Imperial College London

Software Engineering 2: Object Oriented Software Engineering

Programming test Autumn 2013

Max Cattafi (`m.cattafi@imperial.ac.uk`)

A shop has a warehouse containing many items of several types, we'll focus on books and dvds.

What items of all types have in common is that we want to deal with information related to their available quantity.

As far as books are concerned we would like to deal with information related to their authors and titles.

The relevant information for dvds is about director, title and one main actor or actress of the film.

In files `books.txt` and `dvds.txt` you can see some examples.

Write a C++ program which reads the content of these two files, stores it into a container class and prints it on the screen more or less like this:

```
book: Anna_Karenina by Lev_Tolstoy (25)
book: Solaris by Stanislaw_Lem (20)
book: 1984 by George_Orwell (10)
dvd: Notorious directed by Alfred_Hitchcock with Ingrid_Bergman (20)
dvd: Raging_Bull directed by Martin_Scorsese with Robert_De_Niro (4)
dvd: Escape_from_New_York directed by John_Carpenter with Kurt_Russell (6)
```

Some requirements to respect for the program design and architecture:

- A suitable class hierarchy.

- Separation of source and header files.

- Encapsulation: appropriate visibility for class fields, avoid getters, no setters.

- Const-correctness.

- Use of initialization lists in constructors.

- Appropriate memory management.

- *Only one* overloading of `operator<<` (not one for each type).

- Use of iterators whenever appropriate.