4. Write code to construct a Scanner object to read the file input.txt, which exists in the same folder as your program.

Section 6.2: Details of Token-Based Processing

5. Given the following line of input, what tokens does a Scanner break the line apart into?

```
welcome...to the matrix.
```

   a. "welcome", "to", "the", "matrix"
   b. "welcome...to the matrix."
   c. "welcome...to", "the", "matrix."
   d. "welcome...", "to", "the matrix."
   e. "welcome", "to the matrix"

6. Given the following lines of input, what tokens does a Scanner break the line apart into?

```
in fourteen-hundred 92
columbus sailed the ocean blue :)
```

   a. "in", "fourteen-hundred", "92"
   b. "in", "fourteen-hundred", "92", "columbus", "sailed", "the", "ocean", "blue", ":)"
   c. "in", "fourteen", "hundred", "92", "columbus", "sailed", "the", "ocean", "blue"
   d. "in", "fourteen-hundred", "92\ncolumbus", "sailed", "the", "ocean", "blue :)"
   e. "in fourteen-hundred 92", "columbus sailed the ocean blue :)"

7. How many tokens are there in the following input, and what Scanner method(s) can be used to read each of the tokens?

```
Hello there,how are you?
I am "very well", thank you.
12 34 5.67 (8 + 9) "10"
```

8. What is wrong with the following line of code?

```
Scanner input = new Scanner(new File("C:\temp\new files\test.dat"));
```

   (Hint: Try printing the String in this line of code.)

9. Answer the following questions about a Java program located on a Windows machine in the folder C:\Documents and Settings\amanda\My Documents\programs:

   a. What are two legal ways you can refer to the file C:\Documents and Settings\amanda\My Documents\programs\numbers.dat?
   b. How can you refer to the file C:\Documents and Settings\amanda\My Documents\programs\data\homework6\input.dat?
   c. How many, and in what legal, ways can you refer to the file C:\Documents and Settings\amanda\My Documents\homework\data.txt?

10. Answer the following questions about a Java program located on a Linux machine in the folder /home/amanda/Documents/hw6:

   a. What are two legal ways you can refer to the file /home/amanda/Documents/hw6/names.txt?
   b. How can you refer to the file /home/amanda/Documents/hw6/data/numbers.txt?
   c. How many legal ways can you refer to the file /home/amanda/download/saved.html?

11. The following program contains 6 mistakes! What are they?

```
1  public class Oops6 {
2      public static void main(String[] args) {
3          Scanner in = new Scanner("example.txt");
4          countWords(in);
5      }
6
7      // Counts total lines and words in the input scanner.
8      public static void countWords(Scanner input) {
9          Scanner input = new Scanner("example.txt");
10         int lineCount = 0;
11         int wordCount = 0;
12
13         while (input.nextLine()) {
14             String line = input.line();       // read one line
15             lineCount++;
16             while (line.next()) {              // tokens in line
17                 String word = line.hasNext;
18                 wordCount++;
19             }
20         }
21     }
22 }
```

Section 6.3: Line-Based Processing

12. For the next several questions, consider a file called readme.txt that has the following contents:

```
6.7      This file has
     several input lines.

 10 20        30    40

test
```

What would be the output from the following code when it is run on the readme.txt file?

```
Scanner input = new Scanner(new File("readme.txt"));
int count = 0;
while (input.hasNextLine()) {
    System.out.println("input: " + input.nextLine());
    count++;
}
System.out.println(count + " total");
```

13. What would be the output from the code in the previous exercise if the calls to hasNextLine and nextLine were replaced by calls to hasNext and next, respectively?

14. What would be the output from the code in the previous exercise if the calls to hasNextLine and nextLine were replaced by calls to hasNextInt and nextInt, respectively? How about hasNextDouble and nextDouble?

15. Given the following file contents, what will be the output from each of the following code fragments?

```
the quick brown
   fox    jumps


      over
the lazy    dog
```

a.

```java
Scanner input = new Scanner(new File("brownfox.txt"));
while (input.hasNextLine()) {
    String line = input.nextLine();
    System.out.println(line);
}
```

b.

```java
Scanner input = new Scanner(new File("brownfox.txt"));
while (input.hasNext()) {
    String token = input.next();
    System.out.println(token);
}
```

16. Write a program that prints itself to the console as output. For example, if the program is stored in Example.java, it will open the file Example.java and print its contents to the console.

17. Write code that prompts the user for a file name and prints the contents of that file to the console as output. Assume that the file exists. You may wish to place this code into a method called printEntireFile.

18. Write a program that takes as input lines of text like the following:

```
This is some
text here.
```

The program should produce as output the same text inside a box, as in the following:

```
+--------------+
| This is some |
| text here.   |
+--------------+
```

Your program will have to assume some maximum line length (e.g., 12 in this case).

Section 6.4: Advanced File Processing

19. What object is used to write output to a file? What methods does this object have available for you to use?

20. Write code to print the following four lines of text into a file named message.txt:

```
Testing,
1, 2, 3.

This is my output file.
```