CIS211: Data Structures

Delaware Tech, CT Department

Wilmington

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**Project #3: Bag 3 – Linked Approach**

1. **Introduction:**

We continue with the Bag data structure. However, in this project we focus on the representation of the Bag structure using singular linked list as described in chapter 3 of your textbook. Please study the sample programs “LinkedBag.java” and “LinkedBagDemo.java”.

1. **Part A.**
   1. Data Files: “p1artists.txt” that we used for project #1 and “p2changes.txt”.
   2. Assignment: Use the Linked approach to update “p1artists.txt” through “p2changes.txt” to produce “p3artists.txt”, which should have the same results produced in project #2.
   3. Use ***System.nanoTime()*** to find the time spent on this approach and compare the result with the output from project #2.
2. **Part B.**
   1. Data File: “p1arts”.txt”
   2. Assignment:
      1. Use an array of linked list to process the data file to produce the output similar to the following: Name the output file “p3artists\_arts.txt”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Artist ID | Artist Name | Art ID | Art Title | Appraised Value |
| 50 | Morgan | 1001 | Red Rock Mountain | 18000 |
|  |  | 1028 | Tired Cowboy | 4700 |
|  |  | 1054 | Snake Charmer | 4500 |
|  |  | 1068 | Moonlight | 9750 |
|  |  | 1069 | Renaissance | 5500 |
|  |  | 1113 | Shadow House | 5500 |
|  |  | 1114 | Storytelling at the Campfire | 18000 |
| 52 | Novarre | 1002 | Offerings | 10000 |

* + 1. Each artist will occupy one row of the array.
    2. Try to design the structure of the first node. In addition to “artistID” and “next” fields, what else should it contain?