18.02 Assignment Instructions

Instructions: For this assignment, you will create several binary search methods and perform the searches using a collection of music.

1. Create a new project called **18.02 Assignment** in your Module 18 assignments folder.
2. Copy your **Music.java** and tester file from the previous search project as a starting point. Rename the tester to `V3`. Delete the existing search methods.
3. Declare an array of at least 10 `Music` objects. For each, you will need a song title, year, and artist name. At least one year needs to have multiple entries in the array. Same with one of the artists. Of course, be sure to use school-appropriate songs.
   For example: Livin' on a Prayer, 1986, Bon Jovi
4. Design a static method that traverses through the array and prints each element.
5. Since the data will need to be sorted prior to conducting a binary search, three static methods to do so need to be created.
   a. Write static methods to sort by title, year, and artist. You may use the insertion, selection, or merge sort, but not a bubble sort.
   b. Name and document the methods to clearly indicate the type of sort and the values being sorted.
   c. Utilize print debugging statements to ensure the sorts worked. Be sure to comment these out prior to submitting your work.
6. Create the following static methods in the tester class. Utilize the binary search algorithm. Each method will take two arguments: the array and the value to find.
   a. a method that searches the array for a particular song `title`
   b. a method that searches the array for `year` released. The output should list all songs found from that year
   c. a method that searches the array for the name of the `artist`. The output should list all songs performed by that artist
   d. methods to assist with printing all matches after a binary search has found a match. Model your code after the `linearPrint` method sample
7. Test your search methods by calling each and displaying the results. Start by showing the original array. Then demonstrate searching for a title, showing results when a title is found and when not found. Do the same for year and artist. Include searches that should find more than one match. Be sure to clearly label your output so someone looking at it knows which search criterion was applied each time.

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