GIT Department of Computer Engineering
CSE 222/505 - Spring 2017
Homework 5
Due date: 06 April 2017, 23:55

SCENARIO:

Q1:

1. ~~Extend BinaryTree class to implement Iterable interface. The iterator should traverse the binary tree pre order.~~
2. ~~Extend BinarySearchTree class from BinaryTree class. BinarySearchTree class should have an extra iterator method levelOrderIterator which returns an Iterator that traverses the binary search tree in level order.~~

~~Test:~~

~~Write your traverse methods such that they print each traversed node to console. Read integers (separated by sapces) from test.txt file. Create a BinaryTree and a BinarySearchTree. Traverse your trees.~~

Q2:

Consider the binary tree representation of a family tree in the book. Extend BinaryTree class to implement FamilyTree class. Your FamilyTree class should include the following features:

1. One parameter constructor to build a person’s family. The person should be at the root.
2. Add a new person in the family tree.
   The add method should take three parameters:
   - The name of the person to be added
   - The name of the person’s father or mother
   - The nickname of the person's father or mother.

   The nickname is given as in Arabic culture:

   - ibn-Fatih (son/daughter of Fatih) or
   - ebu-Fatih (father/mother of Fatih).

   So, the name of a son/daughter or the name of the father/mother is given in nickname format to the method. So, there could be more than one person with the same name in the family tree. To specify where to insert the person, the name of his/her mother/father is specified together with mother's/father's nickname. If there are more than one father/mother with the same name and nickname the insertion cannot be completed. Your method should throw an exception specifying both person's mother/father and daughters/sons.

3. A method to traverse the family tree in pre-order. Note that the pre-order traversal is not the same as the traversal of the binary tree. You should override the pre-order traversal method of BinaryTree.
4. Override the iterator method of BinaryTree o that the iterator correctly traverses the family tree.

Test:

- Read family.txt file which includes a family with a person in each line. The format of the txt file will be as:

  Hasan

  Ayşe, Hasan, ebu-Ayşe

  Ali, Ayşe, ibn-Hasan

  Sema, Hasan, ebu-Ayşe

  …

- Create a FamilyTree.
- Write your traverse method such that prints each traversed node to console. Traverse your tree.

RESTRICTIONS:

- Write a main class for each of two questions.
- Don’t use any other third part library.

GENERAL RULES:

- For any question firstly use course news forum in moodle, and then the contact TA.
- You can submit assignment one day late and will be evaluated over twenty percent (%20).
- Register github student pack and create private project and upload your projects into github.
- Your appeals are considered over your github project process.

TECHNICAL RULES:

- Use given CSE222-VM to develop and test your homeworks (your code must be working on CSE222-VM), CSE222-VM download link will be given on Moodle.
- Implement clean code standarts in your code;
  - Classes, methods and variables names must be meaningful and related with the functionality.
  - Your functions and classes must be simple, general, reusable and focus on one topic.
  - Use standart java code name conventions.

REPORT RULES:

- Add all javadoc documentations for classes, methods, variables ...etc. All explanation must be meaningful and understandable.
- You should submit your homework code, javadoc and report to Moodle in a studentid_hw#.tar.gz file.
- Use the given homework format including selected parts:

Detailed system requirements	
The Project usecase diagrams (extra points)	
Class diagrams	*
Other diagrams	
Problem solutions approach	*
Test cases	
Running command and results	

GRADING :

- No error handling : -50
- No javadoc documentation : -50
- No report : -90
- Disobey restrictions : -100
- **Cheating : -200**
- Your solution is evaluated over 100 as your performance.

CONTACT :

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