Foundations of Programming (in Java) 2002 p10q2 FHK

Playgroup Question - Solution Notes

A complete program which provides all the features required in the second part of the question (and includes the sort method which is not required) is shown below. A complete program to solve the first part of the question is an obvious cut-down version of the program below.

```
public class ChildProg
 { public static void main(String[] args)
    { Child[] p = {new Child("George",  4, 1.06f),
                   new Child("Betty",   2, 0.93f),
                   new Child("Charles", 4, 0.82f),
                   new Child("Hanna",   6, 1.11f),
                   new Child("Edward",  3, 0.72f),
                   new Child("Frida",   7, 1.23f),
                   new Child("Davina",  3, 0.89f),
                   new Child("Andrew",  5, 1.02f)};
      sort(p, Rank.NAME);
      sort(p, Rank.AGE);
      sort(p, Rank.HEIGHT);
    }

   private static void sort(Child[] p, int c)
    { for (int k=1; k<p.length; k++)
       { int i = k;
         while (i > 0  &&  p[i-1].compare(p[i], c))
          { Child t = p[i-1];
            p[i-1] = p[i];
            p[i] = t;
            i--;
          }
       }
      for (int i=0; i<p.length; i++)
         System.out.println(p[i]);
      System.out.println();
    }
 }

class Child
 { private String name;
   private int age;
   private float height;

   public Child(String n, int a, float h)
    { this.name = n;
      this.age = a;
      this.height = h;
    }

   public boolean compare(Child that, int choice)
    { switch (choice)
       { case Rank.NAME:   return (this.name.compareTo(that.name) > 0);
         case Rank.AGE:    return (this.age > that.age);
         case Rank.HEIGHT: return (this.height > that.height);
         default:              return true;
       }
    }

   public String toString()
    { return fmtString(this.name,9) + this.age + "  " + this.height;
    }

   private String fmtString(String s, int d)
    { while (s.length() < d)
        s = s + " ";
      return s;
    }
 }

class Rank
 { public static final int NAME = 0;
   public static final int AGE = 1;
   public static final int HEIGHT = 2;
 }
```