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CS 1083

Assignment 6

3429069

Section A:

Source code:

TemperatureParser:

```
import java.io.File;

import java.io.FileNotFoundException;

import java.util.NoSuchElementException;

import java.util.Scanner;

/**
 * Parses the temperature and date from a file given as a string to the file
 * @author Isaac Shoebottom (3429069)
 */

public class TemperatureParser {
    private Scanner sc;

    private int counterDateTime = -1;

    private int counterTemperature = -1;

    private double temperature;

    private String date;

    /**
     * Constructor for the parser
     * Measures the index of the date/time and temperature in the csv file
     * @param filename The filename of the csv file to be parsed.
     */
}
```

```

TemperatureParser(String filename) {
    try {
        sc = new Scanner(new File(filename), "UTF-
8").useDelimiter("\\",\\"");
    } catch (FileNotFoundException exception) {
        System.out.println("File not found, the file might have been
typed incorrectly");
        System.out.print("Use tab to autocomplete a filename when in the
same directory as the program");
        System.exit(1);
    }
    int counter = 1;
    String field;
    while (sc.hasNext() && counterTemperature == -1 | counterDateTime ==
-1) {
        field = sc.next();
        if (field.equals("Date/Time (LST)"))
            counterDateTime = counter;
        if (field.equals("Temp (°C)"))
            counterTemperature = counter;
        counter++;
    }
    sc.nextLine();
}

```

```
/**
 * Parses a line of a csv and gets the date/time and temperature
 * @throws NoSuchElementException When a line is incomplete or a field is
empty in the csv spreadsheet this error is thrown
 */
void parseLine() throws NoSuchElementException {
    String line = sc.nextLine();
    Scanner scanDate = new Scanner(line).useDelimiter("\\",\\"");
    Scanner scanTemp = new Scanner(line).useDelimiter("\\",\\"");
    try {
        for (int i = 1; i < counterDateTime; i++) {
            scanDate.next();
        }
        date = scanDate.next();
        for (int i = 1; i < counterTemperature; i++) {
            scanTemp.next();
        }
        temperature = scanTemp.nextDouble();
    }
    catch (NoSuchElementException exception) {
        System.out.println("Invalid entry at: " + date);
    }
}

/**
```

```
* Checks if there is a value next
* @return boolean if there is a next value true if not false
*/
boolean parseHasNext() {
    return sc.hasNext();
}

/**
 * Gets there temperature that was most recently parsed
 * @return The temperature that was most recently parsed as a double
 */
public double getTemperature() {
    return temperature;
}

/**
 * Gets the date that was most recently parsed
 * @return The date/time that was most recently parsed
 */
public String getDate() {
    return date;
}
}
```

TemperatureStats:

```
/**
 * Temperature statistics on a csv file, a driver class
 * @author Isaac Shoebottom (3429069)
 */

public class TemperatureStats {
    public static void main(String[] args) {

        String maxDate = null, minDate = null;
        double maxTemp = 0, minTemp = 0;
        int counter = 0;

        if (args.length == 0) {
            System.out.println("Usage: java TemperatureStats file.csv");
            System.exit(1);
        }

        TemperatureParser tp = new TemperatureParser(args[0]);

        while (tp.parseHasNext()) {
            tp.parseLine();

            if (counter == 0) {
                maxDate = tp.getDate();
                minDate = maxDate;
                maxTemp = tp.getTemperature();
                minTemp = maxTemp;
            }
            else if (tp.getTemperature() < minTemp) {
```

```
        minTemp = tp.getTemperature();
        minDate = tp.getDate();
    }
    else if (tp.getTemperature() > maxTemp) {
        maxTemp = tp.getTemperature();
        maxDate = tp.getDate();
    }
    counter++;
}

System.out.println("Maximum: " + maxDate + ": " + maxTemp);
System.out.println("Minimum: " + minDate + ": " + minTemp);
}
}
```

Section B:

Sample input and outputs:

Input 1 (File Provided 1):

```
java TemperatureStats en_climate_hourly_NB_8101505_01-2021_P1H.csv
```

Maximum: 2021-01-15 15:00: 3.1

Minimum: 2021-01-31 08:00: -19.3

Process finished with exit code 0

Input 2 (File provided 2):

```
java TemperatureStats en_climate_hourly_NB_8101505_02-2021_P1H.csv
```

Invalid entry at: 2021-02-16 00:00

Invalid entry at: 2021-02-16 01:00

Invalid entry at: 2021-02-16 02:00

Invalid entry at: 2021-02-16 03:00

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Invalid entry at: 2021-02-16 05:00

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Invalid entry at: 2021-02-28 22:00

Invalid entry at: 2021-02-28 23:00

Maximum: 2021-02-03 16:00: 2.6

Minimum: 2021-02-10 08:00: -23.0

Process finished with exit code 0

Input 3 (Invalid first temperature):

java TemperatureStats Test1.csv

Invalid entry at: 2021-01-01 00:00

Maximum: 2021-01-15 15:00: 3.1

Minimum: 2021-01-31 08:00: -19.3

Process finished with exit code 0

Input 4 (Invalid temperature elsewhere):

java TemperatureStats Test2.csv

Invalid entry at: 2021-01-01 02:00

Maximum: 2021-01-15 15:00: 3.1

Minimum: 2021-01-31 08:00: -19.3

Process finished with exit code 0

Input 5 (Mistyped file name):

java TemperatureStats Test88.csv

File not found, the file might have been typed incorrectly

Use tab to autocomplete a filename when in the same directory as the program

Process finished with exit code 1

Input 6 (No argument given):

java TemperatureStats

Usage: java TemperatureStats file.csv

Process finished with exit code 1