

bankingapp-with-impexp-thread - bankingapp-with-impexp-thread/src/com/indium/bankingapp/BankingAppMain.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer × BankingAppMain.java × Account.java × AccountService.java × AccountServiceHashMapImpl.java

bankingapp-with-impexp-thread [indium.javabootcamp]
JRE System Library [JavaSE-17]
src
com.indium.bankingapp
BankingAppMain.java
com.indium.bankingapp.model
Account.java
com.indium.bankingapp.service
AccountService.java
AccountServiceHashMapImpl.java

```
1 package com.indium.bankingapp;  
2  
3 import com.indium.bankingapp.model.Account;  
4 import com.indium.bankingapp.service.AccountService;  
5 import com.indium.bankingapp.service.AccountServiceHashMapImpl;  
6  
7 import java.util.InputMismatchException;  
8 import java.util.Scanner;  
9 import java.util.ArrayList;  
10 import java.util.List;  
11 import java.util.Map;  
12 import java.util.HashMap;  
13 import java.io.BufferedReader;  
14 import java.io.BufferedWriter;  
15 import java.io.FileReader;  
16 import java.io.FileWriter;  
17 import java.io.IOException;  
18 import java.util.Collection;  
19  
20 public class BankingAppMain {  
21     private static AccountService<Account> accountService = createAccountService();  
22     private static Scanner scanner = new Scanner(System.in);  
23  
24     // Define int variables to keep track of the counts  
25     private static int importCount = 0;  
26     private static int exportCount = 0;  
27  
28     public static void main(String[] args) {  
29         while (true) {  
30             displayMenu();  
31             int choice = getUserChoice();  
32  
33             switch (choice) {  
34                 case 1: importAccount(); break;  
35                 case 2: exportAccount(); break;  
36                 case 3: createAccountService(); break;  
37                 case 4: displayMenu(); break;  
38                 case 5: System.exit(0); break;  
39                 default: break;  
40             }  
41         }  
42     }  
43 }
```

Task List ×
Find | All | Activate...

Outline ×
com.indium.bankingapp
BankingAppMain
accountService : AccountService
scanner : Scanner
importCount : int
exportCount : int
main(String[]) : void
createAccountService() : void
displayMenu() : void
getUserChoice() : int

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AccountServiceHashMapImpl.java

BankingAppMain.java Account.java AccountService.java AccountServiceHashMapImpl.java

```
33     try {
34         switch (choice) {
35             case 1:
36                 captureAccountDetails();
37                 break;
38             case 2:
39                 viewALLAccounts();
40                 break;
41             case 3:
42                 viewAccountDetails();
43                 break;
44             case 4:
45                 updateAccountDetails();
46                 break;
47             case 5:
48                 deleteAccount();
49                 break;
50             case 6:
51                 handlePrintStatisticsMenu();
52                 break;
53             case 7:
54                 importAccounts();
55                 break;
56             case 8:
57                 exportAccounts();
58                 break;
59             case 9:
60                 System.out.println("Exiting the Banking App.");
61                 scanner.close();
62                 System.exit(0);
63             default:
64                 System.out.println("Invalid choice. Please enter a valid option.");
```

Task List

Find All Activate...

Outline

com.indium.bankingapp
BankingAppMain
accountService : Acc
scanner : Scanner
importCount : int
exportCount : int
main(String[]) : void
createAccountServio
displayMenu() : void
getUserChoice() : int
captureAccountData

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BankingAppMain.java × Account.java AccountService.java AccountServiceHashMapImpl.java

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89
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91
92
93
94
95
96
    }
    } catch (InputMismatchException e) {
        System.out.println("Invalid input. Please enter a valid choice.");
        scanner.nextLine(); // Consume the invalid input
    } catch (Exception e) {
        System.err.println("An error occurred: " + e.getMessage());
    }
}

private static AccountService<Account> createAccountService() {
    return new AccountServiceHashMapImpl();
}

private static void displayMenu() {
    System.out.println("\nBanking App Menu:");
    System.out.println("1] Add Account");
    System.out.println("2] View All Accounts");
    System.out.println("3] View Account");
    System.out.println("4] Update Account");
    System.out.println("5] Delete Account");
    System.out.println("6] Print Statistics");
    System.out.println("7] Import");
    System.out.println("8] Export");
    System.out.println("9] Exit");
    System.out.print("Enter your choice: ");
}

