Lab Assignment 02, Object-Oriented Programming, CSE 271, Spring 2020
Department of Computer Science and Engineering, Miami University

File IO, Try-Catch Block, Random Numbers

In this lab you will create a well-commented java project that will contain a class name **FileIO.** At first, create a project in Eclipse called **Lab2** and then create a new class, **FileIO** in the **src** folder. Include the **main()** method in the class **FileIO.** You must do the following in your **main** method step by step: [Before you start, please review the code we worked together in the lecture. It's available on Canvas in the module section.]

- **Arrays and File IO**
    1. Take an integer input, **N** from the keyboard (user).
    2. Create a file (through code) called "*numbers.txt*".
    3. Now write **N** random integers (between 1 and 100) to the file ("numbers.txt").
    4. Close numbers.txt file.
    5. Create an array of integers of size **N.**
    6. Read all the numbers from the **numbers.txt** file and store it on the array.
    7. Create another file called "*output.txt*".
    8. Write all the numbers from the array to the file output.txt with a header "Numbers:".
    9. Sort the array using **Arrays.sort()** method.
    10. Write (append to *output.txt* file) all the numbers from the sorted array to the file again, now with the header "Sorted Numbers:".
    11. Iterate through the array and count the total number of Odd and Even numbers.
    12. Write (append to *output.txt* file) number of Odd and Even numbers.
    13. Iterate through the array and the find smallest and largest numbers.
    14. Write (append to *output.txt* file) the smallest and largest numbers.
    15. Find the mean and write (append) to *output.txt* file with a header.
    16. Close the output.txt file.

Hints: Use **PrintWriter** class to write data to the file and **Scanner** class to read data from the file. Use **try-catch** block to handle exception related to file operations.

Grading Rubric:

Input from Keyboard	5
Create file *numbers.txt*	5
Generate N random integers	10
Write random integers to the file	5
Create array of N integers	5
Read numbers from the file *numbers.txt*	10
Store numbers on the array	5
Create *output.txt* file and write numbers from the array to the file	10
Sort numbers and write (append) sorted numbers to the file (*output.txt*)	10
Count number of odd and even numbers	5
Write (append) number of odd and even numbers to the file (*output.txt*)	5
Find smallest and largest numbers	5
Write (append) smallest and largest numbers to the file (*output.txt*)	5
Compute mean	5
Write mean to the file (*output.txt*)	5
Close all the files	5
Total	**100**
Output doesn't follow sample run format	-5
Not well commented [write a sentence for each step]	-5

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Important Note:

You must follow the sample run for the formatting your input and output. Make sure the file name is correct and code is well commented. No late submission. You will get zero for late submission.

Submission:

Submit **ONLY** java file to the appropriate submission folder on the Canvas by the due time.

Sample Run:

Console:

```
Enter an integer, N :10
```

Files:

numbers.txt

```
33
6
84
77
68
83
6
60
49
3
```

output.txt

```
Numbers:
[33, 6, 84, 77, 68, 83, 6, 60, 49, 3]
Sorted Numbers:
[3, 6, 6, 33, 49, 60, 68, 77, 83, 84]

Number of odd numbers: 5
Number of even numbers: 5
Smallest number: 3
Largest number: 84
Mean: 46.9
```