Gebze Technical University
Computer Engineering

CSE 222 - 2019 Spring

HOMEWORK 2 REPORT

CANER KARAKAŞ
131044061

Ayşe Serbetçi Turan

1   INTRODUCTION

1.1   Problem Definition

Storing experiments that we have in the linkedlist type. This type should depend on the experiments and the days of the experiment. Day nodes should poit to the first experiment of each day and show the next day. At the same time, each experiment should Show itself after the next experiment. This list should be iterable. Additions should be made at the end of the experimental nodes with day nodes.

1.2   System Requirements

For system working requirements, class of experiments and class of experiments list were established. Within the class of experiments, setup day time completed and accuracy informations was included. The class of experiments list has two inner class. These classes are NodeExp and NodeDay. NodeExp class holds Experiment object and the next NodeExp object. Finally, Experiment list class has been to override to be replicable.

2 METHOD

2.1 Class Diagrams
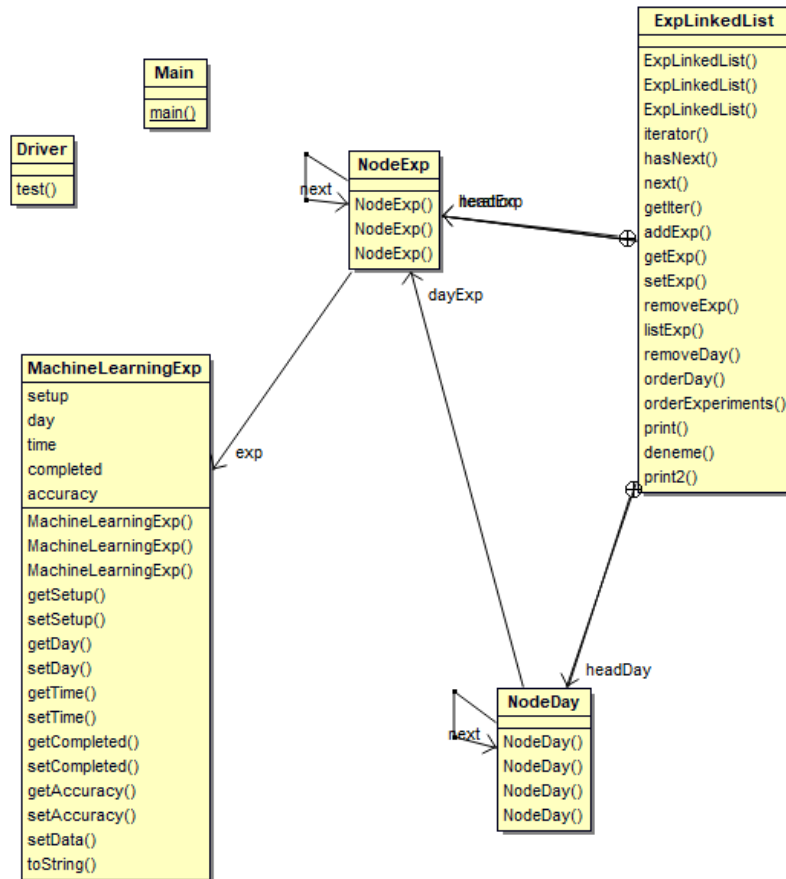
2.2 Problem Solution Approach

MachineLearningExperiment Class

This class includes the information of the experiments. This information is like setup day, time, completed and accuracy. Setters and Getters are written for these values. İn addition, the toString method has been override.

ExperimentList Class

This class has NodeExp and NodeDay inner classes. This class holds the objects of the inner classes as private member. NodeExp class holds Experiment object and the next NodeExp object. NodeDay class holds NodeExp object and the next NodeDay object. NodeExp objects in NodeDay point the elements of the list. In this way, fast processing can be done over days. We can think of it with the subset logic. If the parent cluster is a NodeDay class, the subset is NodeExp class.

