Laboratory in1278LR Introduction to Programming with Java
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Group = 3; Remainder = 2

Assignment 5
Create a new directory with the name Assignment5.
Use this directory to save all programs that you will create as part of this assignment.

Part 1 RecCoord
Construct a class RecCoord that contains two double-precision attributes named *xval* and *yval*, which will store the values of a point in rectangular coordinates. The class methods should include appropriate constructors setting the attributes to user-defined values, a display method, a method comparing two points for equality and a method assigning the attributes of one object to the other.

- Construct a test program in which several points are created and initialized and have their values printed.
- Assign an object1 to object2; compare these objects before and after assignment
- Extend the class RecCoord with a method calculating the distance between two points. Extend your test program to calculate some distances between points.

  Use the following conversion formula: *distance* = $\sqrt{(x_2 - x_1)^2 +)(y_2 - y_1)^2}$.

Part 2 Gas pump simulator.
You are asked to create a class GasPump.
The attributes of interest are:

- the available stock of gas in the supply tank (the maximum amount of gas in the supply tank has some reasonable value),
- the price of the gas (in cents per litre),
- the kind of gas (regular/super/diesel).

The services available on the class GasPump are:

- a constructor initializing an object with sensible default values for each of the attributes.
- a constructor initializing an object with user programmed values for each of the attributes.
- The request of some amount of gas. Assuming there is a sufficient stock of gas, the requested amount is delivered, otherwise all the available gas in the supply tank is delivered.
- the pump will display (print) the amount of gas pumped, the amount of gas in the supply tank and the total price of the pumped amount of gas. Note that there is no need to simulate the pumping action in any way. Just substraction of the values will do.
- a refill operation which will (magically) refill the tank,
- an *equals*()-method which will test whether two pumps are 'the same'. Two pumps are the same if and only if the values of their attributes *price* and *kind* are identical.

Create a class TestPump. This class will contain the *main*( ) method. In this main method several pumps will be constructed using both forms of the constructor. Create pumps for regular, super and for diesel. These kinds of gas have different prices.
Exercise the pumps by having several deliveries and refills.
Also test the *equals*()-method on two pumps.

Part 3 Strings
You are asked to write a program that can manipulate dates contained in Strings. The program should:

- Let the user input a string consisting of a date using the format '20-12-92' (without the quotes but including the dashes). Repeat the question if the date format is not recognized.
- Reformat the string to the following format: '20 December 1992'.
- Convert the month number to the month name.
- Convert the year to 4 digits. Years < 70 will be converted to 20xx, years >= 70 will be converted to 19xx.

Hint: You may use either substring(), StringTokenizer() or indexOf() to split-up the given string in separate parts.
Note: Table 8.1 contains a number of printing errors: IndexOf ⇒ indexOf (and similar for LastIndexOf).

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