Practical no. 6

FS19CO042

Aim: Implement programs related to File I/O

- 6.1 Create a csv file which will contain 10 integers in a spreadsheet. Read the file using class java.util.Scanner and display the sum of the numbers in the file. Handle all possible exceptions. Write a Java program to create, read and modify a file.
- 6.2 Create two objects of class Path viz., source and target. Perform the following operations a. Create a file at source b. Copy a file from source to target c. Move a file from source to target d. Delete a file from source e. Retrieve information about source and target

Tools used: Editor (Notepad/Intellij IDE), JDK and JRE

Code:

- **Create a csv file which will contain 10 integers in a spreadsheet. Read the file using class java.util.Scanner and display the sum of the numbers in the file. Handle all possible exceptions. Write a Java program to create, read and modify a file.**

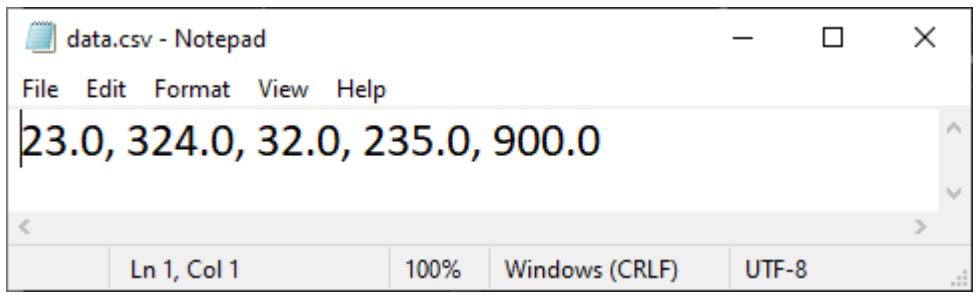
```
import java.util.*;
import java.io.*;


public class exp6_1 {
    public static void main(String[] args) {
        double sum = 0;
        List<Double> numbers = new ArrayList<>();


        String dataFilePath = "data.csv";
        String defaultData = "200,500,25,50\n100,50,25\n70,30,40,60\n40\n60,90,150\n20,40";
        Scanner inputScanner = new Scanner(System.in);
        char opted;

        File dataFile = new File(dataFilePath);


        // If file doesn't exist, creating one and writing default data to the file
        if (!dataFile.exists()) {
            System.out.println("CSV file could not be found, hence creating one !\nYou can put desired data in the file manually separated by commas");
            try {
                if (dataFile.createNewFile()) {
                    System.out.println("File created: " + dataFile.getAbsolutePath());
                    FileWriter defauFileWriter = new FileWriter(dataFile.getName());
                    defauFileWriter.write(defaultData);
                    defauFileWriter.close();
```

```
        } else
            System.out.println("There was a problem creating new file, try creating one manually");

    } catch (Exception e) {
        System.out.println("An error occurred while writing default data to the file, try writing manually :)");
        e.printStackTrace();
    }
}

// Find sum of all numbers in csv file
// All numbers in CSV file:

displaySum(dataFile, sum, numbers);

// Modify the numbers in csv file

System.out.print("Do you want to write numbers to csv file? y/n: ");
opted = inputScanner.nextLine().trim().charAt(0);
if (opted == 'y' || opted == 'Y') {
    int n;
    double entity;
    System.out.println("How many decimal numbers do you wish to write to file(eg. 4 or 8): ");
    n = inputScanner.nextInt();
    System.out.println("Enter the numbers separated by spaces:");
    List<Double> newData = new ArrayList<>();
    while (n-- > 0) {
        entity = inputScanner.nextDouble();
        newData.add(entity);
    }
    String data = newData.toString();
    data = data.substring(1, data.length() - 1);
    System.out.println(data);

    try {
        FileWriter customWriter = new FileWriter(dataFile.getName());
        customWriter.write(data);
        customWriter.close();
        System.out.println("Your changes are succesfuly written to file: " + dataFile.getAbsolutePath());
```

