1. Creating Accounts

#1	Main Menu	``` <---------Bank Of Bengaluru: Banking Application using Tree Map--------> Actions: 1. Create Accounts 2. List all Accounts 3. View an Account 4. Update an Account 5. Delete an Account 6. Print Statistics 7. Import 8. Export 9. Exit ```
#2	Entering the number accounts	``` How many accounts you would like to create? 4 ```
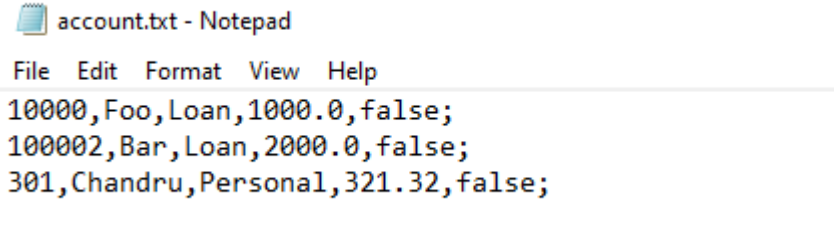
#3	Entering account details (true/ false/y/n/yes/no are accepted for isActive field)	
| | | ```
The Account ID for the new account is: 1
What is the name of the Account Holder?
Saminathan Raju
What is the Account Type?
Saving
What is the Account Balance?
12
Is the Account Active?
true
The Account ID for the new account is: 2
What is the name of the Account Holder?
Poornima Chandru
What is the Account Type?
Deposit
What is the Account Balance?
99.12
Is the Account Active?
y
The Account ID for the new account is: 3
What is the name of the Account Holder?
Vihaan Saminatan
What is the Account Type?
Savings
What is the Account Balance?
99
Is the Account Active?
true
The Account ID for the new account is: 4
What is the name of the Account Holder?
Ahaana Saminathan
What is the Account Type?
Deposit
What is the Account Balance?
992.
Is the Account Active?
n
Accounts created successfully, Select an option to proceed
``` |

| #4 | Account creation confirmation, and main menu | ```
Accounts created successfully, Select an option to proceed
<----------Bank Of Bengaluru: Banking Application using Tree Map---------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
``` |
| #5 | Error handled while trying to enter characters for Account Id | N/A (as the Id is auto generated by the code) |
| #6 | Error handled while trying to enter characters for Balance | ```
What is the Account Balance?
One hundred
Invalid input, please enter only numbers; This field is decimal friendly.!
What is the Account Balance?
``` |

2.   **Import as we go! - concurrent execution.**

#1	Snapshot of existing data	2 Fetching Accounts... Account{id=1, name='Saminathan Raju', type='Saving', balance=12.0, active=true} Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true} Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true} Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false} Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true} Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false} <----------Bank Of Bengaluru: Banking Application using Tree Map--------> Actions:
#2	Snapshot of the file	**account.txt - Notepad** File Edit Format View Help 10000,Foo,Loan,1000.0,false; 100002,Bar,Loan,2000.0,false; 301,Chandru,Personal,321.32,false;
#3	Actual file I used	account.txt

#4	File path is relative	1 usage ▲ Chandrasekaran
		@Override
		public synchronized void ImportData() {
		    try (Scanner in = new Scanner(new FileReader(fileName: "./input/account.txt"))) {
		        while (in.hasNext()) {
		            String line = in nextLine();

#5	Thread started but manual addition permitted	

```
7
main Import Started
<----------Bank Of Bengaluru: Banking Application using Tree Map-
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
Thread[pool-1-thread-1,5,main] Waiting to start importing
1
How many accounts you would like to create?
2
Creating Accounts...
The Account ID for the new account is: 7
What is the name of the Account Holder?
Sam
What is the Account Type?
Loan
What is the Account Balance?
99.12
```

| #6 | Import completion thread confirmation | ```
Creating Accounts...
The Account ID for the new account is: 7
What is the name of the Account Holder?
Sam
What is the Account Type?
Loan
What is the Account Balance?
99.12
Is the Account Active?
true pool-1-thread-1 Accounts data imported successfully.
The Account ID for the new account is: 8
What is the name of the Account Holder?
Joe
What is the Account Type?
Deposit
What is the Account Balance?
012.
Is the Account Active?
true
Accounts created successfully, Select an option to proceed
``` |
|----|----|----|
| #7 | Showing all account | |

```
Accounts created successfully, Select an option to proceed
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
2

Fetching Accounts...
Account{id=10000, name='Foo', type='Loan', balance=1000.0, active=false}
Account{id=1, name='Saminathan Raju', type='Saving', balance=12.0, active=true}
Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true}
Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true}
Account{id=100002, name='Bar', type='Loan', balance=2000.0, active=false}
Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false}
Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true}
Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false}
Account{id=7, name='Sam', type='Loan', balance=99.12, active=true}
Account{id=8, name='Joe', type='Deposit', balance=12.0, active=true}
Account{id=301, name='Chandru', type='Personal', balance=321.32, active=false}
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
```

