Gebze Technical University
Computer Engineering

CSE 222 - 2018 Spring

HOMEWORK 2 REPORT

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1 INTRODUCTION

1.1 Problem Definition

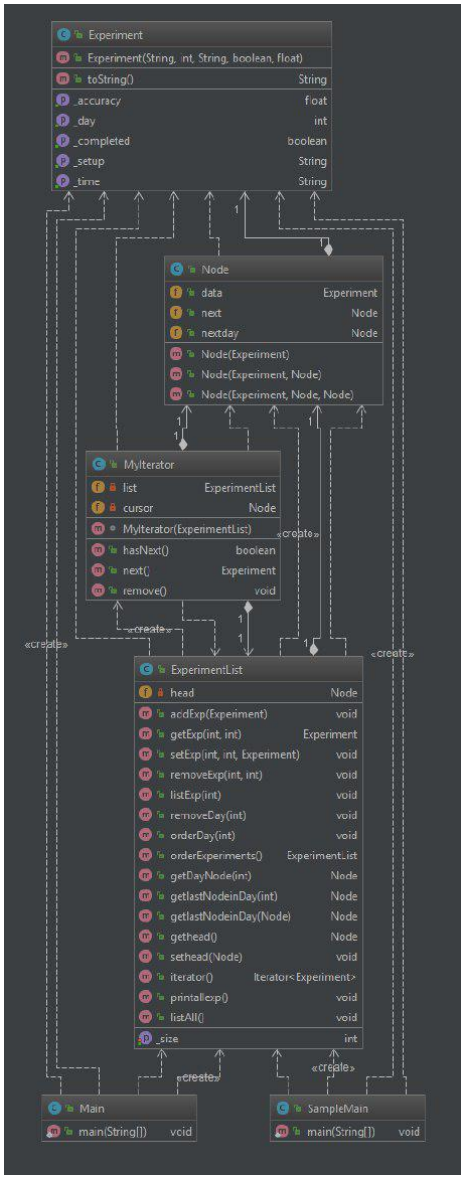
In this assignment, There are more machine learning experiments consist of the instance variable: setup, day, time, completed and accuracy. These machine learning experiments is interdependent and the first experiment of each day is interdependent. A new experiment can be added at any time. The newly added experiment should be added to the correct place. An experiment can be removed at any time. The experiment that is intended to be removed without disturbing the connections of other experiments should be removed. Any experiment can be set or get any time. In the same way, it should be able to do other operations without disturbing the basic logic. Like, List experiments, Order experiments.

1.2 System Requirements

There is a need for a class to hold the data of the experiments. Experiments can be created with this class and its data can be accessed. I need to create an ExperimentList class to keep track of some machine learning experiments and their result. ExperimentList should be a single linked list in which each element is interdependent and some element independent for their special value like day. In order to speed up add and remove operations, an additional list structure should be defined in the level of days. Therefore, I need to node of each element to bind to the other element. So, I need to create a new class named Node. Because of the definition of the problem, each experiment had to keep the next experiment and the next day's experiment. Thus, This Node class needs to keep the next experiment and the next day's experiment. Node should to keep 2 experiment. And this ExperimentList should support some operations like add, remove, get , set ,order, list … It is necessary to create methods to implement these operations without disturbing the connections between the nodes. Also, This ExperimentList should be iterable. I need to create ExperimentList's iterator class and this class provide the some methods. Methods are like hasNext, next, remove . The iterator should be between te experiments. The first state of the iterator should be before the head. So, the first next() should show head of ExperimentList. The Remove method should delete the last return element. Therefore, it is necessary to keep 2 cursors to do these operations. The first cursor is required to bat around the ExperimentList and the second cursor is required to hold previous status of first cursor. Simply all the requirements are made up of these.

2 METHOD

2.1 Class Diagrams



2.2 Use Case Diagrams

There is no user. So not required.

2.3 Other Diagrams (optional)

Not required.

