Chapter 8

Arrays

PP 8.4 The lines in the histogram in PP 8.3 will be too long if a large number of students score in the same range. Modify the program so that it prints a hash for every three students in each range. Ignore leftovers. For example, if a range has 11 students, print three hashes in that row. If a category has 2 students, do not print any hashes in that row.

PP 8.5 Write a program that computes and prints the mean and standard deviation of a list of integers x₁ through xₙ. Assume that there will be no more than 50 input values. Compute both the mean and standard deviation as floating point values, using the following formulas.

\[
\text{mean} = \frac{\sum_{i=1}^{n} X_i}{n}
\]

\[
\text{sd} = \sqrt{\frac{\sum_{i=1}^{n} (X_i - \text{mean})^2}{n}}
\]

PP 8.6 The L&L Bank can handle up to 30 customers who have savings accounts. Design and implement a program that manages the accounts. Keep track of key information and allow each customer to make deposits and withdrawals. Produce appropriate error messages for invalid transactions. Hint: You may want to base your accounts on the Account class from Chapter 4. Also provide a method to add 3 percent interest to all accounts whenever the method is invoked.

PP 8.7 The programming projects of Chapter 4 discussed a Card class that represents a standard playing card. Create a class called DeckOfCards that stores 52 objects of the Card class. Include methods to shuffle the deck, deal a card, and report the number of cards left in the deck. The shuffle method should assume a full deck. Create a driver class with a main method that deals each card from a shuffled deck, printing each card as it is dealt.

PP 8.8 Write a program that reads a sequence of up to 20 pairs of employee names and IDs. Store the data in an object designed to store a first name (string), last name (string), and an employee ID (integer). Assume each line of input will contain two strings followed by an integer value, each separated by a tab character. Then, after the input has been read in, print the list in an appropriate format to the screen.