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NDXWI002

CSC2001F ASSIGNMENT 4

ELECTRICAL AND COMPUTER ENGINEERING

I, NDXZWI002, hereby declare that this assignment is my original work and that all sources have been acknowledged. I understand that plagiarism is the presentation of another person's work or idea as my own, without proper referencing, and that it is a serious offence. I declare that I have read and understood the plagiarism policy of my institution and that this assignment complies with those requirements.

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1. OO Design

Classes:

- Posts.class, Account.class, BinarySearchTree.class, BinaryNode.class, Profile.class, TikTok.class

Posts.class

- The Posts class creates a Post object that stores details of a post (title, videoName, numberOfLikes)

Account.class

- The Account class creates an Account object that stores an accountName, description, accountPosts list, followers list, following list

BinarySearchTree.class

- Initialises the Binary Search Tree root.

BinaryNodeTree.class

- The BinaryNodeTree class creates a node that stores an Account data and is linked to its left and right subtrees/children

Profile.class

- The Profile class initialises the BinarySearchTree tree, Scanner input and user choice.

TikTok.class

- It is used as a user interface to interact with the Profile classes and it contains the main function

Interaction:

The TikTok class has a main function that is used to initiate the TikTok app and its dependencies (classes). The startTikTok() method from the Profile is invoked by the TikTok class inside the main function to display a user's choices so they can interact with the TikTok app.

Option 1, allows a user to access an existing given account full profile description. The full profile description of an Account is displayed by the fullDescription() method from the Account class. Option 2, allows a user to display a list of accounts in the TikTok app that are stored by nodes in the BinarySearchTree. The method responsible for such is the getListOfAccounts() in the BinarySearchTree.

Option 3, allows the user to create a non existing account by calling the insert Method from the BinarySearchTree. Option 4, allows users to remove an existing Account. Option 5, calls the listAccountPosts() method from Account that prints a list of Post. Option 6, calls the addAccountPost method from Account and adds a Post into a list of its type.

Option 7, populates data from a txt file that includes creating an Account, adding a Post, and adding a follower. Option 8, calls the addNewFollower and addNewFollowing from Account to update an account's followers and following. Option 9, calls the followers.remove() and following.remove() methods from an ArrayList to remove an account's following and

followers. Option 10, take in a .txt file and executes commands from the file that includes Delete <Account Name>, Display <Account Name>, List <Account Name> Posts

2. Test Cases

Key * - main 7 functions

Function	Test	Output	Analysis
*Load a text File	Load a text file with create, add and follow commands	https://i.imgur.com/qJfKVSl.png	The program is able to process a text file
*List all accounts	List all account created by loading the text file	https://i.imgur.com/SL8npBA.png	All accounts processed from the text file have been created by the program.
*List all account posts	List all posts associated with an account	https://i.imgur.com/FJEJ3Dp.png	The program is able to show an account's description.
Do not list non existing account posts	list posts associated with a non existing account	https://i.imgur.com/cTTkHUe.png	If user asks for post from a non existing account, the TikTok app will ask them to create an account for that account name first
*Show an profile description	Show profile description for a given account name	https://i.imgur.com/KcMaEHL.png	The program is able to show an account's description
Do not show a non existing profile description	Show profile description for a non existing account	https://i.imgur.com/l2XIKFM.png	If user asks for profile description of a non existing account, the TikTok app will ask them to create an account for that account name first
List of an account followers and following	Shows a list of followers and following for a given account name	https://i.imgur.com/PaANFyH.png	The program is able to show other account the given account follows and

