**Program**

import java.io.\*;

import java.util.\*;

public class Part1 {

private static Scanner input; //input set to field to remove resource leak warning

public static void main(String[] args) throws FileNotFoundException {

input = new Scanner(new File("PortlandWeather1941to2016.txt"));

//Initializes arrays

int dataSize = input.nextInt();

int[] month = new int[dataSize];

int[] day = new int[dataSize];

int[] year = new int[dataSize];

int[] tMax = new int[dataSize];

int[] tMin = new int[dataSize];

//skips lines to access the beginning of the data

for(int i = 0; i < 3; i++) {

input.nextLine();

}

//parses data and loads them into corresponding arrays

int count = 0;

input.useDelimiter("[/ \t\n\r]+");

while(input.hasNextLine()) {

month[count] = input.nextInt();

day[count] = input.nextInt();

year[count] = input.nextInt();

tMax[count] = input.nextInt();

tMin[count] = input.nextInt();

count++;

}

//find and prints out basic data from the data sheet

System.out.println("The highest temperature recorded is " + arrayMax(tMax) + " and the date it occured on was " + month[find(tMax, arrayMax(tMax))] +"/" + day[find(tMax, arrayMax(tMax))]+ "/" + year[find(tMax, arrayMax(tMax))]);

System.out.println("The lowest temperature recorded is " + arrayMin(tMin) + " and the date it occured on was " + month[find(tMin, arrayMin(tMin))] +"/" + day[find(tMin, arrayMin(tMin))] +"/" + year[find(tMin, arrayMin(tMin))]);

System.out.println("The average max temperature is " + arrayAvg(tMax));

System.out.println("The average min temperature is " + arrayAvg(tMin));

//create and prints formated data from each decade in data

dec(year, dataSize, tMin, tMax);

}

//find the maximum value in an array and return it

public static int arrayMax(int[] a) {

int max = a[0];

for (int i = 0; i < a.length; i++) {

if (a[i] > max) {

max = a[i];

}

}

return max;

}

//find the minimum value in an array and return it

public static int arrayMin(int[] a) {

int min = a[0];

for(int i = 0; i < a.length; i++) {

if(a[i] < min) {

min = a[i];

}

}

return min;

}

//calculate the average of an array and return it as double

public static double arrayAvg(int[] a) {

int sum = 0;

double avg = 0;

for(int i = 0; i < a.length; i++) {

sum += a[i];

}

avg = (double) sum / a.length;

return avg;

}

//find a value in an array and return it

//returns -1 if value is not found

public static int find(int[] a, int val) {

for(int i = 0; i < a.length; i++) {

if(a[i]==val) {

return i;

}

}

return -1;

}

//creates formated table by decades using the array containing years

//gets passed tMin and tMax to calculate averages for each decade

public static void dec(int[] year, int length, int[] tMin, int[] tMax) {

int previousYear = year[0];

int lastIndex = 0;

System.out.printf("%s\t %s %s %s\n", "Decades:", "Array indices:","tmin","tmax" );

for(int i = 0; i < length; i++) {

if(year[i] >= ((previousYear / 10) \* 10 + 10)) {

System.out.printf("%s's [%s-%s] [%5s, %5s) %3.5s %3.5s \n", previousYear / 10 \* 10, previousYear, year[i -1], lastIndex, i, arrayRangeAverage(tMin, lastIndex, i), arrayRangeAverage(tMax, lastIndex, i));

previousYear = year[i];

lastIndex = i;

}

//special case for when final decade is not complete

if(year[i] == year[length -1] && year[i] > previousYear) {

System.out.printf("%s's [%s-%s] [%5s, %5s) %3.4s %3.4s \n", previousYear / 10 \* 10, previousYear, year[i], lastIndex, year.length -1, arrayRangeAverage(tMin, lastIndex, year.length - 1), arrayRangeAverage(tMax, lastIndex, year.length - 1));

previousYear += 10;

}

}

}

// calculate the average for a sub-range or the array [startIndex, stopIndex)

// note the value at stopIndex is not included

public static double arrayRangeAverage(int[] a, int startIndex, int stopIndex) {

int sum = 0;

double avg = 0;

for(int i = startIndex; i < stopIndex; i++) {

sum += a[i];

}

avg = (double)Math.round((double) sum / (stopIndex - startIndex - 1) \* 10) / 10;

return avg;

}

}

**Output**

The highest temperature recorded is 103 and the date it occured on was 8/2/1975

The lowest temperature recorded is -39 and the date it occured on was 2/16/1943

The average max temperature is 55.59605893584063

The average min temperature is 36.12972369321661

Decades: Array indices: tmin tmax

1940's [1941-1949] [ 0, 3287) 34.7 55.6

1950's [1950-1959] [ 3287, 6939) 35.0 55.8

1960's [1960-1969] [ 6939, 10592) 34.4 55.0

1970's [1970-1979] [10592, 14244) 35.7 54.6

1980's [1980-1989] [14244, 17897) 36.4 55.5

1990's [1990-1999] [17897, 21549) 37.3 56.0

2000's [2000-2009] [21549, 25202) 37.5 55.7

2010's [2010-2016] [25202, 27758) 38.8 57.2