CS 180-Fall 2011

HW2-Solutions: By Anmer Daskin

Max: 22+ 6+10+10=48

2.9. **(22 pts: 6x1+(11x1)+ (4x1))** Identify classes, methods, and constructors in all programs listed in Example 2.1?

- **(6x1)** Classes
  - (**4 pts**) (defined in the program): GetInputScanner , ComputeHeightScanner, DisplayHeightScanner, BouncingBallScanner
  - (**2 pts**) (predefined used in the program): String, Scanner.
- **(12x1)** Methods:
  - (**5 pts**) GetInputScanner(), ComputeHeightScanner(), DisplayHeightScanner(), BouncingBallScanner(), main()
  - (**7 pts**)System.out.println(...),System.out.print(...). source.nextInt(),source.nextDouble(),String.format(), Integer.toString(), java.lang.Math.pow().
- **(4x1)** Constructors: GetInputScanner(), ComputeHeightScanner(), DisplayHeightScanner() BouncingBallScanner().

(**- 1 point for each extra wrong class, method, or constructor name**)

2.18. **(6 pts: 6x1)** Find all predefined classes used in program 2.7.

- Classes: System , JOptionPane , Math , String, Double, Integer
- **(-2) for double, int**

2.24. **(10 pts:)** Copy and paste program 2.9… Compile and run it. Modify this program so that it inputs the color of the bouncing ball. Note that the color is to be entered by the user in addition to the other data such as height and the number of bounces.

The answer is shown in larger font. Full credit is given for different right answers.

- **(4 pts)** for different answers that modifies the program, but in a wrong way.

```
import java.util.*;
import java.lang.String;
import javax.swing.*;
public class GetInputData {
    public GetInputData() {
        String frameTitle = "Bouncing Ball: Sub-problem 1";
        double height, coeffRestitution;
        int bounces;
        // Declare user prompt strings.
```

```
        String enterH = "Enter height.";
        String enterC = "Enter coefficient of restitution.";
        String enterK = "Enter number of bounces.";
        String thankYou = "Thank you, all data entered. Bye!";
        // Prompt the user, get data, and convert to appropriate type.
        String response = JOptionPane.showInputDialog(null,enterH,
frameTitle,JOptionPane.QUESTION_MESSAGE);/*@\label{inputDialogLineOne}@*/
        height = Double.valueOf(response).doubleValue();
/*@\label{convertToDoubleLineOne}@*/
        response = JOptionPane.showInputDialog(null,enterC,
frameTitle,JOptionPane.QUESTION_MESSAGE);/*@\label{inputDialogLineTwo}@*/
        coeffRestitution =
Float.valueOf(response).doubleValue();/*@\label{convertToDoubleLineTwo}@*/
        response = JOptionPane.showInputDialog(null, enterK, frameTitle,
JOptionPane.QUESTION_MESSAGE);/*@\label{inputDialogLineThree}@*/
        bounces =
Integer.valueOf(response).intValue();/*@\label{convertToDoubleLineThree}@*/
        String enterColor = "Enter the color of the
ball."
         response = JOptionPane.showInputDialog(null,
enterColor, frameTitle, JOptionPane.QUESTION_MESSAGE);
         String color = response;

        // Display goodbye message!
        JOptionPane.showMessageDialog(null, thankYou, frameTitle,
JOptionPane.INFORMATION_MESSAGE);/*@\label{displayGoodbyeMessage}@*/
    }
    public static void main(String[] args) {
        new GetInputData();/*@\label{createGetInputDataObject}@*/
    }
}
```

2.26. **(10 pts:)** In Example 2.5 let us assume that the speed is given in miles per hour and the duration in seconds. Now rewrite the program 2.6 to compute the distance travelled by a moving object given its speed and duration.

- **(4 pts)** for different answers that modifies the program, but in a wrong way.

```
/*
 * This program computes the distance travelled by
 * a moving object given its speed and travel duration.
 * Uses the Scanner class for input.
 * Author: Aditya Mathur. Date: July 20, 2010.
 */
import java.util.*;
import java.lang.String;
import javax.swing.*;
public class ScannerExample {
    // Create an object named source that will
    // help us input data for solving this problem.
    Scanner source = new Scanner(System.in); /*@\label{scannerObject}@*/
    public ScannerExample() {
        double speed, duration;// Speed and duration.
/*@\label{useOfDouble}@*/
```

```
        double distance; // Distance to be computed.
        // Declare user prompt strings.
        String enterS = "Enter the speed."; //mph
        String enterD = "Enter duration.";  //seconds
// Solution to sub-problem 1: Read input.
        // Prompt the user and get speed and duration.
        System.out.println(enterS);
/*@\label{solutionSubProblemOneScanner}@*/
        speed = source.nextDouble();/*@\label{getSpeed}@*/
        System.out.println(enterD);
        duration = source.nextDouble();/*@\label{getDuration}@*/
// Solution to sub-problem 2: Compute distance travelled.
// Conversion from seconds to hours
          distance = speed*(duration/3600);
// Solution to sub-problem 3: Display output.
        System.out.println("Distance travelled: "+ distance+"
miles.");/*@\label{distanceTravelled}@*/
    }
    public static void main(String[] args) {
        new ScannerExample(); // Create ScannerExample
object./*@\label{mainScannerExecutionBegins}@*/
    }
}
```