Overview

This program lets the user to add a string element into the hierarchy of non redundant sorted linked list and check whether a specific element is present inside the data structure. Every time an element is added in the list, a function is invoked that arbitrarily returns either a 0 or 1. If the returned value is 1, the element is added to the next level. If the next level doesn't exist, it is created. This procedure will be repeated until the random method returns a 0.

Tools and languages used for the development

IDE - Eclipse for Windows 10 operating system
Language - JAVA

Requirements to run the program

- JAVA
- Any integrated development environment software for JAVA programming language
- Any operating system (Windows, Mac, Linux, etc.)

Files

SkipUI.java - main for the program. Provides an interface to the user to make choices.
Coin.java - interface for the RandomCoin and ArrayCoin.
RandomCoin.java - contains random method that arbitrarily returns either a 0 or 1, using a library function.
ArrayCoin.java - contains random method that arbitrarily returns either a 0 or 1 without using a library function.
ListHierarchy.java - java class that provides the functionality of the data structure.

Data Structure

In order to store the non redundant string data, the linked list of type Node is used. The objects of the list contains five attributes, namely, 'key' of type string (to store the string data), 'prev' of type Node (containing the reference of the previous list object), 'next of type Node (containing the reference of the next list object), 'up' of type Node (containing the reference of list object in the above level) and 'down' of type Node (containing the reference of list object in the level below).

Method description

Add - When invoked, adds the element into the non redundant string data structure. Returns true if the operation is performed successfully.

Find - Search for a specific string element in the structure. Returns true is the element is present in the structure otherwise false.

Print - Prints the current data state of the structure on the computer screen.

Assumptions

- Multiple blank spaces are treated as a single blank space.
- No string whose first character's ascii value is less than the ascii value of the character " " will be added.

Restrictions

- The string data is case insensitive.