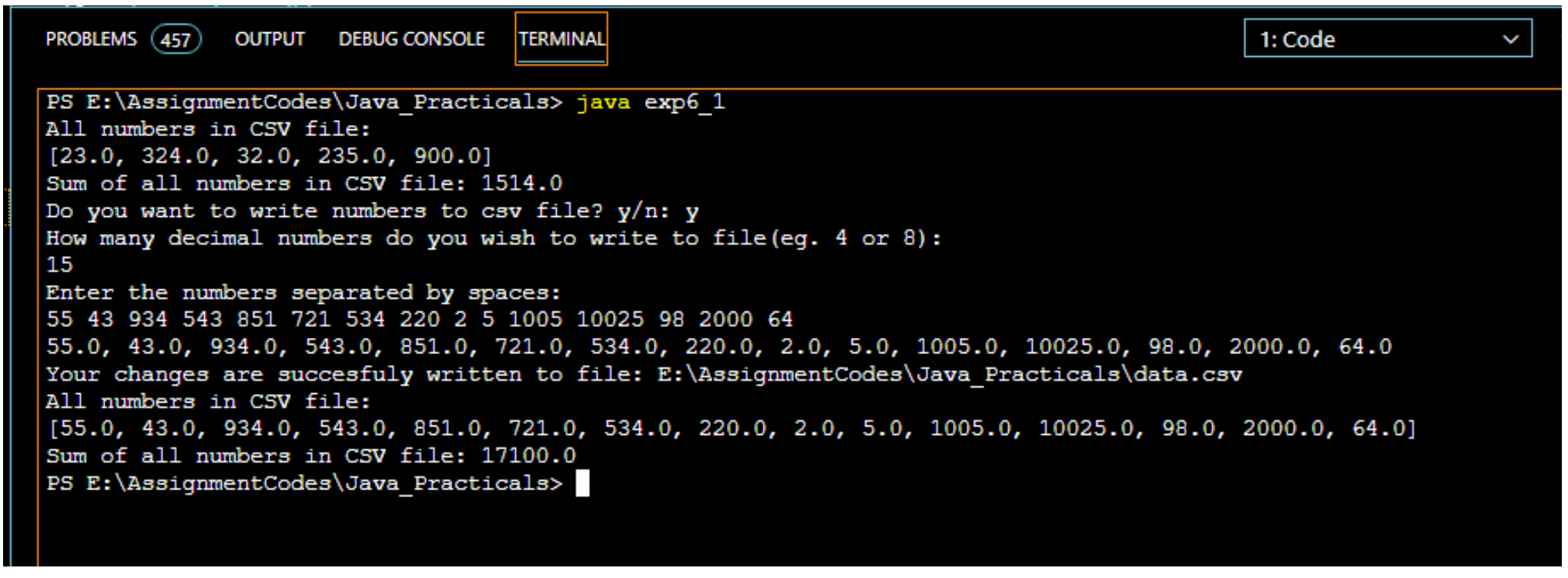
```
        } catch (Exception e) {
            System.out.println("xxxxxx ERROR xxxxxxxxx::: Close the CSV file And Try Again   :)");
            e.printStackTrace();
        }
    }
    numbers.clear();
    sum = 0;
    displaySum(dataFile, sum, numbers);                    // All numbers in CSV file:
    inputScanner.close();
}

private static void displaySum(File dataFile, double sum, List<Double> numbers) {
    try {
        Scanner csvScanner = new Scanner(dataFile);
        Scanner dataScanner = null;
        while (csvScanner.hasNextLine()) {
            dataScanner = new Scanner(csvScanner.nextLine());
            dataScanner.useDelimiter(",");

            while (dataScanner.hasNext()) {
                try {
                    String data = dataScanner.next().trim();
                    numbers.add(Double.parseDouble(data));
                    sum += Double.parseDouble(data);
                } catch (NumberFormatException ne) {
                    continue;
                }
            }
            dataScanner.close();
        }
        csvScanner.close();
    } catch (Exception e) {
        System.out.println(e);
        e.printStackTrace();
    }

    System.out.println("All numbers in CSV file:\n" + numbers.toString());
    System.out.println("Sum of all numbers in CSV file: " + sum);
```

```
    }
}
```

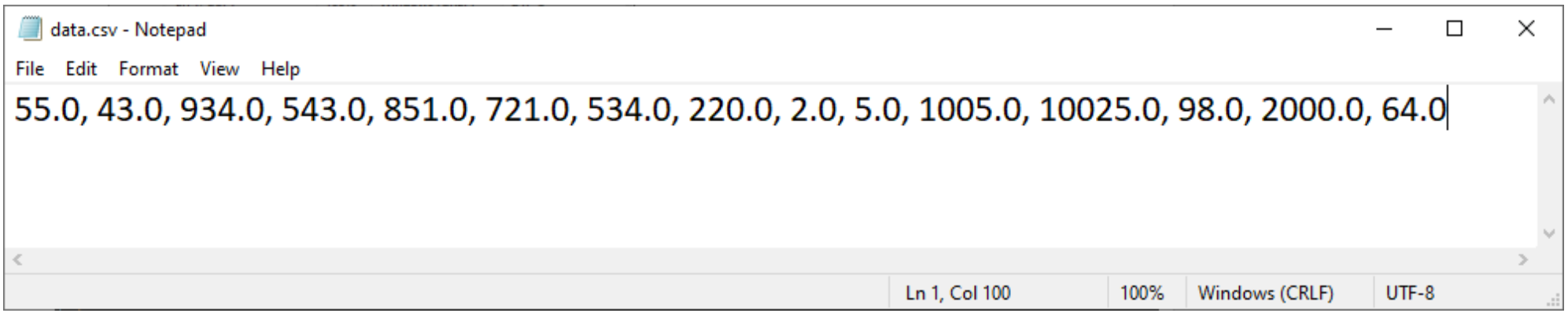
Previous CSV file:



Output:



CSV file after modifications:



- **Create two objects of class Path viz., source and target. Perform the following operations a. Create a file at source b. Copy a file from source to target c. Move a file from source to target d. Delete a file from source e. Retrieve information about source and target**