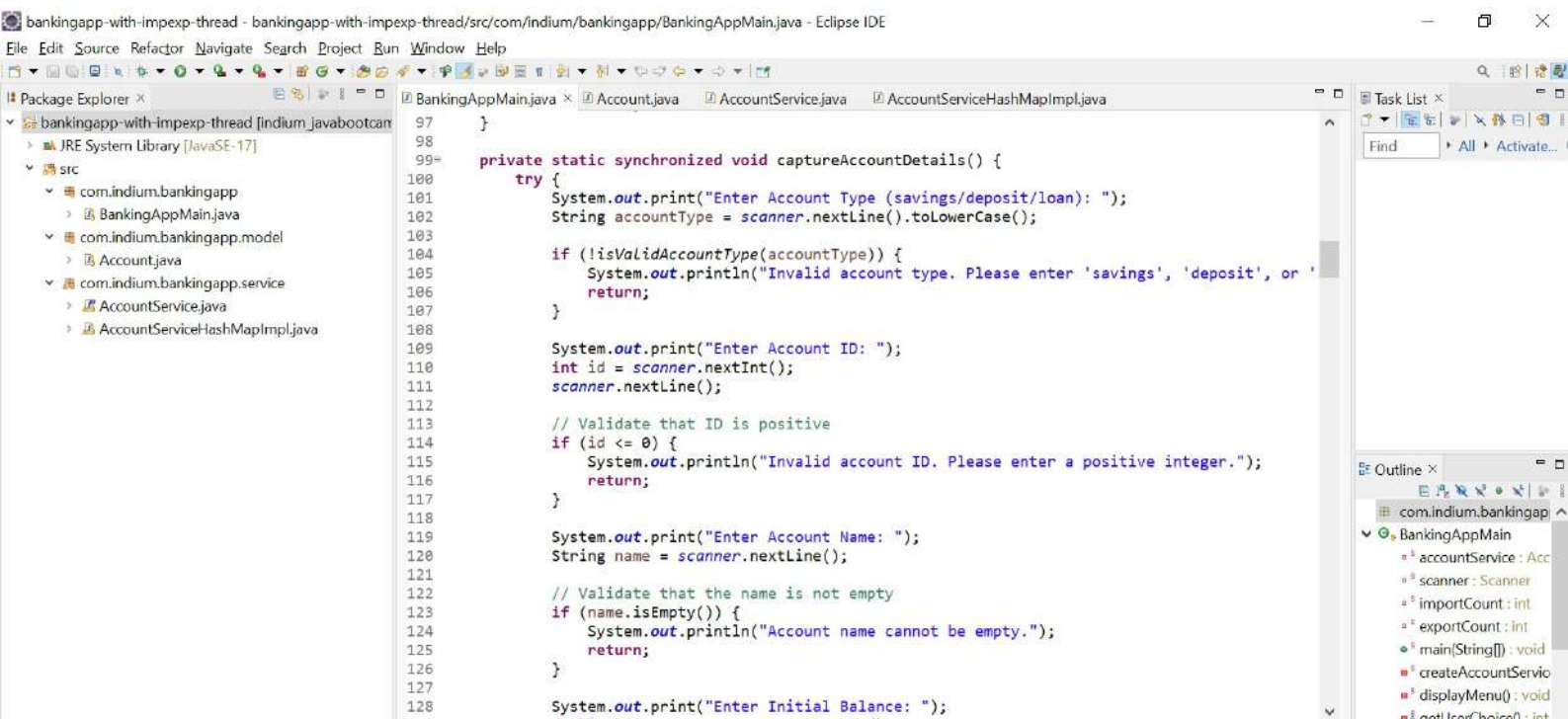
private static synchronized int getUserChoice() {
    int choice = scanner.nextInt();
    scanner.nextLine();
    return choice;
}
```

Task List ×

Find All Activate...

Outline ×

- com.indium.bankingapp
 - BankingAppMain
 - accountService: AccountService
 - scanner: Scanner
 - importCount: int
 - exportCount: int
 - main(String[]): void
 - createAccountService(): AccountService
 - displayMenu(): void
 - getUserChoice(): int
 - exportAccountData(): void



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```
131
132
133 // Validate that the balance is non-negative
134 if (balance < 0) {
135     System.out.println("Initial balance cannot be negative.");
136     return;
137 }
138
139 System.out.print("Enter Rate of Interest (ROI): ");
140 double roi = scanner.nextDouble();
141 scanner.nextLine();
142
143 // Validate that the ROI is non-negative
144 if (roi < 0) {
145     System.out.println("Rate of Interest (ROI) cannot be negative.");
146     return;
147 }
148
149 Account account = new Account(id, name, balance, roi, accountType);
150
151 // Calculate and update the balance with interest
152 calculateInterestAndUpdateBalance(account);
153
154 if (accountService.createAccount(account)) {
155     System.out.println("Account created successfully.");
156 } else {
157     System.out.println("Failed to create an account.");
158 }
159 } catch (InputMismatchException e) {
160     System.out.println("Invalid input. Please enter valid data.");
161     scanner.nextLine(); // Consume the invalid input
162 } catch (Exception e) {
163     System.err.println("An error occurred: " + e.getMessage());
164 }
```

