CSC3202 Data Structures and Algorithms

ASSIGNMENT 3

Application using Binary Search Tree

DATE: 8 December 2022

INSTRUCTIONS:

1. Submit the program listing via PutraBLAST.
2. Submission dateline is 22 December 2022.
3. Copying or other forms of cheating is forbidden. The faculty has very strong rules about this and the standard penalty of first offence is to award 0 marks to all parties concerned.
4. Use Java to implement your solution.

QUESTION:

Implement a menu-driven program for managing a software store. All information about the available software is stored in file **software**. This information includes the name, version, quantity, and price of each package. When it is invoked, the program automatically creates a binary search tree with one node corresponding to one software package and includes as its key the name of the package and its version. Another field in this node should include the position of the record in the file **software**. The only access to the information stored in **software** should be through this tree.

The program should allow the file and tree to be updated when new software packages arrive at the store and when some packages are sold. The tree is updated in the usual way. All packages are entry ordered in the file **software**; if a new package arrives, then it is put at the end of the file. If the package already has an entry in the tree (and the file), then only quantity field is updated. If a package is sold out, the corresponding node is dleted from the tree, and the quantity field in the file is change to 0. For example, if the file has these entries:

Adobe Photoshop	7.0	21	580
Norton Utilities		10	30
Norton SystemWorks		6	50
Visual J++ Professional	6.0	19	100
Visual J++ Standard	6.0	27	40

Then after selling all six copies of Norton SystemWorks, the file is

Adobe Photoshop	7.0	21	580
Norton Utilities		10	30
Norton SystemWorks		0	50

Visual J++ Professional	6.0	19	100
Visual J++ Standard	6.0	27	40

If an exit option is chosen from the menu, the program cleans up the file by moving entries from the end of file to the position marked with 0 quantities. For example, the previous file becomes

Adobe Photoshop	7.0	21	580
Norton Utilities		10	30
Visual J++ Professional	6.0	19	100
Visual J++ Standard	6.0	27	40