2.4 Problem Solution Approach

First, I created Experimental class. Then I've created an ExperimentalList that is a single linkedlist. Then, I created Node Class to keep next and nextday experiment. Then I created a few experiments to test class's methods. I started building the methods, repectively. I tried to take all the possibilities and try each possibility while writing the method. Firstly, I wrote a print method. Then I wrote the add method and checked the using print method. For the Add operation first, it checks whether there is an element in the list, if there is no element in the list, it will add the new element to the list then change head. If the list has an experiment of the day, it is added to the end of the day and the connections are made. If there is no experiment of the element's own day, it is connected between the days of the previous and next experiment. All other methods based on the add method. It was easy to write my other methods after editting the experiments to add to the list. For example, I checked the opposite conditions for remove. If try to remove first experiment of ExperimentList, it will change head of ExperimentList. If you remove the first experiment of the day, connect the last experiment of the previous day to the next experiment. And connect nextday of first experiment of previous day to next experiment. Otherwise, connect previous experiment to next experiment. But also check nextday cases. The other methods looks at whether the given day and index are elements. If there is a element it will does what it should, Otherwise will do nothing or return null.

3 RESULT

3.1 Test Cases

- AddExp: I tried to try all the situations while testing the methods. I added the experiment that is not listed in the day to add. I've added experiments randomly.
- GetExp: I tried the last experiment of a certain day. I tried a day that wasn't on the list. I have tried the condition that is not listed in the index but entered the day. I have tried some random days and index.
- SetExp: I tried to set a different experiment for the same day instead of a random day's experiment.
- RemoveExp: I tried to remove the list's head. I've tried to extract some of the last experiments and first experiments of some days. I just tried to remove the experiment on the day containing 1 experiment. I tried many conditions like this.

- ListExp: I tried the list method for random days. For example, for the first and last days, or for some intermediate days.
- RemoveDay: I tried to remove the first day's experiments. I tried to remove the last day's experiments. I tried to remove their experiments for some intermediate days.
- OrderDay: I tried to order the first day's experiments. I tried to order the last day's experiments. I tried to remove their experiments for some intermediate order.
- OrderExp: Order experiment method order all experiment according to its accuracy.
- Iterator: I try hasNext and next method to print all experiments. I try remove method to remove some experiments in ExperimentList using iterator.

3.2 Running Results

Assume there is an ExperimentalList and it has more Experiment. Like that:

```
------------------------------ DRIVER ------------------------------
List experiment view:
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}
Experiment{setup='Exp2', day=1, time='08:12:23', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=1, time='19:18:13', accuracy=27.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp1', day=3, time='12:02:58', accuracy=83.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp3', day=4, time='13:22:54', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=6, time='08:20:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=7, time='16:33:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp2', day=9, time='09:12:51', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp1', day=10, time='09:52:55', accuracy=84.0, completed=true}
List day view:
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=3, time='12:02:58', accuracy=83.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp1', day=6, time='08:20:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=7, time='16:33:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp1', day=10, time='09:52:55', accuracy=84.0, completed=true}

* All tests shall be carried out on the above draft. You need to check the steps in sequence. *
```

AddExp method test:

I add some new experiment:

Exp1 day=5 accuracy 73.0, Exp2 day=10 accuracy -1.0, Exp4 day=1 accuracy 97.0, Exp4 day=9 accuracy 73.0, Exp1 day=4 accuracy 76.0, Exp3 day=2 accuracy -1.0, Exp2 day=5 accuracy 54.0, Exp5 day=4 accuracy 25.0

```
/* ------------------------  ADD EXPERIMENT TEST ------------------------ *\

/* STEP 1 : addExp(Experiment) method : insert experiment to the end of the day *\

Some experiments will be added using the addExp(...) method. Experiments to be added are as follows:
 <***1***>
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}

<***2***>

Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}
<***3***>

Experiment{setup='Exp4', day=1, time='23:02:05', accuracy=97.0, completed=true}
<***4***>

Experiment{setup='Exp4', day=9, time='19:37:05', accuracy=73.0, completed=true}
<***5***>

Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
<***6***>

Experiment{setup='Exp3', day=2, time='16:17:44', accuracy=-1.0, completed=false}
<***7***>

Experiment{setup='Exp2', day=5, time='21:32:15', accuracy=54.0, completed=true}
<***8***>
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
```