Task List ×

Find All Activate...

Outline ×

com.indium.bankingapp

BankingAppMain

- accountService : AccountService
- scanner : Scanner
- importCount : int
- exportCount : int
- main(String[]) : void
- createAccountService() : void
- displayMenu() : void
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```
163     }  
164 }  
165  
166 private static synchronized void calculateInterestAndUpdateBalance(Account account) {  
167     double balance = account.getBalance();  
168     double roi = account.getRoi();  
169     double interest = balance * roi;  
170  
171     // Add interest to the balance  
172     double newBalance = balance + interest;  
173     account.setBalance(newBalance); // Update the balance attribute directly  
174 }  
175  
176 private static boolean isValidAccountType(String accountType) {  
177     return accountType.equals("savings") || accountType.equals("deposit") || accountType.equals("current");  
178 }  
179  
180 private static synchronized void viewAllAccounts() {  
181     List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());  
182  
183     if (!accounts.isEmpty()) {  
184         System.out.println("All Accounts:");  
185         for (Account account : accounts) {  
186             System.out.println(account.toString());  
187             System.out.println("-----");  
188         }  
189     } else {  
190         System.out.println("No accounts found.");  
191     }  
192 }  
193  
194 private static synchronized void viewAccountDetails() {  
195     try {
```

Task List

Find All Activate...

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com.indium.bankingapp
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accountService : AccountService
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```
192 }  
193  
194 private static synchronized void viewAccountDetails() {  
195     try {  
196         System.out.print("Enter Account ID to view: ");  
197         int id = scanner.nextInt();  
198         scanner.nextLine();  
199  
200         Account account = accountService.getAccount(id);  
201  
202         if (account != null) {  
203             System.out.println("Account Details:");  
204             System.out.println(account.toString());  
205         } else {  
206             System.out.println("Account not found.");  
207         }  
208     } catch (InputMismatchException e) {  
209         System.out.println("Invalid input. Please enter a valid ID.");  
210         scanner.nextLine(); // Consume the invalid input  
211     }  
212 }  
213  
214 private static synchronized void updateAccountDetails() {  
215     try {  
216         System.out.print("Enter Account ID to update: ");  
217         int id = scanner.nextInt();  
218         scanner.nextLine();  
219  
220         Account existingAccount = accountService.getAccount(id);  
221  
222         if (existingAccount != null) {  
223             System.out.print("Enter New Account Name: ");  
224             String newName = scanner.nextLine();
```

Task List

Find All Activate...

Outline

com.indium.bankingapp
BankingAppMain
accountService : AccountService
scanner : Scanner
importCount : int
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main(String[]) : void
createAccountService : void
displayMenu() : void
getUserChoice() : int

