the next two input values from the standard input stream.

<table>
<tr><td>**2.11**</td><td>**PROGRAMMING PROJECT — YOU**</td></tr>
</table>

Developing software can be a rewarding experience—it is a chance to be both creative and analytical. People of all sorts report high levels of satisfaction in completing a programming task and demonstrating its capabilities. The goal of this introductory problem-solving case study and our other case studies is for you to experience such satisfaction as you learn to program and problem solve in Java.

> The objective of this case study is to practice the display of information using methods print() and println()

At the end of the main body of each chapter, we present a problem or two for you to consider. The problems have been selected for their relevance to the concepts being discussed, as well as being appropriately complex and interesting to a broad range of people. We provide background and problem-solving guidance on how to go about designing and implementing solutions.

The first case study is a personal one—design and produce a display giving a short autobiography that could be used as part of an application for a club membership. The information you supply and how you present it is your choice. However, at a minimum you must supply contact information such as your name and e-mail address. To get you

started, you may consider describing some of your personal favorites (e.g, author, artist, music, activities) and plans (e.g., career, travel).

ANALYSIS AND DESIGN

So what tasks must be accomplished to produce a Java program that creates the desired display? For one, you must determine what personal information is to be displayed. For another, you must determine how the information is to be displayed. After making these decisions, you can create a preliminary design of the information and its layout. You might want to get feedback from friends. They can make suggestions on the information to make sure it is sufficiently interesting.

Snapshots of our own personal efforts are given in Figure 2.5 and Figure 2.6.

Figure 2.5   **A MeDisplay compilation and run.**


```
Java Program Design

cmd:  javac MeDisplay.java

cmd:  java MeDisplay

Jim Cohoon was born in Brooklyn, NY and grew up in NJ, the Garden
State.  At first, Jim wanted to play centerfield for the the NY
Yankees. However, because he is unable to hit a curveball, he
decided becoming a Computer Science professor was a better choice.
He also has an interest in an appointment to the Supreme Court.

In his spare time, Jim enjoys tandem bicycling and indoor rowing,
reading, music, movies, traveling, going to museums, and being with
his family.  His favorite books include Mark Helprin's "A Soldier of
the Great War", Norman Mailer's "Harlot's Ghost", Gore Vidal's
"Lincoln", and Bob Woodward and Scott Armstrong's "Brethren".
He hopes to write a great American novel some day.

Jim frequently listens to Neil Young's "Mirrorball" and "Freedom",
Natalie Merchant's "Tigerlily", and George Harrison's "All Things
Must Pass" and "Brainwashed".

Jim enjoys many movies, but he is partial to science fiction movies,
movies that star Sean Connery, Robert DeNiro, Clint Eastwood, Gene
Hackman, Tom Hanks, Rene Russo, or Meyrl Streep, and movies directed
by Francis Ford Coppola, Spike Lee, Michael Mann, or Martin Scorsese.

His favorite artist is Leonardo DaVinci and his favorite paintings
are Da Vinci's Mona Lisa and Winslow Homer's "Blowing the Dinner
Horn (Blowing the Horn at Seaside)"

Jim has traveled much but not enough.  Future plans include visiting
the Galapalgos, Antarctica, and outer space.

Jim Cohoon can be contacted via his publisher, McGraw-Hill.

cmd:
```
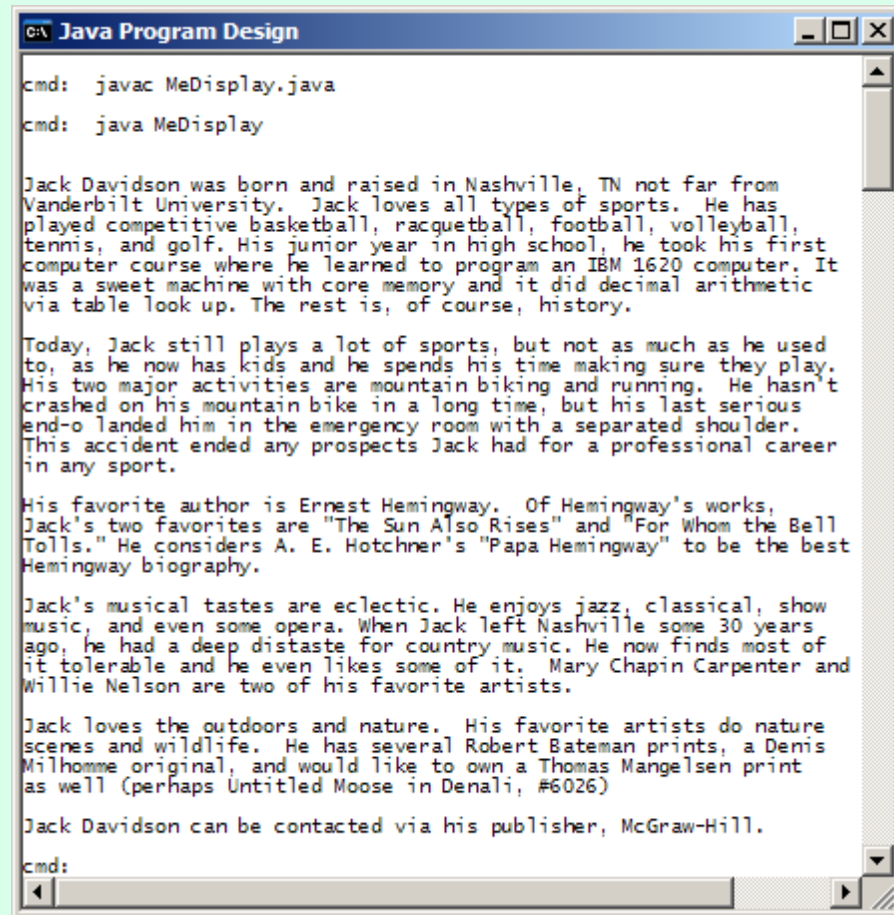
Implementation

Name the program `MeDisplay.java`. To implement and run the program, you will need access to Java tools. Some versions of this text are bundled with a CDROM supplying a

100   *Java basics*

Figure 2.6   A MeDisplay compilation and run.

Java IDE for you to use. In addition, our website `www.javaprogramdesign.com` contains links to some freely available tools such as the SDK.

For this case study, you will develop a class `MeDisplay` that consists of a single method `main()`. The class should be documented and laid out appropriately. For example, the code should make use of program header and method comments, whitespace and a consistent indentation scheme.

For your information, our programs produced each line of text using individual statements.

TESTING

Just as you should seek the comments of others to evaluate your preliminary design, you should also demonstrate your working program to others to get advice on how the presentation might be improved.