การทดลองที่ 3

Chapter 6 Methods - Chapter 7 Single-Dimensional Arrays - Chapter 8 Multidimensional Arrays

1. Programming Exercise 6.26 p.262 (Palindromic prime)

A palindromic prime is a prime number and also palindromic. For example, 131 is a prime and also a palindromic prime, as are 313 and 757. Write a program that displays the first 100 palindromic prime numbers. Display 10 numbers per line, separated by exactly one space, as follows:

```
2 3 5 7 11 101 131 151 181 191
313 353 373 383 727 757 787 797 919 929
```

Hint: See Listing 5.15 p.189(PrimeNumber.java)

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2. Programming Exercise 7.31 p.283 (Merge two sorted lists)

Write the following method that merges two sorted lists into a new sorted list.

public static int[] merge(int[] list1, int[] list2)

Implement the method in a way that takes at most list1.length + list2.length comparisons. Write a test program that prompts the user to enter two sorted lists and displays the merged list. Here is a sample run. Note that the first number in the input indicates the number of the elements in the list. This number is not part of the list.

```
Enter list1: 1 5 16 61 111 <Enter>
Enter list2: 2 4 5 6 <Enter>
The merged list is 1 2 4 5 5 6 16 61 111
```

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3. Programming Exercise 8.14 p.310 (Explore matrix)

Write a program that prompts the user to enter the length of a square matrix, randomly fills in 0s and 1s into the matrix, prints the matrix, and finds the rows, columns, and diagonals with all 0s or 1s. Here is a sample run of the program:

```
Enter the size for the matrix: 4 <Enter>
0111
0000
0100
1111

All 0s on row 1
All 1s on row 3
No same numbers on a column
No same numbers on the superdiagonal
No same numbers on the diagonal
No same numbers on the subdiagonal
```

Remark:
The subdiagonal of a square matrix is the set of elements directly under the elements comprising the diagonal.
The superdiagonal of a square matrix is the set of elements directly above the elements comprising the diagonal.
