

Social Media Application using Binary Search tree

The goal of this assignment is to produce a simple proof-of-concept replica of some functionality of a social media system like Tiktok, using Binary Search Trees as the main underlying data structure. The classes are designed to work together to allow users to create and manage accounts and their associated posts. The '**BinarySearchTree**' class provides efficient searching and retrieval of accounts, while the '**Account**' and '**Post**' classes provide the necessary data structures to store and display user-generated content. The '**Application**' class serves as the primary interface for users to interact with the system and perform various operations.

1. **Application**: The main class that contains the program's entry point and user interface. It interacts with the '**BinarySearchTree**' and **Account** classes to perform operations like creating, listing and deleting accounts, adding and listing posts, and loading data from file.
2. '**BinarySearchTree**': A generic binary search tree that stores '**BinaryTreeNode**' objects. It provides methods for inserting, deleting and searching nodes.
3. '**BinaryTreeNode**': A generic class that represents a node in a binary tree. It contains a reference to the node's data and its left and right child nodes.
4. '**BinaryTree**': A class that contains inOrder method to sort list of Accounts in ascending order and also a getSize method that calculate the size of the binary tree to check if the tree has Accounts or empty.
5. '**Account**': A class that represents a user account. It contains a name, description, date joined, followers, following and a list of posts. It provides methods for adding, deleting and displaying posts.
6. '**Posts**': A class that represents a post created by a user. It contains a title, video, number of likes, comments and shares.

The '**Application**' class interacts with the '**BinarySearchTree**' class to store and retrieve '**Account**' objects. Each '**Account**' object contains a list of '**Post**' objects that are added and displayed using methods provided by the '**Account**' class. The '**BinarySearchTree**' class uses the '**BinaryTreeNode**' class to store and retrieve data in the binary search tree.

Testing

Testing whether user input is relevant to the menu or integers needed to access the menu.

```
rector@rector-VivoBook-ASUS:~/Documents/Assignment4$ make run
java -cp bin Application
Welcome to the worlds best entertaining videos

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: r
Invalid input. Please enter an integer 1-9.

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 9
Bye!
rector@rector-VivoBook-ASUS:~/Documents/Assignment4$
```

Testing for insertion() method of BinarySearchTree class.

```
Enter your choice: 1
Enter account name to see description: Rector
Account not found

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 3
Enter name: Rector
Enter description: uct cs student
Account Created successfully

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 1
Enter account name to see description: Rector
uct cs student
```

Testing and find(), delete() methods of BinarySearchTree class and inOrder() method of BinaryTree class. If you are trying to delete account that does not exist it will refuse and you can delete an account if and only if it exists. If the binary tree is empty there will be no list of accounts printed and if they exist they will be printed. If the account is inserted in the binary tree then it can be listed else it won't be on the list.

```
8. Delete a post
9. QUIT
Enter your choice: 4
Enter account name to delete: Man
Account not found

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 4
Enter account name to delete: Rector
Account deleted successfully

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 2
No accounts in the system at the moment, you can create your account by entering 3

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 2
List of all Accounts:

4-LOM0
miniscule's Hamlin's Lorenz
Joined April 2023
502933 Following 628759 Followers

4-LOM1
sale contingent Gielgud's
Joined January 2023
153653 Following 170190 Followers

4-LOM2
prod's tawdry imperfect
Joined December 2023
170467 Following 354936 Followers

4-LOM3
accountefensiveness's Banks's subletting
Joined May 2023
699818 Following 251067 Followers
```

Testing addPost(), deletePost() and displayPosts() methods of Account class. A post will be added/deleted to an existing account only and a post will be displayed only if it was added to an existing account.

```
9. QUIT
Enter your choice: 6
Enter the account name: Rector
Account not found.

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
```

```
Enter your choice: 6
Enter the account name: Zuckuss3
Enter Title: Shebe's best lyrics
Input Video: vid425.mpg
```

```
Title: Shebe's best lyrics
Video: vid425.mpg
Likes: 0 Comments: 0 Shares: 0
Post added successfully.
```

```
9. QUIT
Enter your choice: 5
Enter an account name: Rector
Account not found

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
```

```
Enter your choice: 5
Enter an account name: Zuckuss3
```

```
Title: Shebe's best lyrics
Video: vid425.mpg
Likes: 0 Comments: 227 Shares: 392
```

```
Title: suspicion episcopate movable's vitally unarmed
Video: video2453.mpg
Likes: 6322 Comments: 6220 Shares: 513
```

```
Title: unruly microwaves paramilitary's unwiseest declarative
Video: video2452.mpg
Likes: 895 Comments: 252 Shares: 109
```

```
Title: fatalists lummoX seminaries railway's tingeing
Video: video2451.mpg
Likes: 5120 Comments: 497 Shares: 866
```

9. QUIT

Enter your choice: 8

Enter an account name: Zuckuss3

Enter post title to delete the post: best football skills

Post "best football skills" not found.