#8	Finding the account Id	
| | | ```
3
View details of the given Account id...
Enter the Account ID:
100002
Account Id: 100002
Account Name: Bar
Account Type: Loan
Account Balance: 2000.0
Is the account active? false
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
``` |

#9	Printing the statistics	
| | | ```
6

***** Printing the Statistics *****
No of accounts with Balance over 1 lac is: 0
------------------------------------------------
***Number of accounts by the Account Type***
Account Type: Deposit; Count: 4
Account Type: Savings; Count: 1
Account Type: Loan; Count: 4
Account Type: Personal; Count: 1
Account Type: Saving; Count: 1
------------------------------------------------
***Number of accounts by the Account Type: Sorted***
Account Type: Deposit; Count: 4
Account Type: Loan; Count: 4
Account Type: Personal; Count: 1
Account Type: Saving; Count: 1
Account Type: Savings; Count: 1
------------------------------------------------
***Average Balance by the Account Type:
Average Balance for Deposit is: 300.78
Average Balance for Loan is: 3252.855
Average Balance for Personal is: 321.32
Average Balance for Saving is: 12.0
Average Balance for Savings is: 99.0
------------------------------------------------
***Account Ids containing the name: Kumar
No accounts found containing the name Kumar
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
``` |

After creating an account for the name contains "kumar"

```
How many accounts you would like to create?
1
Creating Accounts...
The Account ID for the new account is: 9
What is the name of the Account Holder?
Abhay Kumar Pandey
What is the Account Type?
Savings
What is the Account Balance?
9923.3
Is the Account Active?
true
Accounts created successfully, Select an option to proceed
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
```

```
***** Printing the Statistics *****
No of accounts with Balance over 1 lac is: 0
----------------------------------------------
***Number of accounts by the Account Type***
Account Type: Deposit; Count: 4
Account Type: Savings; Count: 2
Account Type: Loan; Count: 4
Account Type: Personal; Count: 1
Account Type: Saving; Count: 1
----------------------------------------------
***Number of accounts by the Account Type: Sorted***
Account Type: Deposit; Count: 4
Account Type: Loan; Count: 4
Account Type: Personal; Count: 1
Account Type: Saving; Count: 1
Account Type: Savings; Count: 2
----------------------------------------------
***Average Balance by the Account Type:
Average Balance for Deposit is: 300.78
Average Balance for Loan is: 3252.855
Average Balance for Personal is: 321.32
Average Balance for Saving is: 12.0
Average Balance for Savings is: 5011.15
----------------------------------------------
***Account Ids containing the name: Kumar
The Account ID is 9 for the name: Abhay Kumar Pandey
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
```


3. **Listing all accounts**

#1		
| | Listing all the accounts created during the above steps | ```
Accounts created successfully, Select an option to proceed
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
2

Fetching Accounts...
Account{id=10000, name='Foo', type='Loan', balance=1000.0, active=false}
Account{id=1, name='Saminathan Raju', type='Saving', balance=12.0, active=true}
Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true}
Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true}
Account{id=100002, name='Bar', type='Loan', balance=2000.0, active=false}
Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false}
Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true}
Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false}
Account{id=7, name='Sam', type='Loan', balance=99.12, active=true}
Account{id=8, name='Joe', type='Deposit', balance=12.0, active=true}
Account{id=301, name='Chandru', type='Personal', balance=321.32, active=false}
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
``` |

4.   **Viewing an account**

#1	Entering the proper Account ID	3 View details of the given Account id... Enter the Account ID: 100002 Account Id: 100002 Account Name: Bar Account Type: Loan Account Balance: 2000.0 Is the account active? false <----------Bank Of Bengaluru: Banking Application using Tree Map--------->
#2	Entering incorrect Account ID	3 View details of the given Account id... Enter the Account ID: 9999 Account not found! <----------Bank Of Bengaluru: Banking Application using Tree Map--------->

5.   **Updating an account**

| #1 | Updating on a valid account Id | 4
Update an Account for a given Account id...
Enter the Account ID:
1
What is the name of the Account Holder?
SamiNew
What is the Account Type?
Savings
What is the Account Balance?
99123.
Is the Account Active?
true
Account{id=1, name='SamiNew', type='Savings', balance=99123.0, active=true}
Account Updated |

#2	Viewing all the accounts (including the updated one)	<pre>2
		Fetching Accounts...
		Account{id=10000, name='Foo', type='Loan', balance=1000.0, active=false}
		Account{id=1, name='SamiNew', type='Savings', balance=99123.0, active=true}
		Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true}
		Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true}
		Account{id=100002, name='Bar', type='Loan', balance=2000.0, active=false}
		Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false}
		Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true}
		Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false}
		Account{id=7, name='Sam', type='Loan', balance=99.12, active=true}
		Account{id=8, name='Joe', type='Deposit', balance=12.0, active=true}
		Account{id=9, name='Abhay Kumar Pandey', type='Savings', balance=9923.3, active=true}
		Account{id=301, name='Chandru', type='Personal', balance=321.32, active=false}
		<----------Bank Of Bengaluru: Banking Application using Tree Map---------></pre>

| #3 | Trying to update an invalid account Id; and getting error | ```
4
Update an Account for a given Account id...
Enter the Account ID:
0999
What is the name of the Account Holder?
Samin
What is the Account Type?
Savings
What is the Account Balance?
0912.3
Is the Account Active?
true
Can't Update, no Account found
``` | |

