

Tutorial 4

Exercise 1

Given the following Java code:

```
public class Test {
    public static void show(int [] arr) {
        for (int i = 0; i < arr.length-1; i++)
            System.out.print(arr[i] + ", ");
        System.out.println(arr[arr.length-1]);
    }

    public static void asort(int [] element) {
        int temp, s = 1;
        for (int k = element.length - 1; k > 0; k--) {
            for (int i = 0; i < k; i++)
                if (element[i] > element[i+1]) {
                    temp = element[i];
                    element[i] = element[i+1];
                    element[i+1] = temp;
                }
            System.out.print ("Pass " + s++ + " = ");
            show(element);
        }
    }

    public static void main(String [] args) {
        int [] num = {5, 9, 23, 35, 6, 17, 13, 43, 12 };
        asort(num);
    }
}
```

- (a) Specify the name of the sorting method carried out by asort() method.
- (b) Show the output after executing java Test.
- (c) A better algorithm for asort() method is that it can terminate the sorting process earlier once it has found the elements in the array are in ascending order. Modify the asort() method to this early terminating version.

Exercise 2

If the bubble sort is used for the following sequence of integers:

4, 7, 5, 9, 6, 3, 2, 8, 1

show the output of the first six bubbling passes.

Exercise 3

Modify the code given in *exercise 1* to implement *selection sort*.

Review

1. Double-click bookprog.zip to extract bookprog folder. The bookprog/applications folder contains all Java codes presented in the lectures.
(To compile the package, please refer to “Compiling Java Packages”)
2. Read the corresponding lecture slides (Lecture Notes 4 and 5) for the compilation and execution. Understand those Java source codes, compile and execute them.