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```
221
222
223     if (existingAccount != null) {
224         System.out.print("Enter New Account Name: ");
225         String newName = scanner.nextLine();
226         System.out.print("Enter New Account Balance: ");
227         double newBalance = scanner.nextDouble();
228         scanner.nextLine();
229
230         Account updatedAccount = new Account(id, newName, newBalance, existingAccount.get
231
232         if (accountService.updateAccount(id, updatedAccount)) {
233             System.out.println("Account updated successfully.");
234         } else {
235             System.out.println("Failed to update the account.");
236         }
237     } else {
238         System.out.println("Account not found.");
239     }
240 } catch (InputMismatchException e) {
241     System.out.println("Invalid input. Please enter valid data.");
242     scanner.nextLine(); // Consume the invalid input
243 }
244
245 private static synchronized void deleteAccount() {
246     try {
247         System.out.print("Enter Account ID to delete: ");
248         int id = scanner.nextInt();
249         scanner.nextLine();
250
251         if (accountService.deleteAccount(id)) {
252             System.out.println("Account deleted successfully.");
253         }
254     }
255 }
```

Task List ×

Find All Activate...

Outline ×

- com.indium.bankingapp
- BankingAppMain
 - accountService : Acc
 - scanner : Scanner
 - importCount : int
 - exportCount : int
 - main(String[]) : void
 - createAccountServic
 - displayMenu() : void
 - getUserChoice() : int

Line: 227

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```
261  
262 private static synchronized void handlePrintStatisticsMenu() {  
263     while (true) {  
264         displayStatisticsMenu();  
265         int choice = getUserChoice();  
266  
267         try {  
268             switch (choice) {  
269                 case 1:  
270                     printAccountsAbove100000();  
271                     break;  
272                 case 2:  
273                     printAccountTypeCounts();  
274                     break;  
275                 case 3:  
276                     printSortedAccountTypeCounts();  
277                     break;  
278                 case 4:  
279                     printAvgBalanceByAccountType();  
280                     break;  
281                 case 5:  
282                     listAccountIdsByName();  
283                     break;  
284                 case 6:  
285                     return; // Return to the main menu  
286                 default:  
287                     System.out.println("Invalid choice. Please enter a valid option.");  
288             }  
289         } catch (InputMismatchException e) {  
290             System.out.println("Invalid input. Please enter a valid choice.");  
291             scanner.nextLine(); // Consume the invalid input  
292         }  
293     }  
294 }
```

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```
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307=
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311
312
313=
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327

private static void displayStatisticsMenu() {
    System.out.println("\nStatistics Menu:");
    System.out.println("1] No of accounts which have balance more than 1 Lac");
    System.out.println("2] Show no of account by account type");
    System.out.println("3] Show no of accounts by account type with sorting");
    System.out.println("4] Show avg balance by account type");
    System.out.println("5] List account ids whose account name contains given name");
    System.out.println("6] Back to Main Menu");
    System.out.print("Enter your choice: ");
}

private static void printAccountsAbove100000() {
    List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());
    long accountsWithHighBalance = accounts.stream().filter(account -> account.getBalance() >
    System.out.println("No. of accounts with balance more than 1 Lac: " + accountsWithHighBal
}

private static void printAccountTypeCounts() {
    List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());
    Map<String, Long> accountTypeCounts = new HashMap<>();

    for (Account account : accounts) {
        String accountType = account.getAccountType();
        accountTypeCounts.put(accountType, accountTypeCounts.getOrDefault(accountType, 0L) +
    }

    System.out.println("No of accounts by account type:");
    for (Map.Entry<String, Long> entry : accountTypeCounts.entrySet()) {
        System.out.println(entry.getKey() + ": " + entry.getValue());
    }
}
```

Task List ×

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 - importCount : int
 - exportCount : int
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 - createAccountService() : void
 - displayMenu() : void
 - getUserChoice() : int

