Lab Report 02 Justin Schlag

1. Problem:

pastTense Method: Read words from the file it is.txt and replace all the “is” words with “was”. And have it output each word on a new line to both the console and a new file (it was.txt)

totalTubeVolume Method: Read the file Tubes.txt that contains tube dimensions (ID, radius, and height)
Figure out how to calculate the total volume of all tubes using the formula
Volume = pi * radius^2 * height
Ignore lines that are incorrectly formatted, and finally return and display the total combined volume

2. Solution Descriptions:

pastTense Method: reads words from the input file ItIs.txt one by one using Scanner. Each word is checked and if it matches ‘is’ it is replaced with ‘was’. The words are then printed to the console as well as an output file (it was.txt) using FileWriter. The program makes sure that each word appears on a new line. Exception handling also ensures the program doesn’t crash when a file is missing.

totalTubeVolume Method: This method reads the tube dimension from Tubes.txt. The program processes each line by splitting it into ID, radius, and height.
The radius and height are converted into numbers and the volume is then calculated with the volume formula. Invalid lines are ignored. And finally the total volume of all tubes is summed up and returned as the final result, which would then be printed in the console.

Both methods use relative path files, ensuring that files are accessed correctly with the project’s directory.

3. Problems Encountered:

I had a lot of syntax errors throughout this process. Initially, the program lacked the necessary import java.io.*; which caused errors when trying to use File, FileWriter, and Scanner. This was resolved by explicitly importing the required classes.

I also had a lot of incorrect method calls. Calling methods with incorrect file paths resulted in compilation errors.

The program initially could not find my text files (it is.txt and Tubes.txt) resulting in FIleNotFoundException. I placed the text files inside the src folder, while the program was searching for them in the root Lab02 directory. After moving the files around, I finally got it to work.

4. An absolute file path is a complete and fixed path that specifies the exact location of a file or directory from the root of the file system. It includes the full directory structure starting from the drive. i.e
C:\Users\justi\Downloads\CSCE146\CSCE146Lab02\Lab02\ItIs.txt

A relative file path specifies the location of a file or directory relative to the current working directory (where the program is running). It does not include the full directory structure, making it more flexible and portable. i.e ItIs.txt

5. In file paths, ./ refers to the current working directory, which is the directory where the program is being executed. It is a shorthand way to specify that a file or folder is located relative to where the program is running.

6. In this course, all files that the program reads from or writes to should be placed in the root directory of the project

7. It is crucial to close the file after reading or writing. This ensures that system resources are properly released and prevents potential issues such as file corruption, memory leaks, or locked files.

8. A delimiter (also called a separator) is a character or sequence of characters used to separate data values in a structured file format. Delimiters help programs correctly read, parse, and interpret file contents by distinguishing different data fields.

9. The problem occurs because the code uses fileScanner.next() instead of fileScanner.nextLine() when reading the file.
fileScanner.next() reads the next word instead of the entire line
Change it to fileScanner.nextLine() so that the entire line is read before splitting.

10. By default, new FileOutputStream("output.txt") overwrites the file instead of appending.

Fix: Enable append mode by passing true as the second argument to FileOutputStream.
new FileOutputStream(new File("./output.txt"), true)

This change would ensure new data is added to the existing data, instead of deleting it.