Choose an action from the menu:

1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT

Enter your choice: 8

Enter an account name: Zuckuss3

Enter post title to delete the post: unruly microwaves paramilitary's unwise declarative

Post "unruly microwaves paramilitary's unwise declarative" deleted successfully.

7. Load a file of actions from disk and process this

8. Delete a post

9. QUIT

Enter your choice: 5

Enter an account name: Zuckuss3

Title: suspicion episcopate movable's vitally unarmed

Video: video2453.mpg

Likes: 6322 Comments: 1191 Shares: 117

Title: fatalists lummoX seminaries railway's tingeing

Video: video2451.mpg

Likes: 5120 Comments: 7246 Shares: 450

Title: robing rumba's abomination bonkers turpentine's

Video: video2450.mpg

Likes: 950 Comments: 6207 Shares: 23

Title: inspirations selectors unforgettably capitulate smellier

Video: video2449.mpg

Likes: 122 Comments: 7434 Shares: 12

Title: perspicacity sweeper Butterfingers deserving complicating

Video: video2448.mpg

Likes: 6694 Comments: 8830 Shares: 252

Title: casings laid greased anesthetics nightclub's

Video: video2447.mpg

Likes: 6991 Comments: 2606 Shares: 166

Title: Merton sawdust's vulgarizing irregularity's bitchiest

Video: video2446.mpg

Likes: 86 Comments: 3297 Shares: 877

Title: Senghor's artsiest accountooaccountleaccount haraccountiest Haraccounty's

Video: viaccounteo2445.mpg

Likes: 6624 Comments: 4112 Shares: 386

Testing file loading, if file exist it will try and add accounts and posts else return file not found.

```
8. Delete a post
9. QUIT
Enter your choice: 7
Enter file path to load:
dataset.txt
File not found.

Choose an action from the menu:
1. Find the profile description for a given account
2. List all accounts
3. Create an account
4. Delete an account
5. Display all posts for a single account
6. Add a new post for an account
7. Load a file of actions from disk and process this
8. Delete a post
9. QUIT
Enter your choice: 7
Enter file path to load:
/home/rector/Documents/dataset.txt
Accounts and Posts added successfully.
```

Creativity

- Account details or user profile has added functionality of showing date joined, followers and following.
- User's post has added function of showing number of comments and shares.
- Added functionality for deleting a post.
- Added functionality for searching for a post by a keyword
- Using ANSI colour codes for interactive and creative command line user interface. Welcome message(purple and bold), menu(green background), input query(blue), successful output(green), unsuccessful output(red)

Git

```
rector@rector-VlvoBook-ASUS:~/Documents/Assignment$ git log | (ln=0; while read l; do echo $l\n: $l; ln=$((ln+1)); done) | (head -10; echo ...; tail -10)
9: commit 724f415405e5aa80e8fc982e484983db45aa832c
1: Author: Rector Ratsaka <rtsrec001@myuct.ac.za>
2: Date: Tue Apr 18 10:36:10 2023 +0200
3:
4: addition of ANSI color codes for interactive and creative command user interface
5:
6: commit fc13807670e1bf18d66b4310fa5f6172513fbf72
7: Author: Rector Ratsaka <rtsrec001@myuct.ac.za>
8: Date: Sun Apr 16 06:04:39 2023 +0200
9:
...
43: Author: Ghost0377 <rectorrratsaka4@gmail.com>
44: Date: Sun Apr 9 06:48:18 2023 +0200
45:
46: implementation of post and some upgrades to Account
47:
48: commit 2585b93c7982eb7c8a011738be4a15bf68be5b82
49: Author: Ghost0377 <rectorrratsaka4@gmail.com>
50: Date: Sun Apr 9 04:45:53 2023 +0200
51:
52: Initial commit...
rector@rector-VlvoBook-ASUS:~/Documents/Assignment$
```