```
328 private static void printSortedAccountTypeCounts() {
329     List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());
330     Map<String, Long> accountTypeCounts = new HashMap<>();
331
332     for (Account account : accounts) {
333         String accountType = account.getAccountType();
334         accountTypeCounts.put(accountType, accountTypeCounts.getOrDefault(accountType, 0L) + 1);
335     }
336
337     // Create a list of Map entries and sort it by count in descending order
338     List<Map.Entry<String, Long>> sortedAccountTypeCounts = new ArrayList<>(accountTypeCounts.entrySet());
339     sortedAccountTypeCounts.sort((entry1, entry2) -> entry2.getValue().compareTo(entry1.getValue()));
340
341     System.out.println("No of accounts by account type (sorted in descending order):");
342     for (Map.Entry<String, Long> entry : sortedAccountTypeCounts) {
343         System.out.println(entry.getKey() + " : " + entry.getValue());
344     }
345 }
346
347 private static void printAvgBalanceByAccountType() {
348     List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());
349     Map<String, Double> avgBalanceByType = new HashMap<>();
350     Map<String, Integer> countByType = new HashMap<>();
351
352     for (Account account : accounts) {
353         String accountType = account.getAccountType();
354         double balance = account.getBalance();
355
356         avgBalanceByType.put(accountType, avgBalanceByType.getOrDefault(accountType, 0.0) + balance);
357         countByType.put(accountType, countByType.getOrDefault(accountType, 0) + 1);
358     }
359 }
```

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```
359
360
361     System.out.println("Average balance by account type:");
362     for (Map.Entry<String, Double> entry : avgBalanceByType.entrySet()) {
363         String accountType = entry.getKey();
364         double totalBalance = entry.getValue();
365         int count = countByType.get(accountType);
366
367         double avgBalance = totalBalance / count;
368         System.out.println(accountType + ": " + avgBalance);
369     }
370
371     private static void listAccountIdsByName() {
372         try {
373             System.out.print("Enter a name to search for: ");
374             String searchName = scanner.nextLine().toLowerCase();
375             List<Account> accounts = new ArrayList<>(accountService.getAllAccounts());
376
377             List<String> accountInfoWithName = new ArrayList<>(); // Change to store both ID and
378
379             for (Account account : accounts) {
380                 if (account.getName().toLowerCase().contains(searchName)) {
381                     String accountInfo = "Account ID: " + account.getId() + ", Account Type: " +
382                         accountInfoWithName.add(accountInfo);
383                 }
384             }
385
386             if (!accountInfoWithName.isEmpty()) {
387                 System.out.println("Account IDs and Types with names containing '" + searchName +
388                     "':");
389                 for (String accountInfo : accountInfoWithName) {
390                     System.out.println(accountInfo);
391                 }
392             } else {
393                 System.out.println("No accounts found with the specified name.");
394             }
395         } catch (Exception e) {
396             e.printStackTrace();
397         }
398     }
399 }
```

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```
393     }
394     } catch (Exception e) {
395         System.err.println("An error occurred: " + e.getMessage());
396     }
397 }
398
399 private static synchronized void importAccounts() {
400     try {
401         System.out.print("Enter the path of the file to import from: ");
402         String filePath = scanner.nextLine();
403
404         // Create a thread to perform the import
405         Thread importThread = new Thread(() -> {
406             BufferedReader reader = null;
407             try {
408                 reader = new BufferedReader(new FileReader(filePath));
409                 String line;
410
411                 while ((line = reader.readLine()) != null) {
412                     String[] parts = line.split(",");
413                     if (parts.length == 5) {
414                         int id = Integer.parseInt(parts[0].trim());
415                         String name = parts[1].trim();
416                         double balance = Double.parseDouble(parts[2].trim());
417                         double roi = Double.parseDouble(parts[3].trim());
418                         String type = parts[4].trim();
419
420                         Account account = new Account(id, name, balance, roi, type);
421
422                         if (accountService.createAccount(account)) {
423                             importCount++; // Increment the count
424                         }
425                     }
426                 }
427             } catch (Exception e) {
428                 System.err.println("Error importing accounts: " + e.getMessage());
429             }
430             reader.close();
431         });
432         importThread.start();
433     }
434 }
```

Task List

Find All Activate...

Outline

com.indium.bankingapp

BankingAppMain

accountService : AccountService

scanner : Scanner

importCount : int

exportCount : int

main(String[]) : void

createAccountService() : void

displayMenu() : void

getUserChoice() : int

bankingapp-with-impexp-thread - bankingapp-with-impexp-thread/src/com/indium/bankingapp/BankingAppMain.java - Eclipse IDE

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Package Explorer ×

bankingapp-with-impexp-thread [indium_javabootcar
JRE System Library [JavaSE-17]
src
com.indium.bankingapp
BankingAppMain.java
com.indium.bankingapp.model
Account.java
com.indium.bankingapp.service
AccountService.java
AccountServiceHashMapImpl.java

BankingAppMain.java × Account.java AccountService.java AccountServiceHashMapImpl.java

