

Lab Goal : This lab was designed to teach you more about Heaps and Priority Queues.

Lab Description : Create a class of your choosing that stores some data you cook up. The class must implement Comparable as it will be stored in a PriorityQueue. Instantiate and store at least 10 Objects of the type you create. Print out the 10 Objects in ascending order using the Min Heap setup of the PriorityQueue. The Java PriorityQueue is a minimum heap where the smallest value is always the first one removed.

Sample Data:

```
YourPQ<Monster> test = new YourPQ<>();

test.add(new Monster(1,5));
test.add(new Monster(1,3));
test.add(new Monster(10,55));
test.add(new Monster(12,45));
test.add(new Monster(111,123));
test.add(new Monster(5,9));
System.out.println("PQ: " + test);
System.out.println("natural order of contents: " + test.getNaturalOrder());
System.out.println("getMin() - " + test.getMin());
System.out.println("removeMin() - " + test.removeMin()+"\n");
System.out.println("PQ: " + test);
System.out.println("natural order of contents: " + test.getNaturalOrder());
System.out.println("getMin() - " + test.getMin());
System.out.println("removeMin() - " + test.removeMin()+"\n");
System.out.println("PQ: " + test);
System.out.println("natural order of contents: " + test.getNaturalOrder());
System.out.println("\n");

YourPQ<Integer> test2 = new YourPQ<>();

test2.add(3);
test2.add(9);
test2.add(1);
test2.add(6);
test2.add(7);
test2.add(1);
System.out.println("PQ: " + test2);
System.out.println("natural order of contents: " + test2.getNaturalOrder());
System.out.println("getMin() - " + test2.getMin());
System.out.println("removeMin() - " + test2.removeMin()+"\n");
System.out.println("PQ: " + test2);
System.out.println("natural order of contents: " + test2.getNaturalOrder());
System.out.println("getMin() - " + test2.getMin());
System.out.println("removeMin() - " + test2.removeMin()+"\n");
System.out.println("PQ: " + test2);
System.out.println("natural order of contents: " + test2.getNaturalOrder());
```

Files Needed ::

YourPQ.java
Monster.java
Lab18b.java

Output:

```
PQ: [1-3, 1-5, 5-9, 12-45, 111-123, 10-55]
natural order of contents: 1-3 1-5 5-9 10-55 12-45 111-123
getMin() - 1-3
removeMin() - 1-3
```

```
PQ: [1-5, 10-55, 5-9, 12-45, 111-123]
natural order of contents: 1-5 5-9 10-55 12-45 111-123
getMin() - 1-5
removeMin() - 1-5
```

```
PQ: [5-9, 10-55, 111-123, 12-45]
natural order of contents: 5-9 10-55 12-45 111-123
```

```
PQ: [1, 6, 1, 9, 7, 3]
natural order of contents: 1 1 3 6 7 9
getMin() - 1
removeMin() - 1
```

```
PQ: [1, 6, 3, 9, 7]
natural order of contents: 1 3 6 7 9
getMin() - 1
removeMin() - 1
```

```
PQ: [3, 6, 7, 9]
natural order of contents: 3 6 7 9
```