



GIFT School of Engineering and Applied Sciences

Fall 2021

CS-240: Object-oriented Programming

Lab-4 Manual

File I/O (Scanner for Read and Write)

Task #1: Writing to the file

In this task, you are being asked to write to the text file in Java.

Write a program to write your name, id, and discipline to the file named ***output-1-3.txt***. In the first line, write your name, in the second line write your Id, and in the third line write your discipline.

An ***example*** of the output could be:

Abdullah

19124578

BS Computer Science

NOTE: Write the output to the ***output-1-3.txt*** file.

1. Create a program called **FileOutputLab3.java**.
2. Correctly write the output with appropriate messages.

Task #2: File I/O

In this task, you are being asked to write and read to and from the text file in Java.

Write a program to read from file named ***input-2-3.txt***. In this file, there are three integer numbers separated by spaces. Read all the numbers and calculate the sum, then write the sum in the output file named ***output-2-3.txt***.

For example, if the contents of the file are **8 5 6** then the program, should write **19** to the output file.

NOTE: Read the input from the ***input-2-3.txt*** file.

Write the output to the ***output-2-3.txt*** file.

1. Create a program called **FileIOSumNumbersLab3.java**.
2. Correctly write the output with appropriate messages.

Task #3: Arrays, Methods and File I/O

In this task, you are being asked to write methods that manipulate arrays, and write and read to and from the text file in Java.

Write a method called **getFirstRepeatingNumber** that accepts one integer array as argument and returns the first repeating number from the array.

For example, if we pass {3, 5, 6, 2, 7, 9, 8, 11, 6, 12} then the method should return 6 as the first repeating element from the array. If all the elements are unique, then the method should return -1.

You may use the following header for this method:

```
static int getFirstRepeatingNumber(int[] array)
```

Declare and initialize the array and write the first repeating number from that array in the output file. If there is no repeating element in the array, then you would write “All elements are unique” by a test in the **main** method.

NOTE: Read the input from the *input-3-3.txt* file.

Write the output to the *output-3-3.txt* file.

3. Create a program called **FileIOFirstRepeatingNumberLab3.java**.
4. Correctly write the output with appropriate messages.

Task #4: Arrays, Methods and File I/O

In this task, you are being asked to write methods that manipulate arrays, and write and read to and from the text file in Java.

1. Write a method called **getSecondSmallestNumber** that accepts an integer array as argument and returns the *second smallest* number from the array.

You may use the following header for this method:

```
static int getSecondSmallestNumber(int[] array)
```

For example, if we pass {10, 17, 3, 5, 12, 19} then the method should return 5 as the second smallest number from the array.

2. Write another method called **getSecondLargestNumber** that accepts an integer array as argument and returns the *second largest* number from the array.

You may use the following header for this method:

```
static int getSecondLargestNumber(int[] array)
```

For example, if we pass {10, 17, 3, 5, 12, 19} then the method should return 17 as the second largest number from the array.

NOTE: Read the input from the *input-4-3.txt* file.

Write the output to the *output-4-3.txt* file.

Write the **second smallest** and then the **second largest** number from that array.

1. Create a program called **FileIOSecondSmallestLargestLab3.java**.
2. Correctly write the output with appropriate messages..

Task #5: Arrays, Methods and File I/O

In this task, you are being asked to write methods that manipulate arrays, and write and read to and from the text file in Java.

Write a method called **isFibonacci** which will take an integer array as argument and return **true** if the sequence of the array elements are a *Fibonacci* series, or **false** otherwise.

You may use the following header for this method:

```
static boolean isFibonacci(int[] array)
```

A *Fibonacci* series is a series of numbers where every next element is the sum of two previous numbers.

For example, starting from **0**, and **1** (first and second numbers), the third number is the sum of these **0** and **1**. Now the series will become **0, 1, 1**

The *fourth* number is the sum of *second* and *third* numbers which is **2**. Now, the Fibonacci series of four numbers is **0, 1, 1, 2**.

And so on.

The following series is a Fibonacci series.

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144

NOTE: Read the input from the *input-5-3.txt* file.

Write the output to the *output-5-3.txt* file.

1. Create a program called **FileIOFibonacciLab3.java**.
2. Correctly write the output with appropriate messages.

Task #6: String, Methods and File I/O

In this task, you are being asked to write void methods that manipulate String, and write and read to and from the text file in Java.

Write a method called **replaceSpacesWithDots()** that accepts one **String** argument, and return the **String** after replacing all spaces in the **String** with dots.

You may use the following header for this method:

```
static String replaceSpacesWithDots(String sentence)
```

For example, if you read "The quick brown fox jumps over the lazy dog" from the file, then the method should write "The.quick.brown.fox.jumps.over.the.lazy.dog" to the output file.

NOTE: Read the input from the *input-6-3.txt* file.

Write the output to the *output-6-3.txt* file.

1. Create a program called **FileIOStringReplaceLab3.java**
2. Correctly write the output with appropriate messages.

Task #7: Arrays, Methods and File I/O

In this task, you are being asked to write void methods that manipulate String, and write and read to and from the text file in Java.

1. Write a method called **reverseString()** that accepts one String argument, and returns the reverse of the String.

You may use the following header for this method:

```
static String reverseString (String word)
```

2. Write another method called **isPalindrome()** that accepts one String argument, and write *“Yes, the string is palindrome”* if the String is a palindrome or *No, the string is not palindrome* otherwise.

You may use the following header for this method:

```
static void isPalindrome (String word)
```

You should make use of the **reverseString()** method inside the **isPalindrome()** method.

A palindrome string is a string that reads the same backwards as forwards. For example, civic level, madam, mom, noon, racecar, rotator, and stats.

Hint: Read a String from file, call **isPalindrome()** method, this method will get the reverse of the string from **reverseString()** method and will compare if the original string and the reverse of that string are equal, and write to the output file accordingly.

NOTE: Read the input from the *input-7-3.txt* file.

Write the output to the *output-7-3.txt* file.

1. Create a program called **FileIOStringPalindromeLab3.java**.
2. Correctly write the output with appropriate messages.