6. **Deleting an account**

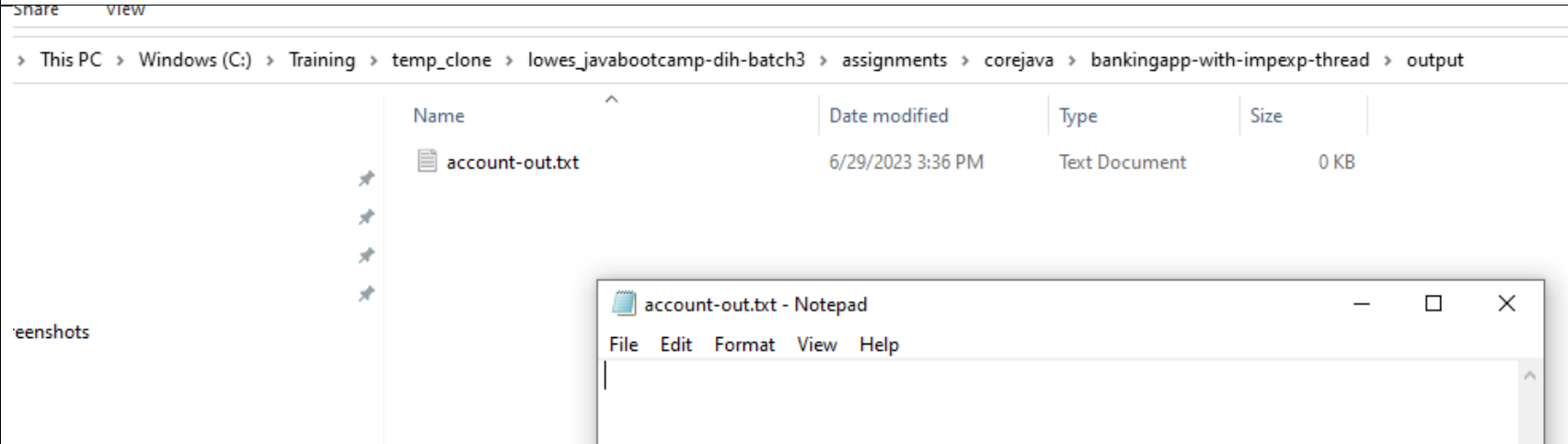| #1	Trying to delete an invalid account	``` Actions: 1. Create Accounts 2. List all Accounts 3. View an Account 4. Update an Account 5. Delete an Account 6. Print Statistics 7. Import 8. Export 9. Exit 5 Delete an Account for given Account ID... Enter the Account ID to be deleted: 999 Can't Delete, No Account found ```
#2	Valid account deletion, and confirmation; Viewing the account to ensure it is gone	

```
Delete an Account for given Account ID...
Enter the Account ID to be deleted:
301
Account Deleted
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
2
Fetching Accounts...
Account{id=10000, name='Foo', type='Loan', balance=1000.0, active=false}
Account{id=1, name='SamiNew', type='Savings', balance=99123.0, active=true}
Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true}
Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true}
Account{id=100002, name='Bar', type='Loan', balance=2000.0, active=false}
Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false}
Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true}
Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false}
Account{id=7, name='Sam', type='Loan', balance=99.12, active=true}
Account{id=8, name='Joe', type='Deposit', balance=12.0, active=true}
Account{id=9, name='Abhay Kumar Pandey', type='Savings', balance=9923.3, active=true}
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
```