			is been followed by
Do not list non existing account followers and following	List followers and following for a given non existing account name	https://i.imgur.com/QQ1roGm.png	If user asks for a list of followers for a non existing account, the TikTok app will ask them to create an account for that account name first
*Create a new account	Able to interact with a user to create an account	https://i.imgur.com/DbregHc.png https://i.imgur.com/Q3tjObk.png	The program is able to interact with the user and add a new account name and description.
Do not allow to create an account with existing account name	Create an account with existing account name	https://i.imgur.com/Ad4BtjN.png	The program does not allow an account with already existing account name to be created
Show new account created	Show account details of the newly created account	https://i.imgur.com/VH4hsoq.png	The program is able to show a description of the new account.
*Delete an account with given account name	Delete an account	https://i.imgur.com/tpb4q4P.png https://i.imgur.com/6AmfQpq.png	The program is able to delete a given existing account from the BinarySearchTree
Do no allow to delete a non existing account	Delete a non existing account	https://i.imgur.com/VBWUZAp.png	The program does not recognize the a non existing account name
*Add a new post for an account	Add a new post with a title, video name and number of likes	https://i.imgur.com/CKf1b05.png	The program is able to create a post for an existing account
Do not allow to add a new post for a non existing account	Add a new post for a non existing account	https://i.imgur.com/X0lPpui.png	The program does not allow a post for non existing account to be created
Add a new follower	Add an follower to for an existing	https://i.imgur.com/zeuwBrK.png	Zuckuss9 has been added as Zwivhuya

	account and account following should also exist	https://i.imgur.com/13r0WdR.png https://i.imgur.com/xTPfcQn.png	<p>Ndou's follower</p> <p>Zwivhuya Ndou has been added as an account Zuckuss9 is following</p>
Do not add a non existing account as follower or following	Try to add a non existing account as follower or following	https://i.imgur.com/s1LBaxq.png https://i.imgur.com/GqxDRuZ.png	The program does not allow user to add a non existing account as a follower or following
Able to remove an existing follower	remove an existing follower	https://i.imgur.com/HRormhE.png https://i.imgur.com/Qdtg9IL.png https://i.imgur.com/4H8o4ou.png https://i.imgur.com/5B4fsGB.png https://i.imgur.com/PkdaBN1.png	<p>Revan3 has unfollowed Dengar8</p> <p>Thus Dengar8 has been removed from Revan3 following list and Revan3 has been removed from Dengar8 followers list</p>
Unable to remove a non existing account as a follower or following	remove an existing follower	https://i.imgur.com/sldJaGw.png	The program does not allow user to remove a non existing account as a follower or following
Automatic Test	Process a txt file with random Display <Account Name> Posts, Delete <Account Name> and Find <Account Name> commands generated from makecommandsList dataset.py	https://i.imgur.com/OFft0ac.png https://i.imgur.com/ozRyjWy.png https://i.imgur.com/lhpSZsP.png https://i.imgur.com/xHYvXaD.png https://i.imgur.com/OarOnL9.png https://i.imgur.com/kRIEAt3.png https://i.imgur.com/j	The @statements are the commands been executed from the txt file

		kc95L7.png	
Does not crash when it receives invalid input	Enter any random value	https://i.imgur.com/K2qxxZ5.png	

3. Creativity

The functionality of these functions has been added on the test cases table

3.1 Adding Followers and Following feature

- An account's description includes an account's a list of an account's followers and following including number of followers for that account.

3.2 Processing a txt file with commands and generating the commands with the makecommandsListdataset.py

- Generated a commandsList.txt file with Delete <Account Name>, Display <Account Name>, List <Account Name> Posts commands.

3.3 Adding <Account Name> Follows <Account Name> into the dataset.txt

- When the dataset.txt file is loaded it processes Create, Add and Follows thus adding <Account Name> following and followers.

3.4 Manually add and Remove a follower.

- A user choice to add or remove an account's follower(s).

4. Git Log

<https://i.imgur.com/5i7mPOK.png>

5. Reference

- https://vula.uct.ac.za/access/content/group/de661d79-937c-4555-9799-32022052d752/Unix%20and%20Data%20Structures%201/csc2001f_2023_binarysearchtrees.pdf
- CSC2001F Resources, Hussein Suleman