After add test:

```
/* ------------------------ AFTER ADD EXPERIMENT STEP ------------------------ *\
List experiment view:
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}
Experiment{setup='Exp2', day=1, time='08:12:23', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=1, time='19:18:13', accuracy=27.0, completed=true}
Experiment{setup='Exp4', day=1, time='23:02:05', accuracy=97.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp3', day=2, time='16:17:44', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=3, time='12:02:58', accuracy=83.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp3', day=4, time='13:22:54', accuracy=-1.0, completed=false}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=5, time='21:32:15', accuracy=54.0, completed=true}
Experiment{setup='Exp1', day=6, time='08:20:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=7, time='16:33:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp2', day=9, time='09:12:51', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='19:37:05', accuracy=73.0, completed=true}
Experiment{setup='Exp1', day=10, time='09:52:55', accuracy=84.0, completed=true}
Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}
```

```
List day view:
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=3, time='12:02:58', accuracy=83.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp1', day=6, time='08:20:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=7, time='16:33:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp1', day=10, time='09:52:55', accuracy=84.0, completed=true}

 Add Experiment Test Successfully Completed!
```

GetExp method test : Get some experiment

1-) day = 6, index = 1 , 2-) day = 4, index = 3 3-) day = 1, index = 0 4-) day = 9, index = 3

5-) day = 3, index = 0, 6-) day = 10, index = 11,

7-) day = 3, index = 1, 8-) day = 15, index = 0 => No experiment in given day and index.

```
/* ------------------------  GET EXPERIMENT TEST ------------------------ *\

/* STEP 2 : getExp(day,index) method : get the experiment with the given day and position *\


Some experiments will be get using the getExp(...) method. The experiments gotten are as follows:
<***1***> day = 6, index = 1 :
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}

<***2***> day = 4 , index = 3 :
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}

<***3***> day = 1 , index = 0 :
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}

<***4***> day = 9 , index = 3 :
Experiment{setup='Exp4', day=9, time='19:37:05', accuracy=73.0, completed=true}

<***5***> day = 3 , index = 0 :
Experiment{setup='Exp1', day=3, time='12:02:58', accuracy=83.0, completed=true}

<***6***> day = 10 , index = 1 :
Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}

<***7***> day = 3 , index = 1 :
null     => Because there is no experiment for index 1.

<***8***> day = 15 , index = 0 :
null     => Because there is no experiment for day 15.


 Get Experiment Test Successfully Completed!
```

SetExp method test : Set some experiment:

1-) day = 3, index = 0 => Exp1 day=3 accuracy -1.0

2-) day = 9, index = 3 => Exp4 day=9 accuracy 54.0

3-) day = 1, index = 2 => Exp3 day=3 accuracy 44.0

4-) day = 7, index = 0 => Exp1 day=3 accuracy 79.0

5-) day = 2, index = 2 => Exp1 day=3 accuracy 37.0

```
/* ------------------------  SET EXPERIMENT TEST ------------------------ *\

/* STEP 3 : setExp(day,index, Experiment) method : set the experiment with the given day and position *\


Some experiments will be set using the setExp(...) method. The experiments to be set are as follows:
<***1***> day = 3 , index = 0 Experiment to be set:
Experiment{setup='Exp1', day=3, time='14:23:07', accuracy=-1.0, completed=false}

<***3***> day = 9 , index = 3 Experiment to be set:
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}

<***4***> day = 1 , index = 2 Experiment to be set:
Experiment{setup='Exp3', day=1, time='17:35:23', accuracy=44.0, completed=true}

<***4***> day = 7 , index = 0 Experiment to be set:
Experiment{setup='Exp1', day=7, time='18:57:38', accuracy=79.0, completed=true}

<***5***> day = 2 , index = 2 Experiment to be set:
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
```

