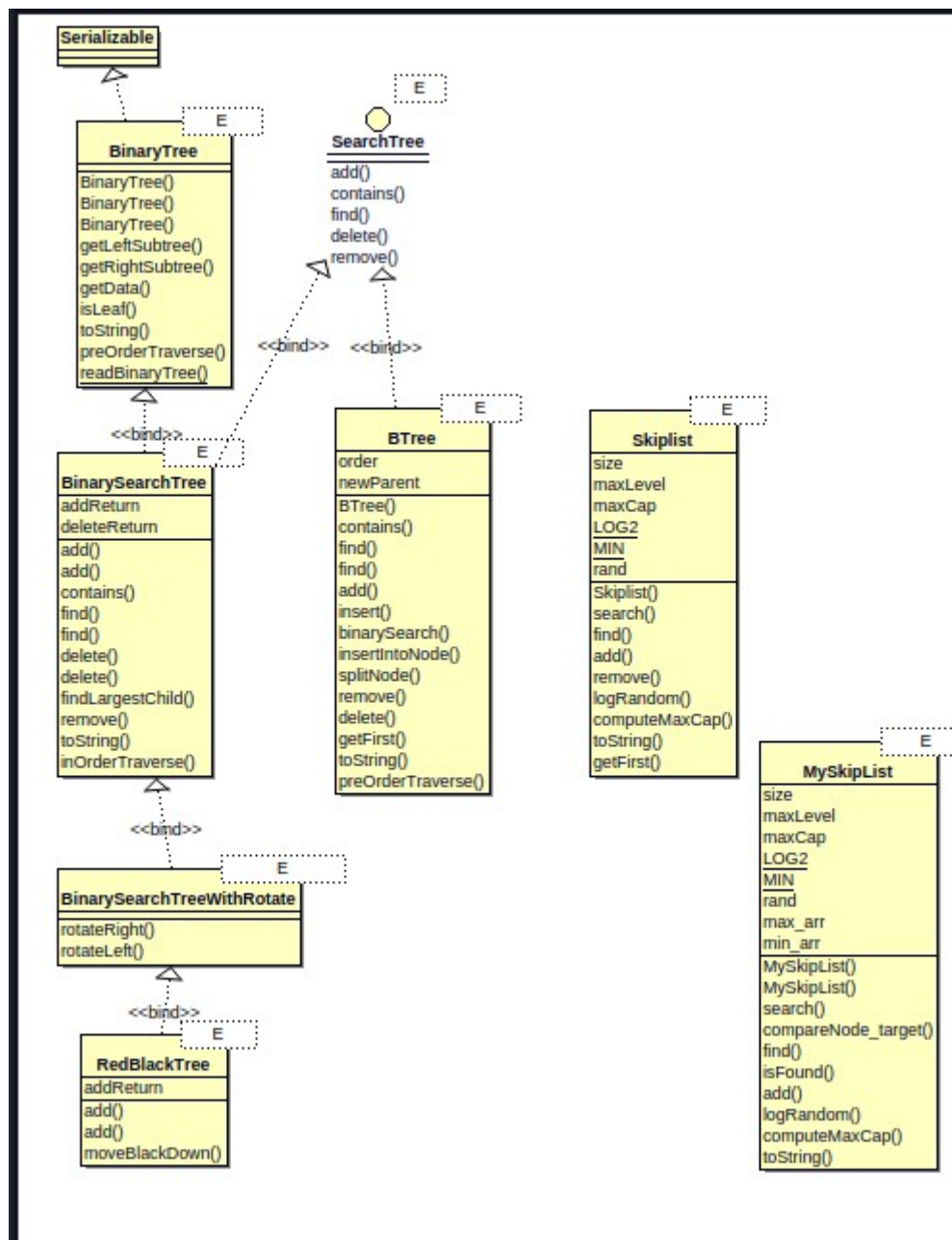


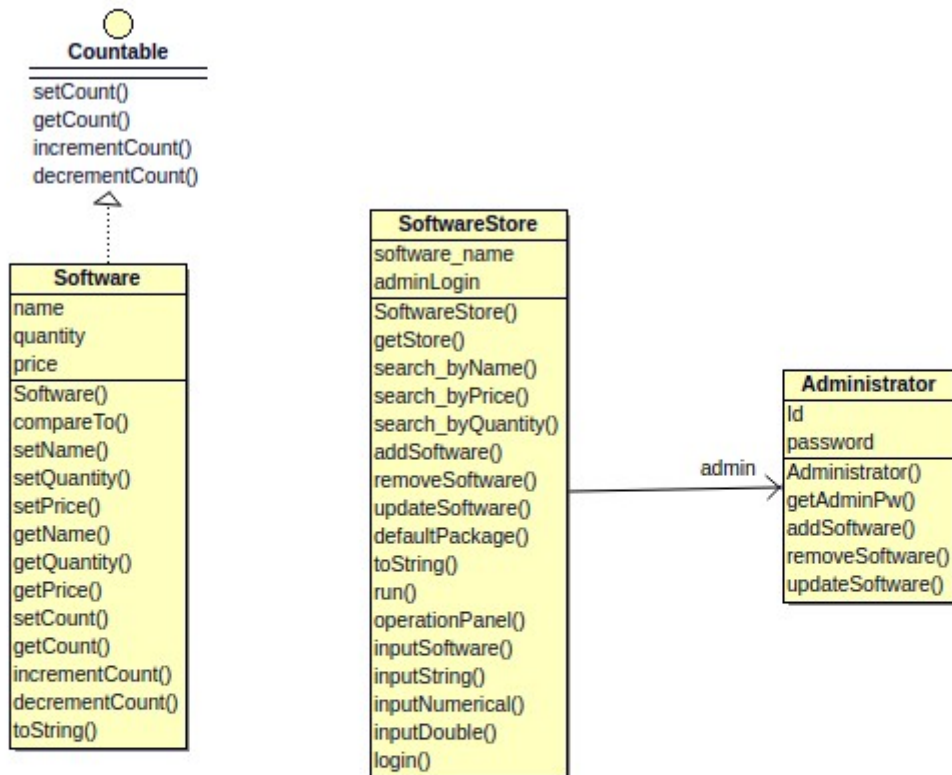
**GIT Department of Computer
Engineering
CSE 222/505 - Spring 2020
Homework 7 Report**

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Question3:



Question 4:



2) Problem Solution Approach

Question 2:

In this section, I kept an array in the skiplist node class. The controlled operations of this arrays are also in this class. But I encountered a few problems in my outhter class and I couldn't overcome these problems. my program doesn't work properly.

Question 4:

In this section, I have a software and manager class first. The software class holds the data of the software packages together. The administrator class regulates operations such as the existence, deletion, updating of these software packages in the data pool of the system. Firstly, in the main class, this software package data is kept with a search tree. If the normal user searches for price or quantity, the name of the software packages is kept in a set, and searches are made in the search tree from these set elements one by one. It lowers performance but provides convenience to the user. At the same time, the administrator logs on to the system with the "admin" password, and external passwords provide normal user access. When a software package is purchased, the method to automatically delete that software package is called. If the number is more than 1 in the deletion process, the number is reduced first and controls have been made. When a new software package comes to the system, the administrator can approve it and during this confirmation, it acts as if it added a software package.

3) TEST CASES

Question 4:

Test Scenario	Pass / Fail
Admin add software in system	PASS
Admin remove software from system	PASS
Admin update software from system	PASS
Search by name	PASS
Search by quantity	PASS
Search by price	PASS
The program allow software	PASS
Package sell to user	PASS