7. Printing the statistics

| #1 | Printing the data statistics | <pre>ó</pre>***** Printing the Statistics *****
No of accounts with Balance over 1 lac is: 0

Number of accounts by the Account Type
Account Type: Deposit; Count: 4
Account Type: Savings; Count: 3
Account Type: Loan; Count: 4

Number of accounts by the Account Type: Sorted
Account Type: Deposit; Count: 4
Account Type: Loan; Count: 4
Account Type: Savings; Count: 3

***Average Balance by the Account Type:
Average Balance for Deposit is: 300.78
Average Balance for Loan is: 3252.855
Average Balance for Savings is: 36381.76666666667

***Account Ids containing the name: Kumar
The Account ID is 9 for the name: Abhay Kumar Pandey
<----------Bank Of Bengaluru: Banking Application using Tree Map---------> |

8. Export

#		
#1	Screenshot of the complete data	2 Fetching Accounts... Account{id=10000, name='Foo', type='Loan', balance=1000.0, active=false} Account{id=1, name='SamiNew', type='Savings', balance=99123.0, active=true} Account{id=2, name='Poornima Chandru', type='Deposit', balance=99.12, active=true} Account{id=3, name='Vihaan Saminatan', type='Savings', balance=99.0, active=true} Account{id=100002, name='Bar', type='Loan', balance=2000.0, active=false} Account{id=4, name='Ahaana Saminathan', type='Deposit', balance=992.0, active=false} Account{id=5, name='Jo', type='Loan', balance=9912.3, active=true} Account{id=6, name='Raju V', type='Deposit', balance=100.0, active=false} Account{id=7, name='Sam', type='Loan', balance=99.12, active=true} Account{id=8, name='Joe', type='Deposit', balance=12.0, active=true} Account{id=9, name='Abhay Kumar Pandey', type='Savings', balance=9923.3, active=true} <----------Bank Of Bengaluru: Banking Application using Tree Map---------> Actions:
#2	The empty file before export	This PC › Windows (C:) › Training › temp_clone › lowes_javabootcamp-dih-batch3 › assignments › corejava › bankingapp-with-impexp-thread › output Name — account-out.txt — Date modified 6/29/2023 3:36 PM — Type Text Document — Size 0 KB account-out.txt - Notepad File Edit Format View Help

| #3 | Export's relative path | ```java
@Override
public void ExportData() {
    System.out.println("Export Started");
    try (FileWriter out = new FileWriter( fileName: "./output/account-out.txt")) {
        for (Map.Entry<Integer, Account> entry : accTreeMap.entrySet()) {
``` |
| #4 | Exported file | This PC > Windows (C:) > Training > temp_clone > lowes_javabootcamp-dih-batch3 > assignments > corejava > bankingapp-with-impexp-thread > output

Name: account-out.txt   Date modified: 6/29/2023 3:38 PM   Type: Text Document   Size: 1 KB

_Screenshots
Personal

account-out.txt - Notepad
File Edit Format View Help
10000,Foo,Loan,1000.0,false
1,SamiNew,Savings,99123.0,true
2,Poornima Chandru,Deposit,99.12,true
3,Vihaan Saminatan,Savings,99.0,true
100002,Bar,Loan,2000.0,false
4,Ahaana Saminathan,Deposit,992.0,false
5,Jo,Loan,9912.3,true
6,Raju V,Deposit,100.0,false
7,Sam,Loan,99.12,true
8,Joe,Deposit,12.0,true
9,Abhay Kumar Pandey,Savings,9923.3,true

account-out.txt |

| # 5 | Threaded execution for Export start | <pre>8
main Export Started
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
Thread[pool-1-thread-2,5,main] Waiting to start exporting
Export Started</pre> | |

| # 6 | Threaded execution for export complete | ```
main Export Started
<----------Bank Of Bengaluru: Banking Application using Tree Map--------->
Actions:
1. Create Accounts
2. List all Accounts
3. View an Account
4. Update an Account
5. Delete an Account
6. Print Statistics
7. Import
8. Export
9. Exit
Thread[pool-1-thread-2,5,main] Waiting to start exporting
Export Started
pool-1-thread-2 Account data exported successfully.
``` |
|---|---|---|
| # 7 | Message confirmation | ```
pool-1-thread-2 Account data exported successfully.
``` |

9. Exiting from the application

| #1 | Entering proper index to exit the application. Thank you, message appears! | ```
Thank you for visiting Bank Of Bengaluru. Have a nice day!
``` |
|---|---|---|