

Practice Test

Java, the finals!

It's the most wonderful time of the year



university of
applied sciences



PROBLEM DESCRIPTION

It's the time of the year again: Christmas! And of course, you can not celebrate Christmas with a nice decorated Christmas tree. The Intratuin sells a lot of Christmas trees and articles. You are going to keep track of all the products, including decorated show model Christmas trees that are in the showroom of Intratuin.

There are four different types of Christmas trees: Norway spruce, Nordmann, blue spruce and the fake (plastic) one. Every tree has a different height and different price.

Every tree **can** be decorated with different type of lights. One tree can have only one type of lights. Lights are available in **predefined** lengths (1m, 5m, 10m, 30m) and different types. These types are: white, RGB, flickering RGB and RGB with a mobile app. The different types **behave differently**. When the lights are turned on the following message needs to be displayed:

- White: "I'm just shining boring white."
- RGB: "I'm giving a little bit more color to your life."
- RGB flickering: "I'm ready to have a little party."
- RGB with mobile app: "I'm completely future proof".

A Christmas tree also has Christmas balls. A ball has a diameter (in cm) and a certain color. The diameter is variable. When the ball is created the diameter should be provided. When a diameter bigger than 30cm is provided it should throw an exception: `ChristmasBallTooBigException`. The balls are available in **predefined** colors (use an `enum`): blue, red, gold and white.

Every product (tree, lights and balls) should have a price label. This is **mandatory**! The price label should return the price (`double`) and a label containing the product information (`String`). You should use the prices as found in Table 1. Don't forget that if a Christmas tree is decorated, the price of the decoration should be included in the price of the tree.

Table 1 Product prices

| Product Group | Type | Price |
|------------------|----------------|--------------------------------|
| Christmas Tree | Nordway spruce | €20,- |
| Christmas Tree | Nordmann | €30,- |
| Christmas Tree | Blue Spruce | €25,- |
| Christmas Tree | Fake (Plastic) | €10,- |
| Christmas Lights | White | €5 + (€0,03 * length in cm) |
| Christmas Lights | RGB | €8 + (€0,05 * length in cm) |
| Christmas Lights | RGB flickering | €9,50 + (€0,08 * length in cm) |
| Christmas Lights | RGB mobile app | €95 + (€0,60 * length in cm) |
| Christmas Bal | Blue | €1,- |
| Christmas Ball | Red | €1,10 |
| Christmas Ball | Gold | €1,50 |
| Christmas Ball | White | €0,80 |

Remark Make sure only the class `Intratuin` is responsible for printing (`System.out.println`).

ASSIGNMENT 1

Make the classes for the Christmas trees, Christmas lights and Christmas balls.

ASSIGNMENT 2

Make a method in the Christmas tree that turns on the Christmas lights (if the tree has any).

ASSIGNMENT 3

Make the Intratuin class. This class should hold all the products that have a price label.

ASSIGNMENT 4

Make a method in Intratuin that prints all the products in the store: their price and information about the product.

ASSIGNMENT 5

Make a method in Intratuin that turns on all the Christmas trees lightning (based on the list of all products).

Hint: To make your code more readable: make a method in the Intratuin class that only returns Christmas trees.

ASSIGNMENT 6

Make Unit tests for the application. Make at least one for the Christmas ball to test the exception.