4) RUNNING COMMAND AND RESULTS

Question 3:

```
Analysis adding to trees (size -> 10000)
avarage bst: 820
avarage red black tree: 963
avarage red black tree java: 458
avarage btree: 1034
avarage skiplist: 1157
avarage skiplist java: 1082

Analysis adding to trees (size -> 10)
avarage bst: 952
avarage red black tree: 963
avarage red black tree java: 836
avarage btree: 1264
avarage skiplist: 1204
avarage skiplist java: 1439

Analysis adding to trees (size -> 20000)
avarage bst: 1011
avarage red black tree: 985
avarage red black tree java: 722
avarage btree: 1213
avarage skiplist: 1510
avarage skiplist java: 1378

Analysis adding to trees (size -> 10)
avarage bst: 1134
avarage red black tree: 1128
avarage red black tree java: 889
avarage btree: 1357
avarage skiplist: 1730
avarage skiplist java: 2359

Analysis adding to trees (size -> 40000)
avarage bst: 1359
avarage red black tree: 1346
avarage red black tree java: 1281
avarage btree: 1565
avarage skiplist: 1841
avarage skiplist java: 2456

Analysis adding to trees (size -> 10)
avarage bst: 1663
avarage red black tree: 1438
avarage red black tree java: 1235
avarage btree: 1493
avarage skiplist: 2217
avarage skiplist java: 2915
```

```
Analysis adding to trees (size -> 80000)
avarage bst: 1804
avarage red black tree: 1925
avarage red black tree java: 1537
avarage btree: 1935
avarage skiplist: 3387
avarage skiplist java: 3229
```

```
Analysis access data to trees
avarage bst: 359478464
avarage red black tree: 381184869
avarage red black tree java: 289239187
avarage btree: 568742765
avarage skiplist: 341955813
avarage skiplist java: 279697338
```

```
Analysis remove 10 data from trees
avarage bst: 3570
avarage red black tree: 3096
avarage red black tree java: 13557
avarage btree: 68
avarage skiplist: 1195
avarage skiplist java: 21318
```

```
chasev@MBX: ~/Desktop/03/out/production/03$
```

Question 4:

```
thasepy@mkx:~/Desktop/Q4/out/production/Q4$ java Main
login or exit [y/n]
y
Administrator pw: admin
Please enter Password: admin
0) Exit...
1) Add Software
2) Remove Software
3) Update Software
4) Software package arrived at the store
Please enter integer: 1
Enter the software name: Whatsapp
Enter the software price: Please enter integer: 10
0) Exit...
1) Add Software
2) Remove Software
3) Update Software
4) Software package arrived at the store
Please enter integer: 1
Enter the software name: Adobe Phosd
Enter the software price: Please enter integer: 12
0) Exit...
1) Add Software
2) Remove Software
3) Update Software
4) Software package arrived at the store
Please enter integer: 2
Adobe Phosd
0) Exit...
1) Add Software
2) Remove Software
3) Update Software
4) Software package arrived at the store
Please enter integer: 3
Norton 4.5
Enter the software name: Norton 4.5(Updated)
Enter the software price: Please enter integer: 12
0) Exit...
1) Add Software
2) Remove Software
3) Update Software
4) Software package arrived at the store
Please enter integer: 0
The operation panel turning off...
```



```
y
Administrator pw: admin
Please enter Password: asd
0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 1
Whatsapp
Name: Whatsapp
Quantity: 1
Price: $10.0

0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 1
Norton 4.5(Updated)
Name: Norton 4.5(Updated)
Quantity: 1
Price: $12.0

0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 3
Please enter integer: 1
Name: Norton 5.5
Quantity: 1
Price: $22.99

Name: Norton 4.5(Updated)
Quantity: 1
Price: $12.0

Name: Adobe Photoshop 6.2
Quantity: 1
Price: $11.99
```

Name: Adobe Photoshop 6.0
Quantity: 1
Price: \$9.99

Name: Adobe Flash 3.3
Quantity: 1
Price: \$5.99

Name: Whatsapp
Quantity: 1
Price: \$10.0

Name: Adobe Flash 4.0
Quantity: 1
Price: \$8.99

0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 2
Please enter integer: 8.99
Name: Adobe Flash 4.0
Quantity: 1
Price: \$8.99

0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 4
Enter the software name: Whatsapp
Enter the software price: Please enter integer: 10
0) Exit...

1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 1
Whatsapp
null

0) Exit...
1) Search by name
2) Search by price
3) Search by quantity
4) Buy software
Please enter integer: 0
The operation panel turning off...
login or exit [y/n]
n