3 RESULT

3.1 Test Cases

```java
MachineLearningExp x11 = (new MachineLearningExp( s: "Exp1", d: 1,new Time( hour: 1, m
MachineLearningExp x22 = (new MachineLearningExp( s: "Exp1", d: 1,new Time( hour: 1, m
MachineLearningExp x33 = (new MachineLearningExp( s: "Exp1", d: 1,new Time( hour: 1, m
MachineLearningExp x = (new MachineLearningExp( s: "Exp1", d: 1,new Time( hour: 1, min
MachineLearningExp x2 = (new MachineLearningExp( s: "Exp1", d: 2,new Time( hour: 1, mi
MachineLearningExp x3 = (new MachineLearningExp( s: "Exp1", d: 4,new Time( hour: 1, mi
MachineLearningExp x4 = (new MachineLearningExp( s: "Exp1", d: 4,new Time( hour: 1, mi
MachineLearningExp x5 = (new MachineLearningExp( s: "Exp1", d: 4,new Time( hour: 1, mi

ExpLinkedList list = new ExpLinkedList();
list.addExp(x11);
list.addExp(x);
list.addExp(x33);
list.addExp(x3);
list.addExp(x4);
list.addExp(x2);
list.addExp(x22);
list.addExp(x5);

System.out.println("Exps");
list.print2();
System.out.println("\n");
System.out.println("Days");
list.print();

list.removeExp( day: 4, index: 2);
System.out.println("\n");
System.out.println("removeExp(4,2)");
list.print2();

list.removeDay(4);
System.out.println("\n");
System.out.println("removeDay(4)");
list.print2();

list.removeDay(1);
System.out.println("\n");
System.out.println("removeDay(1)");
list.print2();

list.addExp(x11);
list.addExp(x);
list.addExp(x33);
list.addExp(x3);
list.addExp(x4);
list.addExp(x22);
list.addExp(x5);
System.out.println("\n");
System.out.println("flashback");
list.print2();
```

3.2 Running Results

```
removeExp(4,2)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0



removeDay(4)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0
removeExp(4,2)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0



removeDay(4)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0
```

```
removeDay(1)
setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0


flashback
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Exp1 day : 4 time : 01:31:03 completed : false accuracy : 1.0


listExp(1)
setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

orderDay(4)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 4 time : 01:31:03 completed : false accuracy : 1.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0

orderDay(4)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 4 time : 01:31:03 completed : false accuracy : 1.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0
```

```
orderExperiments()
setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0

setup : Exp1 day : 4 time : 01:31:03 completed : false accuracy : 1.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Exp1 day : 4 time : 01:50:03 completed : false accuracy : 3.0

setup : Exp1 day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup :  day : 0 time : null completed : false accuracy : 0.0



getExp(1,0)
setup : Exp1 day : 1 time : 01:02:03 completed : false accuracy : 1.0



getExp(4,1)
setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0



getExp(4,1)
setup : Exp1 day : 4 time : 01:12:03 completed : false accuracy : 2.0



getExp(2,0)
setup : Exp1 day : 2 time : 01:40:03 completed : false accuracy : 0.0



setExp(1,0)
setup : new day : 1 time : 04:22:33 completed : true accuracy : 10.0



setExp(2,0)
setup : new day : 2 time : 05:12:02 completed : true accuracy : 1.0



setExp(4,0)
setup : new day : 4 time : 03:42:55 completed : true accuracy : 23.0



setExp(1,2)
setup : new day : 1 time : 08:55:33 completed : true accuracy : 425.0
```

```
The end
setup : new day : 1 time : 08:55:33 completed : true accuracy : 425.0

setup : Expl day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Expl day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Expl day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : new day : 2 time : 05:12:02 completed : true accuracy : 1.0

setup : new day : 4 time : 03:42:55 completed : true accuracy : 23.0

setup : Expl day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Expl day : 4 time : 01:50:03 completed : false accuracy : 3.0


test iterator
setup : Expl day : 1 time : 01:02:03 completed : true accuracy : 4.0

setup : Expl day : 1 time : 01:02:03 completed : false accuracy : 3.0

setup : Expl day : 1 time : 01:02:03 completed : false accuracy : 2.0

setup : new day : 2 time : 05:12:02 completed : true accuracy : 1.0

setup : new day : 4 time : 03:42:55 completed : true accuracy : 23.0

setup : Expl day : 4 time : 01:12:03 completed : false accuracy : 2.0

setup : Expl day : 4 time : 01:50:03 completed : false accuracy : 3.0

false
```

TIME COMPLEXITY

Class	Method	Complexty
MachineLearningExp	All methods	O(1)
ExpLinkedList	İterator()	O(1)
ExpLinkedList	hasNext()	O(1)
ExpLinkedList	next()	O(1)
ExpLinkedList	getIter()	O(1)
ExpLinkedList	addExp()	$O(n^3)$(While*While*While)
ExpLinkedList	getExp()	O(n)(While+For)
ExpLinkedList	setExp()	O(n)(While+For)
ExpLinkedList	removeExp()	O(n)(While+For)
ExpLinkedList	listExp()	O(n)(While)
ExpLinkedList	removeDay()	$O(n^2)$(While*While)
ExpLinkedList	orderDay()	$O(n^2)$(While*While)
ExpLinkedList	orderExperiments	$O(n^2)$(While*While)
ExpLinkedList	print()	O(n)(While)
ExpLinkedList	print2()	O(n)(While)