Practice Exercise #40: Health Screen

http://www.comp.nus.edu.sg/~cs1020/4_misc/practice.html

Objectives:

- Sorting using **Arrays.sort()** method
- Implementing **Comparator** interface

Task statement:

You are given the **Reading** class as shown below. It contains two attributes, the health score and the frequency (number of people with that score).

```
class Reading {
     // Attributes
     private double score;
     private int freq;

     public Reading(double score, int freq) {
          this.score = score;
          this.freq = freq;
     }

     public void setScore(double score) {
          this.score = score;
     }

     public void setFreq(int freq) {
          this.freq = freq;
     }

     public double getScore() {
          return score;
     }

     public int getFreq() {
          return freq;
     }

     public String toString() {
          return "(" + score + ";" + freq + ")";
     }
}
```

Write a program **HealthScreen.java** to read in a list of health screen readings:

- The first integer *n* indicates the number of health scores in the input data
- This is followed by *n* sets of data, where each set consists of a score and its frequency.

As the readings are gathered from various clinics, there might be duplicate scores in the input data. You are to determine the number of unique scores.

The **HealthScreen.java** program has been partially done for you. You are to fill in the code for the **unique()** method.

You are also to fill in the **ScoreComparator.java** program so that you can use the **Arrays.sort()** method in **HealthScreen.java**.

Sample Input

```
10
5.2135 3
3.123 4
2.9 3
0.87 2
2.9 2
8.123 6
3.123 2
7.6 3
2.9 4
0.111 5
```

Sample Output

```
Number of unique readings = 7
```

ScoreComparator.java

```
import java.util.*;

class ScoreComparator implements Comparator<Reading> {

   public int compare(Reading r1, Reading r2) {
      // fill in the code

   }

   public boolean equals(Object obj) {
      return this == obj;
   }
}
```

HealthScreen.java

```
import java.util.*;
// This program reads a list of health scores and frequencies
// and determine the number of unique readings

public class HealthScreen {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      int n = sc.nextInt(); // number of readings
      Reading[] readings = new Reading[n];

      for (int i=0; i<n; i++) {
         readings[i] = new Reading(sc.nextDouble(), sc.nextInt());
      }

      // Sort readings array by scores
      ScoreComparator scoreComp = new ScoreComparator();
      Arrays.sort(readings, scoreComp);

      System.out.println("Number of unique readings = " +
                         unique(readings));
   }

   public static int unique(Reading[] readings) {
      // fill in the code

   }
}
```