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Class : CS-146

The image shows two screenshots of an IDE (likely IntelliJ IDEA) displaying Java code and its execution results. The first screenshot shows the BubbleSort.java file, and the second screenshot shows the SelectionSort.java file. Both files are part of a project named 'homework_2'.

First Screenshot: BubbleSort.java

```
1 package homework;
2
3 public class BubbleSort {
4     public static void main(String[] args) {
5         int[] array = { 76, 54, 47, 88, 64, 26, 59, 97, 71, 9, 97, 8, 79, 20, 77, 83, 65, 62, 76, 65, 92, 80, 36, 33,
6             59, 40, 96, 90, 94, 10, 38, 16, 52, 26, 35, 100, 53, 98, 19, 50, 62, 59, 74, 36, 10, 96, 89, 38, 76,
7             63 };
8
9         System.out.println("Original array: ");
10        printArray(array);
11
12        bubbleSort(array);
13
14        System.out.println("Sorted array: ");
15        printArray(array);
16    }
17
18    public static void bubbleSort(int[] array) {
19        int n = array.length;
20        boolean swapped;
21
22        for (int i = 0; i < n - 1; i++) {
23            swapped = false;
24            for (int j = 0; j < n - i - 1; j++) {
25                if (array[j] > array[j + 1]) {
26                    // Swap elements
27                    int temp = array[j];
28                    array[j] = array[j + 1];
29                    array[j + 1] = temp;
30                    swapped = true;
31                }
32            }
33            if (!swapped) break;
34        }
35    }
36
37    public static void printArray(int[] array) {
38        for (int i = 0; i < array.length; i++) {
39            System.out.print(array[i] + " ");
40            if (i % 10 == 9) System.out.println();
41        }
42    }
43 }
```

Terminal Output:

```
Sorted array:
8 9 10 16 19 20 26 26 33 35 36 36 38 38 40 47 50 52 53 54 59 59 59 62 62 63 64 65 65 71 74 76 76 77 79 80 83 88 89 90 92 94 96 96 97 97 98 100

PS C:\Users\linhu\SJSU\homework_2> cd 'c:\Users\linhu\SJSU\homework_2'; & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\linhu\SJSU\homework_2\lavo\target\classes' 'homework.BubbleSort'
Original array:
76 54 47 88 64 26 59 97 71 9 97 8 79 20 77 83 65 62 76 65 92 80 36 33
59 40 96 90 94 10 38 16 52 26 35 100 53 98 19 50 62 59 74 36 10 96 89 38 76 63

Sorted array:
8 9 10 16 19 20 26 26 33 35 36 36 38 38 40 47 50 52 53 54 59 59 59 62 62 63 64 65 65 71 74 76 76 77 79 80 83 88 89 90 92 94 96 96 97 97 98 100

PS C:\Users\linhu\SJSU\homework_2>
```

Second Screenshot: SelectionSort.java

```
1 package homework;
2
3 public class SelectionSort {
4     public static void main(String[] args) {
5         int[] array = { 97, 72, 97, 49, 76, 88, 97, 9, 100, 57, 35, 73, 18, 85, 33, 49, 94, 72, 74, 22, 8, 21, 61, 34,
6             75, 54, 43, 26, 28, 79, 60, 10, 4, 63, 48, 89, 83, 18, 45, 51, 93, 17, 84, 47, 20, 9, 32, 96, 82, 70 };
7
8         System.out.println("Original array: ");
9         printArray(array);
10
11        selectionSort(array);
12
13        System.out.println("Sorted array: ");
14        printArray(array);
15    }
16
17    public static void selectionSort(int[] array) {
18        int n = array.length;
19
20        for (int i = 0; i < n - 1; i++) {
21            int minIndex = i;
22
23            // Find the index of the minimum element in the unsorted part of the array
24            for (int j = i + 1; j < n; j++) {
25                if (array[j] < array[minIndex]) {
26                    minIndex = j;
27                }
28            }
29            // Swap elements
30            int temp = array[i];
31            array[i] = array[minIndex];
32            array[minIndex] = temp;
33        }
34    }
35
36    public static void printArray(int[] array) {
37        for (int i = 0; i < array.length; i++) {
38            System.out.print(array[i] + " ");
39            if (i % 10 == 9) System.out.println();
40        }
41    }
42 }
```

Terminal Output:

```
Original array:
97 72 97 49 76 88 97 9 100 57 35 73 18 85 33 49 94 72 74 22 8 21 61 34 75 54 43 26 28 79 60 10 4 63 48 89 83 18 45 51 93 17 84 47 20 9 32 96 82 70

Sorted array:
4 8 9 9 10 17 18 18 20 21 22 26 28 32 33 34 35 43 45 47 48 49 51 54 57 60 61 63 70 72 73 74 75 76 79 82 83 84 85 88 89 93 94 96 97 97 97 100

PS C:\Users\linhu\SJSU\homework_2> cd 'c:\Users\linhu\SJSU\homework_2'; & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\linhu\SJSU\homework_2\lavo\target\classes' 'homework.SelectionSort'
Original array:
97 72 97 49 76 88 97 9 100 57 35 73 18 85 33 49 94 72 74 22 8 21 61 34 75 54 43 26 28 79 60 10 4 63 48 89 83 18 45 51 93 17 84 47 20 9 32 96 82 70

Sorted array:
4 8 9 9 10 17 18 18 20 21 22 26 28 32 33 34 35 43 45 47 48 49 51 54 57 60 61 63 70 72 73 74 75 76 79 82 83 84 85 88 89 93 94 96 97 97 97 100

PS C:\Users\linhu\SJSU\homework_2>
```