Programming Assignment: Degrees of Kevin Bacon

Topics

File I/O and Array Lists

Problem

In this programming assignment you will be implementing a preliminary version of Six Degrees of Kevin Bacon which is based on the concept of degrees of separation between two individuals, in this case it will be Kevin Bacon and another actor. You will be provided with a sample text file with a list of *actor*, *movie*, and *year* information. You should find Kevin Bacon Degrees of Freedom using that list. For simplicity, we are only going to use up to 2 degrees in this assignment: that means you are not required to calculate a degree beyond 2. Full implementation can be done using recursion which will be extra credit/lab. Other functionalities that should be implemented for this assignment are the ability to add, delete an entry from the list or text file, and the program should not stop until the user asks to *quit*. This means that the text file should be updated each time the user makes a change without recompiling.

Procedure

- The user is presented with 3 options and and an option to quit the program

    1. Calculate an actor's *Bacon Number*
    2. Add an entry to the list
    3. Delete an entry from the list

- The output for option 1 should be printed to the screen

- The result of addition and deletion should be instantly reflected in the text file

What is Kevin Bacon Degrees of Freedom?

Based on your input text file (sample text file will be provided along with the assignment), if an actor has acted in a movie with *Kevin Bacon* then the actor's *Bacon Number* or degrees of freedom is 1. For example, *Kevin Bacon* has acted with *Brad Pitt* in the movie *Sleepers* giving *Brad Pit* a **Bacon Number** of 1. Similarly, *Kevin Spacey* has acted with *Tom Cruise* in *Austin Powers in Goldmember* and *Kevin Bacon* has acted with *Kevin Spacey* in *Patriots Day* giving *Tom Cruise* a Bacon Number of 2. You can find a more accurate example at Oracle of Bacon. Feel free to add more information to the list.

Sample Outputs

Option1 DOF version (earn up to 100% credit)

```
Select Opions (Enter Q to Quit):
1. Bacon Degrees of Freedom
2. Add Entry
3. Delete Entry
  1
Enter Actor:
  Brad Pitt
Kevin Bacon acted with Brad Pitt in the movie Sleepers in the year 1996

Brad Pitt has Bacon Number = 1
```

```
Select Opions (Enter Q to Quit):
1. Bacon Degrees of Freedom
2. Add Entry
3. Delete Entry
  1
Enter Actor:
  Tom Cruise
Kevin Spacey acted with Tom Cruise in the movie Austin Powers in Goldmember in the year 2002
Kevin Bacon acted with Kevin Spacey in the movie Patriots Day in the year 2016

Tom Cruise has Bacon Number = 2
```

```
Select Opions (Enter Q to Quit):        Kevin Bacon Sleepers 1996
1. Bacon Degrees of Freedom             Kevin Bacon Beyond All Boundaries 2009
2. Add Entry                            Kevin Bacon Flatliners 1990
3. Delete Entry                         Kevin Bacon Patriots Day 2016
                                        Kevin Bacon Black Mass 2015
 2                                      Kevin Bacon X Men First Class 2011
                                        Kevin Bacon Hero at Large 1980
Enter Actor (First and Last Names with a space in between):   Jennifer Lawrence
                                        Kevin Spacey Se7en 1995
                                        Kevin Spacey Patriots Day 2016
Enter Movie:   X Men First Class        Kevin Spacey Austin Powers in Goldmember 2002
                                        Mark Wahlberg 2 Guns 2013
Enter Year:    2011                     Mark Wahlberg Patriots Day 2016
                                        Mark Wahlberg The Fighter 2010
                                        Matt Damon Ocean's Thirteen 2007
                                        Tom Cruise Austin Powers in Goldmember 2002
                                        Tom Cruise Knight and Day 2010
                                        Jennifer Lawrence X Men First Class 2011
```

```
Select Opions (Enter Q to Quit):        Kenneth Tobey The Great Sinner 1949
1. Bacon Degrees of Freedom             Kenneth Tobey Hero at Large 1980
2. Add Entry                            Kevin Bacon Sleepers 1996
3. Delete Entry                         Kevin Bacon Beyond All Boundaries 2009
                                        Kevin Bacon Flatliners 1990
 3                                      Kevin Bacon Patriots Day 2016
                                        Kevin Bacon Black Mass 2015
Enter Actor (First and Last Names with a space in between):   Tom Cruise
                                        Kevin Bacon X Men First Class 2011
                                        Kevin Bacon Hero at Large 1980
Enter Movie:   Knight and Day           Kevin Spacey Se7en 1995
                                        Kevin Spacey Patriots Day 2016
Enter Year:    2010                     Kevin Spacey Austin Powers in Goldmember 2002
                                        Mark Wahlberg 2 Guns 2013
                                        Mark Wahlberg Patriots Day 2016
                                        Mark Wahlberg The Fighter 2010
                                        Matt Damon Ocean's Thirteen 2007
                                        Tom Cruise Austin Powers in Goldmember 2002
                                        Jennifer Lawrence X Men First Class 2011
```

Option 1 Search version (easy - earn up to 90% credit)

Select Options (Enter Q to quit):
1. Search movie
2. Add Entry
3. Delete Entry
Enter Actor:
    Julia Roberts
Search result:
    Julia Roberts acted in the movie Valentine's Day in the year 2010
    Julia Roberts acted in the movie Flatliners in the year 1990

Assumptions and Requirements

- You must use *array lists* to store actors, movies, and year information

- You must use file input/output taught in class to handle files

- The text file should be updated each time the user makes a change without recompiling

- In this version of implementation, the maximum Degrees of freedom required to be calculated = 2

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- *Actor* name should ALWAYS contain first and last name with a *space* in between

- *Year* should be one word

- *Movie* name should have no restrictions

- All user input errors should be handled. This includes array out of bounds, wrong input types, and so on.

- You should create a separate method to calculate the degrees of freedom

Grading Criteria - 100pts

1. Header [5pts]: Author, Date, Purpose, etc.

2. Good Programming Practices [5pts]: commenting, white space, indentation, etc.

3. Output [5pts]: The format of the output should be similar to the sample outputs given.

4. Pseudocode [5]

5. User input error handling [5]

6. Errors and Debugging [10] - show at least 10 screenshots of errors / debugging windows

7. Test Runs [5] (minimum of 5 different test runs should be included in the report. Screenshots are fine)

8. Code [60] : Further breakdown of points given in the template files

Note: If your code does not compile, your score will be an automatic zero regardless of other assignment sections (no partial credits), with the exception of contacting me beforehand. Also, do not submit your java code in a *docx* or *pdf* file, it has to be a *.java* file. You are more likely to receive better partial credits if you document and explain the errors that you were not able to fix, rather than me finding it.

Deliverables

1. *DOFLastname.java* - Use the template java file provided

2. Pseudocode, Test runs, and Screenshots of errors & debugging in **<u>one</u>** PDF file and name it *LastName-FirstName-Report.pdf*

Submit two files online.