After set step:

```
/* ----------------------- AFTER SET EXPERIMENT STEP ----------------------- *\
List experiment view:
Experiment{setup='Exp1', day=1, time='02:42:53', accuracy=65.0, completed=true}
Experiment{setup='Exp2', day=1, time='08:12:23', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=1, time='17:35:23', accuracy=44.0, completed=true}
Experiment{setup='Exp4', day=1, time='23:02:05', accuracy=97.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp1', day=3, time='14:23:07', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp3', day=4, time='13:22:54', accuracy=-1.0, completed=false}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=5, time='21:32:15', accuracy=54.0, completed=true}
Experiment{setup='Exp1', day=6, time='08:20:47', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=7, time='18:57:38', accuracy=79.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp2', day=9, time='09:12:51', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
Experiment{setup='Exp1', day=10, time='09:52:55', accuracy=84.0, completed=true}
Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}
```

RemoveExp method test : Remove some experiment:

1-) day = 5, index = 1 , 2-) day = 3, index = 0 , 3-) day = 10, index = 0

4-) day = 4, index = 2 , 5-) day = 1, index = 0, 6-) day = 9, index = 1, 7-) day = 6, index = 0

```
/* ------------------------  REMOVE EXPERIMENT TEST ------------------------ *\

/* STEP 4 : removeExp(day,index) method : remove the experiment specified as index from given day. *\

Some experiments will be remove using the removeExp(...) method. The experiments to be remove are as follows:
<***1***> Experiment to be remove: day = 5 , index = 1
<***2***> Experiment to be remove: day = 3 , index = 0
<***3***> Experiment to be remove: day = 10 , index = 0
<***4***> Experiment to be remove: day = 4 , index = 2
<***5***> Experiment to be remove: day = 1 , index = 0
<***6***> Experiment to be remove: day = 9 , index = 1
<***7***> Experiment to be remove: day = 6 , index = 0
```

After remove step:

```
/* ----------------------- AFTER REMOVE EXPERIMENT STEP ----------------------- *\
List experiment view:
Experiment{setup='Exp2', day=1, time='08:12:23', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=1, time='17:35:23', accuracy=44.0, completed=true}
Experiment{setup='Exp4', day=1, time='23:02:05', accuracy=97.0, completed=true}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=7, time='18:57:38', accuracy=79.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}
List day view:
Experiment{setup='Exp2', day=1, time='08:12:23', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp1', day=7, time='18:57:38', accuracy=79.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp2', day=10, time='19:05:08', accuracy=-1.0, completed=false}
```

List method test : List some experiment in a given day:

Day 4:

```
*** DAY 4: ***
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
```

Day 10:

```
*** DAY 10: ***
```

Day 2:

```
*** DAY 2: ***
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
```

Day 8:

```
*** DAY 8: ***
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
```

Day 1:

```
*** DAY 1: ***
Experiment{setup='Exp3', day=1, time='17:35:23', accuracy=44.0, completed=true}
Experiment{setup='Exp4', day=1, time='23:02:05', accuracy=97.0, completed=true}

 List Experiment Test Successfully Completed!
```

RemoveDay method test : Remove all experiments in a given day.

Remove Day 7 , Remove Day 1 , Remove Day 10

After Remove Day step:

```
/* ------------------------  REMOVE DAY TEST ------------------------ *\

/* STEP 6 : removeDay(day) method : remove all experiments in a given day. *\

Experiments that are on some days will be remove using the removeDay(...) method. The days to be remove are as follows:

*** REMOVE 7. DAY ***

*** REMOVE 1. DAY ***

*** REMOVE 10. DAY ***
/* ------------------------ AFTER REMOVE DAY STEP ------------------------ *\
List experiment view:
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
List day view:
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}

 Remove Day Test Successfully Completed!
```

OrderDay method test : Sort the experiments in a given day.