```
426    }  
427    } catch (IOException e) {  
428        System.err.println("Error reading from the file: " + e.getMessage());  
429    } catch (NumberFormatException e) {  
430        System.err.println("Error parsing data from the file: " + e.getMessage());  
431    } finally {  
432        if (reader != null) {  
433            try {  
434                reader.close();  
435            } catch (IOException e) {  
436                e.printStackTrace();  
437            }  
438        }  
439    }  
440    });  
441  
442    // Start the import thread  
443    importThread.start();  
444  
445    // Wait for the import thread to finish  
446    importThread.join();  
447  
448    System.out.println(importCount + " accounts imported successfully.");  
449    } catch (Exception e) {  
450        System.err.println("An error occurred: " + e.getMessage());  
451    }  
452    }  
453  
454    private static synchronized void exportAccounts() {  
455        try {  
456            System.out.print("Enter the path of the file to export to: ");  
457            String filePath = scanner.nextLine();
```

Task List ×

Find → All → Activat

Outline ×

com.indium.bankinga
BankingAppMain
accountService: Ac
scanner: Scanner
importCount: int
exportCount: int
main(String[]) : voi
createAccountServi
displayMenu() : voi
getUserChoice() : in

bankingapp-with-impexp-thread - bankingapp-with-impexp-thread/src/com/indium/bankingapp/BankingAppMain.java - Eclipse IDE

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Package Explorer

bankingapp-with-impexp-thread [indium.javabootcar
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Account.java
com.indium.bankingapp.service
AccountService.java
AccountServiceHashMapImpl.java

BankingAppMain.java Account.java AccountService.java AccountServiceHashMapImpl.java

```
454 private static synchronized void exportAccounts() {  
455     try {  
456         System.out.print("Enter the path of the file to export to: ");  
457         String filePath = scanner.nextLine();  
458  
459         // Create a thread to perform the export  
460         Thread exportThread = new Thread(() -> {  
461             BufferedWriter writer = null;  
462             Collection<Account> accounts = accountService.getAllAccounts();  
463  
464             try {  
465                 writer = new BufferedWriter(new FileWriter(filePath));  
466  
467                 for (Account account : accounts) {  
468                     String line = account.getId() + "," + account.getName() + "," +  
469                         account.getBalance() + "," + account.getRoi() + "," +  
470                         account.getAccountType();  
471  
472                     writer.write(line);  
473                     writer.newLine();  
474  
475                     exportCount++; // Increment the count  
476                 }  
477             } catch (IOException e) {  
478                 System.err.println("Error writing to the file: " + e.getMessage());  
479             } finally {  
480                 if (writer != null) {  
481                     try {  
482                         writer.close();  
483                     } catch (IOException e) {  
484                         e.printStackTrace();  
485                     }  
486                 }  
487             }  
488         });  
489     }  
490 }
```

Task List

Find All Activate...

Outline

com.indium.bankingapp
BankingAppMain
accountService : Acc
scanner : Scanner
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bankingapp-with-impexp-thread - bankingapp-with-impexp-thread/src/com/indium/bankingapp/BankingAppMain.java - Eclipse IDE

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Package Explorer ×

- bankingapp-with-impexp-thread [indium.javabootcar]
- src
 - com.indium.bankingapp
 - BankingAppMain.java
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 - Account.java
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Task List ×

Find | All | Activate...

Outline ×

- com.indium.bankingapp
- BankingAppMain
 - accountService : AccountService
 - scanner : Scanner
 - importCount : int
 - exportCount : int
 - main(String[]) : void
 - createAccountService() : void
 - displayMenu() : void
 - getUserChoice() : int

```
470         account.getAccountType();
471
472         writer.write(line);
473         writer.newLine();
474
475         exportCount++; // Increment the count
476     }
477 } catch (IOException e) {
478     System.err.println("Error writing to the file: " + e.getMessage());
479 } finally {
480     if (writer != null) {
481         try {
482             writer.close();
483         } catch (IOException e) {
484             e.printStackTrace();
485         }
486     }
487 }
488 });
489
490 // Start the export thread
491 exportThread.start();
492
493 // Wait for the export thread to finish
494 exportThread.join();
495
496 System.out.println(exportCount + " accounts exported successfully.");
497 } catch (Exception e) {
498     System.err.println("An error occurred: " + e.getMessage());
499 }
500 }
501 }
```