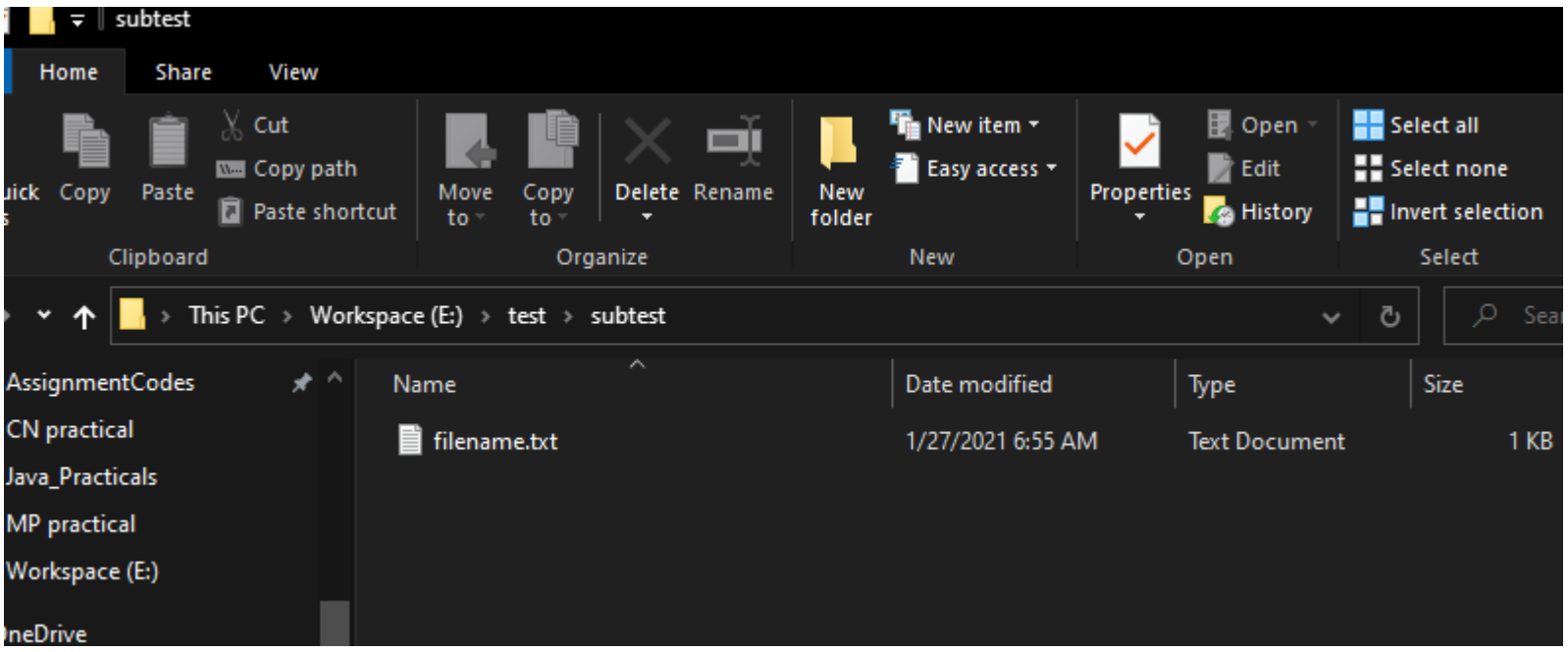
```
import java.nio.file.*;
import java.nio.file.Paths;
import java.io.*;
public class exp6_2 {

    public static void main(String[] args) {
        try{
```

```
Path source = Paths.get("E:\\test");
Path target = Paths.get("E:\\test\\subtest");

String fn1=source+"\\";
String fn2=target+"\\";

FileWriter myWriter = new FileWriter(fn1+"filename.txt");
myWriter.write("Files in Java might be tricky, but it is fun enough!");
myWriter.close();

//copy
InputStream is = null;
OutputStream os = null;
File s=new File(fn1+"filename.txt");
File d=new File(fn2+"filename.txt");
is = new FileInputStream(s);
os = new FileOutputStream(d);
byte[] buffer = new byte[1024];
int length;
while ((length = is.read(buffer)) > 0) {
    os.write(buffer, 0, length);
}
is.close();
os.close();

//move
d.delete();
Path temp = Files.move(Paths.get(fn1+"filename.txt"),  Paths.get(fn2+"filename.txt"));

//delete
s.delete();

//retrieve
System.out.println(source+"");
```

```
            System.out.println(target+"");
            System.out.println(source.getParent()+"");
            System.out.println(target.getParent()+"");
            System.out.println(source.getRoot()+"");
            System.out.println(target.getRoot()+"");
        }catch(Exception ex){
            System.out.println(ex+"");
        }
    }
}
```

Output:

```
PROBLEMS 452   OUTPUT   DEBUG CONSOLE   TERMINAL

PS E:\AssignmentCodes\Java_Practicals> java exp6_2
E:\test
E:\test\subtest
E:\
E:\test
E:\
E:\
PS E:\AssignmentCodes\Java_Practicals>
```



Conclusion: In this experiment, we performed various File Read/write operations like editing csv files, copying/moving/deleting files, etc using FIleWriter, InputStream, OutputStream, etc.