ECE 325 ASSIGNMENT 2: Creating albums from your collection of songs

(10 points total) Now that your equipment inventory is under control (LAB 3), it is time to look at your collection of songs, which is growing steadily. You have a list of all your songs in the songs.txt file. As you can tell, song titles are quite peculiar in the neoclassical jazzhopmetal scene. You plan to keep track of the list of songs in a SongCollection object, which is basically a wrapper class for an ArrayList<Song>. However, sometimes you want to create an Album as well, which is a special type of SongCollection that can only contain songs with different titles (having two songs with the same title on an album is too confusing for the neoclassical jazzhopmetal crowd).

For this assignment, you have to finish the given implementation for the classes in the zip file. You are not allowed to make any changes to the SongCollection class (we will deduct points if you do). For this assignment, two songs are considered equal if their titles are the same. Make sure to avoid as much as possible duplicating functionality that is already implemented in the SongCollection class (i.e., show us that you understand how inheritance works).

1) (1 pt) The contains() method in the SongCollection class depends on the contains() method of ArrayList, which in turn depends on the equals() method of the type that you are storing in the ArrayList. Explain which of the following signature(s) should be implemented and why. Add a screenshot of the source code/documentation that helped you find the answer:
   a) public boolean equals(Object o) { }
   b) private boolean equals(Object o) { }
   c) private boolean equals(Song s) { }
   d) public boolean equals(Song s) { }

2) (3 pts) Implement the correct equals() method.

3) (2 pts) Load the song titles from songs.txt and add them into your collection. What is the biggest (= most songs) Album you can create from your collection of songs? Let your program output the songs on the Album as follows:
Track #1: Song title #1
Track #2: Song title #2 ... etc
Make sure that your implementation of the Album class overrides methods of SongCollection where necessary.

4) (1 pt) What happens if you try to add null to an Album? Why does your equals() method not complain about this?

5) (1 pt) Is there an issue with allowing null to be added to an Album (or SongCollection in general)?

6) (2 pts) Make sure that your code is clean (e.g., no left-over debugging code, nicely indented, etc.) and commented.
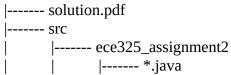
Hints
- If you ctrl + click on a method/class name in Eclipse, it will show the source code for that method/class. This also allows you to look at the source code for Java library methods as well.

Please submit:

1) A zip file containing your code and a PDF with the answers to the questions above.
Name the file 'FirstName_ID_asg2.zip' and keep the exact same file structure as the zip that was provided for the assignment. For example,
Filename: Cor-Paul_1234567_asg1.zip
        |------- solution.pdf
        |------- src
        | |------- ece325_assignment2
        | | |------- *.java

2) A screencast/movie that shows the following steps:
- Open your eClass with your name shown
- Open your IDE
- Show your code briefly
- Execute your code and show the results of question 3 of this assignment

Please do not modify any of the names/methods we've defined in the provided *.java files.