CSE 1322L - Lab 11

Introduction

In this lab, you will write a program that allows users to keep track of their Blue Ray collection. The disks in the collection must be stored as if they were nodes in a linked list.

Requirements

The features described below must be in your program:

- BlueRayDisk class
  - **This class must behave like a node in a linked list.**
  - Has 5 fields: 2 Strings named "title" and "director", an integer named "yearOfRelease", and a double named "cost". The last field is of type BlueRayDisk, is called "next", and is **public**.
  - **BlueRayDisk(String, String, int, double)**: Initializes all the fields in the object with the arguments passed. "next" is initialized with null.
  - **String toString()**: Override of toString(). It must return the following string (where X is the disk's title, Y is its director, Z is its year of release, and A is its cost)

```
X – Y (Z): $A
```

- BlueRayCollection class
  - **This class must behave like a Linked List, where its nodes are BlueRayDisk objects.**
  - Has a single field of type BlueRayDisk called "head".
  - **void addDisk(String, String, int, double)**: Creates a BlueRayDisk object using the arguments passed. It then adds this newly created object to the back of the list.
  - **String showAll()**: Traverses all BlueRayDisks currently stored in the linked list, starting by the head. Calls their toString() and concatenates the returning strings to one other, separating each with a new line character. It then returns this complete string. If the linked list is empty, return an empty string instead. For example:

```
"Movie 1 – Director 1 (2000) $1.00
 Movie 2 – Director 2 (2001) $2.00
 Movie 3 – Director 3 (2002) $3.00"
```

- Driver class
    - Creates a BlueRayCollection object called “collection”
    - In a loop, implements the menu options below:
    1. **Add to collection**: prompts the user for the necessary information to create a BlueRayDisk. Passes said information to collection’s addDisk(). This option must handle the following exceptions:
        a. If the user enters a non-integer when requested for the year, print “Year if release must be a whole number!”, then return to the menu.
        b. If the user enters a non-double when asked for the price, print “Price must be a number!”, then return to the menu.
    2. **See collection**: Calls collection’s showAll(). If the returned string is empty, prints “BlueRay collection is empty”. Otherwise, prints whatever is returned by the method call.
    3. **Quit**: Terminates the program

Deliverables

- Lab11.java (driver)
- BlueRayDisk.java
- BlueRayCollection.java

Considerations

- Remember that the BlueRayCollection class must behave like a linked list and BlueRayDisks must be have like nodes in a linked list. BlueRayCollection’s addDisk() should behave like append() (or addTail()) of a linked list. Check the slides for details on the functionality of linked lists.
- Despite what the deliverables above say, you can submit all 3 classes in a single file.
- Remember that your floating-point numbers do not need to be rounded off to a specific number of decimal places and they do not need to be 100% precise. As long as the datatype you are using and your math are both correct, rounding errors will be ignored during grading.
- In general, you would not want to create a BlueRayDisk class the way the lab requires you to do. Instead, you would declare the BlueRayDisk class inside the BlueRayCollection class, making it private and static. This is because BlueRayDisk objects should be exclusively managed by BlueRayCollections. Their exact implementation should be invisible to the outside world, and it doesn’t make sense to create a BlueRayDisk object outside the context of a collection.

Sample Output (user input in red)

```
[BlueRay Disk Collection]
1. Add to collection
2. See collection
3. Quit
Enter option: 1

Enter disk title: Jaws
Enter director name: Steven Spielberg
Enter year of release: 1975
Enter price of disk: $19.95
BlueRay Disk added to collection.

1. Add to collection
2. See collection
3. Quit
Enter option: 1

Enter disk title: Jurassic Park
Enter director name: Steven Spielberg
Enter year of release: 1993
Enter price of disk: $17.99
BlueRay Disk added to collection.

1. Add to collection
2. See collection
3. Quit
Enter option: 1

Enter disk title: Star Wars
Enter director name: George Lucas
Enter year of release: nineteen seventy-seven
Error: Year of release must be a whole number!

1. Add to collection
2. See collection
3. Quit
Enter option: 1

Enter disk title: Star Wars
Enter director name: George Lucas
Enter year of release: 1977
```

```
Enter price of disk: $twenty-two
Error: Price must be a number!

1. Add to collection
2. See collection
3. Quit
Enter option: 1

Enter disk title: Star Wars
Enter director name: George Lucas
Enter year of release: 1977
Enter price of disk: $21.99
BlueRay Disk added to collection.

1. Add to collection
2. See collection
3. Quit
Enter option: 2

Here's your current collection:
Jaws - Steven Spielberg (1975): $19.95
Jurassic Park - Steven Spielberg (1993): $17.99
Star Wars - George Lucas (1977): $21.99

1. Add to collection
2. See collection
3. Quit
Enter option: 3

Shutting off...
```