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/*********************************************************************
 *
 * File:        OrderBoxes.java
 *
 * Author:      Dan Gerstl
 *
 * Date:        04/28/2018
 *
 * Purpose:     Project 1
 *
 * Description: Object for determining and tracking the amount of boxes
 *              needed
 *
 * Comment:     NA
 *
 *********************************************************************/

 public class OrderBoxes
 {
     /*** Class Constants ***/

     public final int MINIMUM_BAGS_ORDERED = 0;
     public final int MAXIMUM_BAGS_ORDERED = 9999;

     private final int DEFAULT_BAGS_ORDERED = 0;
     private final int DEFAULT_LARGE_BOXES  = 0;
     private final int DEFAULT_MEDIUM_BOXES = 0;
     private final int DEFAULT_SMALL_BOXES  = 0;

     /*** Class Variables ***/

     private int bagsOrdered = 0;
     private int largeBoxes  = 0;
     private int mediumBoxes = 0;
     private int smallBoxes  = 0;

     /*** Constructors ***/

     public OrderBoxes(int bagsOrdered)
     {
         this.setBagsOrdered(bagsOrdered);
         this.setLargeBoxes(DEFAULT_LARGE_BOXES);
         this.setMediumBoxes(DEFAULT_MEDIUM_BOXES);
         this.setSmallBoxes(DEFAULT_SMALL_BOXES);
     }

     /*** Class Methods - Transformers/Mutators ***/

     public void setBagsOrdered(int bags)
     {
         if (bags >= MINIMUM_BAGS_ORDERED && bags <= MAXIMUM_BAGS_ORDERED)
            this.bagsOrdered = bags;
         else
            this.bagsOrdered = DEFAULT_BAGS_ORDERED;
     }

     private void setLargeBoxes(int boxes)
     {
         if (boxes >= 0)
            this.largeBoxes = boxes;
         else
            this.largeBoxes = DEFAULT_LARGE_BOXES;
     }
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    private void setMediumBoxes(int boxes)
    {
        if (boxes >= 0)
           this.mediumBoxes = boxes;
        else
           this.mediumBoxes = DEFAULT_MEDIUM_BOXES;
    }

    private void setSmallBoxes(int boxes)
    {
        if (boxes >= 0)
           this.smallBoxes = boxes;
        else
           this.smallBoxes = DEFAULT_SMALL_BOXES;
    }

    public void calculateBoxesNeeded()
    {
        /*** Local Constants ***/

        final int BAGS_IN_SMALL_BOX   = 5;
        final int BOXES_IN_BIGGER_BOX = 2;

        /*** Local Variables ***/

        int bags = this.bagsOrdered;

        while (bags > 0)
        {
            this.smallBoxes = this.smallBoxes + 1;
            bags = bags - BAGS_IN_SMALL_BOX;
        }

        while (this.smallBoxes >= BOXES_IN_BIGGER_BOX)
        {
            this.mediumBoxes = this.mediumBoxes + 1;
            this.smallBoxes = this.smallBoxes - BOXES_IN_BIGGER_BOX;
        }

        while (this.mediumBoxes >= BOXES_IN_BIGGER_BOX)
        {
            this.largeBoxes = this.largeBoxes + 1;
            this.mediumBoxes = this.mediumBoxes - BOXES_IN_BIGGER_BOX;
        }
    }

    /*** Class Methods - Accessors ***/

    public int getBagsOrdered()
    {
        return this.bagsOrdered;
    }

    public int getLargeBoxes()
    {
        return this.largeBoxes;
    }

    public int getMediumBoxes()
    {
        return this.mediumBoxes;
    }

    public int getSmallBoxes()
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    {
        return this.smallBoxes;
    }

    @Override
    public String toString()
    {
        return "Bags ordered: " + this.getBagsOrdered() + " " +
               "Large boxes: "  + this.getLargeBoxes()  + " " +
               "Medium boxes: " + this.getMediumBoxes() + " " +
               "Small boxes: "  + this.getSmallBoxes()  + " " ;
    }

    /*** Application ***/

    public static void main(String[] args)
    {
        OrderBoxes tester = new OrderBoxes(36);

        System.out.println(tester.toString());

        System.out.println(" Calculating optimal boxes...");
        tester.calculateBoxesNeeded();

        System.out.println(tester.toString());
    }
}
```