Programming 1

Tutorial 8

# Activity 1

Write a program to generate 100 random integers between 2 and 1000 and print out the probability (in percentage) that a number is a prime number.

# Activity 2

Write a method sumWithoutSmallest that computes the sum of an array of values, except for the smallest one, using only a single loop. Write a main method to test this method.

# Activity 3

Write a method removeEvenLength that takes an ArrayList of Strings as a parameter, then removes all of the strings of even length from the list. The method signature should be:

public static void removeEvenLength(ArrayList<String> arrList)

In this case, the method receives a reference to an ArrayList object and modifies its content. So the purpose is to modify the existing ArrayList object, not creating and returning a new one. This situation is called “Call by Reference” and it applies to all types of objects including arrays (refer to Special Topic 8.1 in the Big Java textbook for more details). Write a main method to test this method.

# Activity 4 (\*)

Write a static method named countLastDigits that accepts an array of integers as a parameter and examines its elements to determine how many end in 0, how many end in 1, how many end in 2, etc. Your method will return an array of counts. The count of how many elements end in 0 should be stored in its element at index 0, how many of the values end in 1 should be stored in its element at index 1, and so on.

For example, if an array named list contains the values:

{9, 29, 44, 103, 2, 52, 12, 12, 76, 35, 20}

…the call of countLastDigits(list) should return the array:

{1, 0, 4, 1, 1, 1, 1, 0, 0, 2}

# Activity 5 (\*)

Write a method named shiftRight that accepts an array of integers as a parameter and shifts the values in the array to the right (forward) by one position. Each element moves right by one, except the last element, which moves to the front. For example, if a variable named list refers to an array containing the values {3, 8, 19, 7}, the call of shiftRight(list) should modify it to contain {7, 3, 8, 19}. A subsequent call of shiftRight(list) would turn the array into the following: {19, 7, 3, 8}.

Because the input array is passed into the method by reference, there are 2 different ways to do this exercise:

1. Create a new array, copy elements from input array over, return the new array.
2. Write the method as void and manipulate the input array. In this way, the input array is modified.