**Program**

public class Prog9ArrayMethods {

public static void main(String[] args) {

// daily high temperatures for Portland Maine Jan 1 - Dec 31 2016

int[] tmax = {41, 37, 40, 31, 26, 41, 39, 39, 36, 52, 47, 37, 27, 28,

30, 31, 32, 27, 18, 28, 27, 30, 20, 35, 34, 47, 46, 37,

35, 40, 51, 59, 48, 50, 55, 42, 35, 44, 28, 26, 34, 30,

21, 22, 12, 22, 50, 47, 33, 36, 53, 52, 38, 35, 35, 53,

41, 35, 50, 59, 43, 49, 29, 26, 36, 39, 40, 48, 66, 66,

55, 49, 60, 40, 42, 53, 55, 52, 42, 35, 40, 46, 52, 37,

36, 42, 43, 43, 47, 49, 72, 64, 53, 38, 25, 37, 40, 50,

55, 47, 47, 50, 52, 54, 56, 59, 60, 60, 65, 57, 59, 68,

68, 64, 57, 62, 45, 56, 49, 49, 55, 52, 46, 52, 50, 48,

61, 49, 56, 57, 67, 73, 69, 62, 74, 58, 52, 69, 62, 66,

74, 76, 65, 76, 60, 65, 79, 59, 87, 59, 68, 87, 75, 63,

61, 73, 58, 82, 73, 74, 66, 70, 64, 75, 71, 75, 81, 82,

75, 72, 73, 74, 85, 75, 76, 76, 77, 77, 82, 72, 72, 82,

79, 78, 82, 86, 81, 88, 69, 69, 59, 63, 81, 86, 82, 79,

91, 87, 78, 85, 79, 82, 84, 95, 89, 84, 84, 90, 85, 87,

82, 84, 71, 71, 77, 84, 83, 82, 94, 87, 87, 79, 70, 90,

99, 68, 94, 86, 79, 84, 88, 86, 78, 77, 78, 80, 86, 81,

88, 87, 79, 86, 80, 82, 81, 77, 77, 75, 74, 71, 71, 76,

91, 81, 80, 75, 80, 86, 69, 70, 70, 77, 73, 76, 83, 80,

74, 67, 64, 65, 71, 62, 64, 60, 59, 59, 70, 59, 63, 71,

74, 65, 61, 58, 63, 62, 64, 58, 53, 66, 74, 56, 78, 60,

65, 64, 51, 57, 48, 49, 48, 50, 46, 57, 50, 50, 61, 52,

55, 52, 49, 49, 61, 61, 49, 55, 47, 58, 62, 53, 55, 60,

63, 57, 50, 36, 42, 44, 37, 38, 47, 41, 43, 50, 42, 52,

50, 46, 41, 30, 39, 35, 42, 33, 27, 31, 33, 36, 39, 26,

9, 21, 49, 28, 30, 41, 33, 41, 40, 40, 39, 53, 39, 39,

37, 36};

int[] daysInMonths = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};

String[] months = {"January","Febuary","March","April","May","June","July","August","September","October","November","December"};

// Get Monthly avg temperature

System.out.println("---- Montly Average Temperature ----");

getMonthAvg(tmax, daysInMonths, months);

System.out.println("---- Min, Max, Avg, and less than 32 degrees ----");

int max = arrayMax(tmax);

int min = arrayMin(tmax);

double avg = arrayAvg(tmax);

int lesEq = countValues(tmax, 32);

System.out.println("Maximum value: " + max);

System.out.println("Minimum value: " + min);

System.out.println("Average value: " + avg);

System.out.println("There were " + lesEq + " where the tempature didnt go above 32\n\n");

System.out.println("---- Index of tempatures 0, 10, 20, 30, 40, 50... 100 ----");

for(int i = 0; i <= 100; i+=10) {

int search = find(tmax, i);

if(search != -1) {

System.out.println("Value " + i + " found at index " + search);

}else {

System.out.println("Value " + i + " not found returned value " + search);

}

}

}

// return the maximum value in the array

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;

}

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;

}

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;

}

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

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

if(a[i]==val) {

return i;

}

}

return -1;

}

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

int sum = 0;

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

if(a[i] <= val) {

sum++;

}

}

return sum;

}

public static double monthAvg(int[] a, int start, int end) {

int sum=0;

double avg=0;

int j = 0;

for(int i = start;i < end; i++) {

sum+= a[i];

j++;

}

avg = (double) sum / j;

return avg;

}

public static void getMonthAvg(int[] tmax, int[] daysInMonths, String[] months) {

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

int start = 0;

int end = 0;

if(i != 0) {

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

start += daysInMonths[i];

}

}

if(i == daysInMonths.length - 1) {

end = tmax.length;

}else {

end = start + daysInMonths[i + 1];

}

System.out.println(months[i] + " Had an average of " + monthAvg(tmax, start, end) + " Degrees");

}

System.out.println("\n");

}

}

**Output**

---- Montly Average Temperature ----

January Had an average of 34.392857142857146 Degrees

Febuary Had an average of 39.096774193548384 Degrees

March Had an average of 46.8 Degrees

April Had an average of 53.96774193548387 Degrees

May Had an average of 65.53333333333333 Degrees

June Had an average of 73.6774193548387 Degrees

July Had an average of 80.93548387096774 Degrees

August Had an average of 83.0 Degrees

September Had an average of 76.16129032258064 Degrees

October Had an average of 58.86666666666667 Degrees

November Had an average of 51.41935483870968 Degrees

December Had an average of 35.08 Degrees

---- Min, Max, Avg, and less than 32 degrees ----

Maximum value: 99

Minimum value: 9

Average value: 58.13387978142077

There were 31 days where the temperature didn’t go above 32

---- Index of temperatures 0, 10, 20, 30, 40, 50... 100 ----

Value 0 not found returned value -1

Value 10 not found returned value -1

Value 20 found at index 22

Value 30 found at index 14

Value 40 found at index 2

Value 50 found at index 33

Value 60 found at index 72

Value 70 found at index 161

Value 80 found at index 235

Value 90 found at index 207

Value 100 not found returned value -1