Order Day 4 , Order Day 9 , Order Day 2

After Order Day step:

```
/* ------------------------  ORDER DAY TEST ------------------------ *\

/* STEP 7 : orderDay(day) method : sorts the experiments in a given day according to the accuracy, the changes will be done on the list. *\

Experiments that are on some days will be order using the orderDay(...) method. The days to be order are as follows:

*** ORDER 4. DAY ***

*** ORDER 9. DAY ***

*** ORDER 2. DAY ***
/* ------------------------ AFTER ORDER DAY STEP ------------------------ *\
List experiment view:
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
List day view:
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}

 Order Day Test Successfully Completed!
```

OrderExp method test : Sort the all experiments:

After Order Experiments step:

```
/* ------------------------  ORDER EXPERIMENTS TEST ------------------------ *\

/* STEP 8 : orderExperiments(day) method : sorts all the experiments in the list according to the accuracy, the original list should not be changed since the day list may be damage. *\

All Experiments will be order using the orderExperiments(...) method. The experiments to be order are as follows:

*** ORDER ALL EXPERIMENTS ***
/* ------------------------ AFTER ORDER EXPERIMENTS STEP ------------------------ *\

                      EXPERIMENTS
-----------------------------------------------------------------
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Total experiment : 15
-----------------------------------------------------------------

 Order Experiments Test Successfully Completed!
```

Iterator test : Prints all experiments in ExperimentList using hasNext() and next() method.

hasNext() and next() test:

```
/* ------------------------  ITERATOR TEST ------------------------ *\

=> * Test hasNext() and next() methods. All experiments will be printed using iterator. *
Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}
Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}
Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}
Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}

 ITERATOR hasNext() and next() methods Test Successfully Completed!
```

Iterator test: Remove some experiment using remove() method.

1-) Exp1 day=2 accuracy -1.0

2-) Exp5 day=4 accuracy 25.0

3-) Exp1 day=4 accuracy 44.0

4-) Exp4 day=4 accuracy 76.0

5-) Exp1 day=5 accuracy 73.0

6-) Exp2 day=6 accuracy 77.0

7-) Exp3 day=9 accuracy 49.0

8-) Exp1 day=9 accuracy 63.0

After Iterator remove step:

```
Removed experiment: Experiment{setup='Exp1', day=2, time='07:49:25', accuracy=-1.0, completed=false}

Removed experiment: Experiment{setup='Exp5', day=4, time='20:20:53', accuracy=25.0, completed=true}

Removed experiment: Experiment{setup='Exp1', day=4, time='05:45:29', accuracy=44.0, completed=true}

Removed experiment: Experiment{setup='Exp4', day=4, time='16:02:05', accuracy=76.0, completed=true}

Removed experiment: Experiment{setup='Exp1', day=5, time='11:39:27', accuracy=73.0, completed=true}

Removed experiment: Experiment{setup='Exp2', day=6, time='18:32:41', accuracy=77.0, completed=true}

Removed experiment: Experiment{setup='Exp3', day=9, time='14:42:01', accuracy=49.0, completed=true}

Removed experiment: Experiment{setup='Exp1', day=9, time='03:44:38', accuracy=63.0, completed=true}

/* ----------------------- AFTER ITERATOR REMOVE STEP ----------------------- *\
List experiment view:
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp2', day=2, time='10:22:53', accuracy=68.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp2', day=8, time='09:08:39', accuracy=-1.0, completed=false}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}
List day view:
Experiment{setup='Exp3', day=2, time='17:25:08', accuracy=37.0, completed=true}
Experiment{setup='Exp2', day=4, time='09:37:19', accuracy=56.0, completed=true}
Experiment{setup='Exp3', day=6, time='21:23:45', accuracy=52.0, completed=true}
Experiment{setup='Exp1', day=8, time='01:36:17', accuracy=59.0, completed=true}
Experiment{setup='Exp4', day=9, time='21:08:34', accuracy=54.0, completed=true}

 ITERATOR remove methods Test Successfully Completed!
```