4COSC005W Software Development II

Files and testing – Self Study Exercises

Aim:

- Get familiar with files handling
- Get feedback.

Exercise 1: File writing.

Write a program to write in a file. First, create a new project and add the imports for file handling (before your public class declaration):

```
import java.io.File; import
java.io.FileWriter; import
java.io.IOException;
```

Create a file named Exercise1.txt using Java code:

```
File file = new File("Exercise1.txt");
boolean file_created = file.createNewFile();
```

Check if the file has been created. Which control structure will you use? Using

a FileWriter, open the file and write the text “This is my first file.”:

```
FileWriter writer = new FileWriter("Exercise1.txt");

writer.write("This is my first file.");
```

Close the file:

```
writer.close();
```

You will also have to add a try and catch statement when handling files. Your code should look like this:

```
import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
public class Tutorial5_Ex1 {
public static void main(String[] args) {
try {
File file = new File("Exercise1.txt");
boolean file_created = file.createNewFile();
if (file_created){
FileWriter writer = new FileWriter("Exercise1.txt");
writer.write("This is my first file");
writer.close();
}
    }
catch (IOException e) {
      System.out.println("Error while writing to a file.");
      e.printStackTrace();
}
```

```
    }
}
```

Open the file Exercise1.txt using your file explorer or equivalent (should be in the main directory of your project), and **make sure the file contains the text "This is my first file")**.

Exercise 2: File reading.
Extend the code from exercise 1 to read the file and print the contents.

To read a file, you can use Scanner (remember to import `java.util.Scanner` first):

```
Scanner file_reader = new Scanner(file);
```

Read the file:

```
while (file_reader.hasNextLine()) {
     String text = file_reader.nextLine();
     System.out.println(text);
}
```

When running the program, you should see the following text in the output console:

```
This is my first file.
```

Exercise 3: Save array to a file.
Given the following array:

```
double[] array = {1.3, 5.6, 2.3, 9.0};
```

Write the contents of the array in a file. Make sure the file exists and the values of the array have been stored in the file (open the file to check the output is correct). What happens when you write in a file the array directly? Does it work? Or do you need to store each item individually?

Exercise 4: Read array from file.
Open the file created in Exercise 3 and save the double numbers in a new array. Then, print the contents of the array.

Note: You can use `Scanner` *with* `nextDouble` *to read doubles from a file too.*

Challenge: Read multi-dimensional array.
Create a .txt file with the following content (make sure the file is in the main project directory, or you will need to specify the whole path):

```
14 38 43 64 48 45 74
38 49 74 96 73 07 73 28
93 40 75 43 85 65
```

38 **07 14** 68 53 57 10

Read the file and put the numbers in a multi-dimensional array. Then, find the positive numbers that appear multiple times in the multi-dimensional array (highlighted in bold).

HackerRank: Interview questions.

There are no exercises with Files and Testing, but you can solve the following tasks in HackerRank:

1. Java Exception Handling (Try-catch)
2. Java Exception Handling