EX 12.1 Compare and Contrast data types, abstract data types and data structures.

EX 12.4 Hand Trace an initially empty stack X thought the following operations:

```
X.push(new Integer(4));
X.push(new Integer(3));
Integer Y = X.pop();
X.push(new Integer(7));
X.push(new Integer(2));
X.push(new Integer(5));
X.push(new Integer(9));
Integer Y = X.pop();
X.push(new Integer(3));
X.push(new Integer(9));
```

EX 12.5 Given the resulting stack X from the previous exercise, what would be the result of each of the following?

a. Y = X.peek();

b. Y = X.pop();
   Z = X.peek();

c. Y = X.pop();
   Z = X.peek();

EX 12.7 Show how the undo operation in a word processor can be sup- ported by the use of a stack. Give specific examples and draw the contents of the stack after various actions are taken.

PP 12.1 Complete the implementation of the ArrayStack class presented in this chapter. Specifically, complete the implementations of the peek, isEmpty, size, and toString methods.

PP 12.4 The array implementation in this chapter keeps the top variable pointing to the next array position above the actual top of the stack. Rewrite the array implementation such that stack[top] is the actual top of the stack.