CS150 Lab 9 Notes

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10/18/20

Introduction

The two classes created were ArrayPriorityQueue and WeightedElement. ArrayPriorityQueue has three separate methods: add, peek, poll. Add added the input element into the instance of ArrayPriorityQueue. Peek found the minimal element within the ArrayPriorityQueue instance. Poll did this and removed the element. Unit Testing was tested using basic integers, WeightedElements in the form of <Integer,Integer>, and WeightedElements in the form of <String, String>. The ExperimentController class was also installed to test the efficiency of peek and poll when the queue contained integers. The first test method is testInt which tests the efficiency of peek and poll for various amounts of integers within queue. The second test method is testType which tests the efficiency of the add method for various amounts of strings and integers.

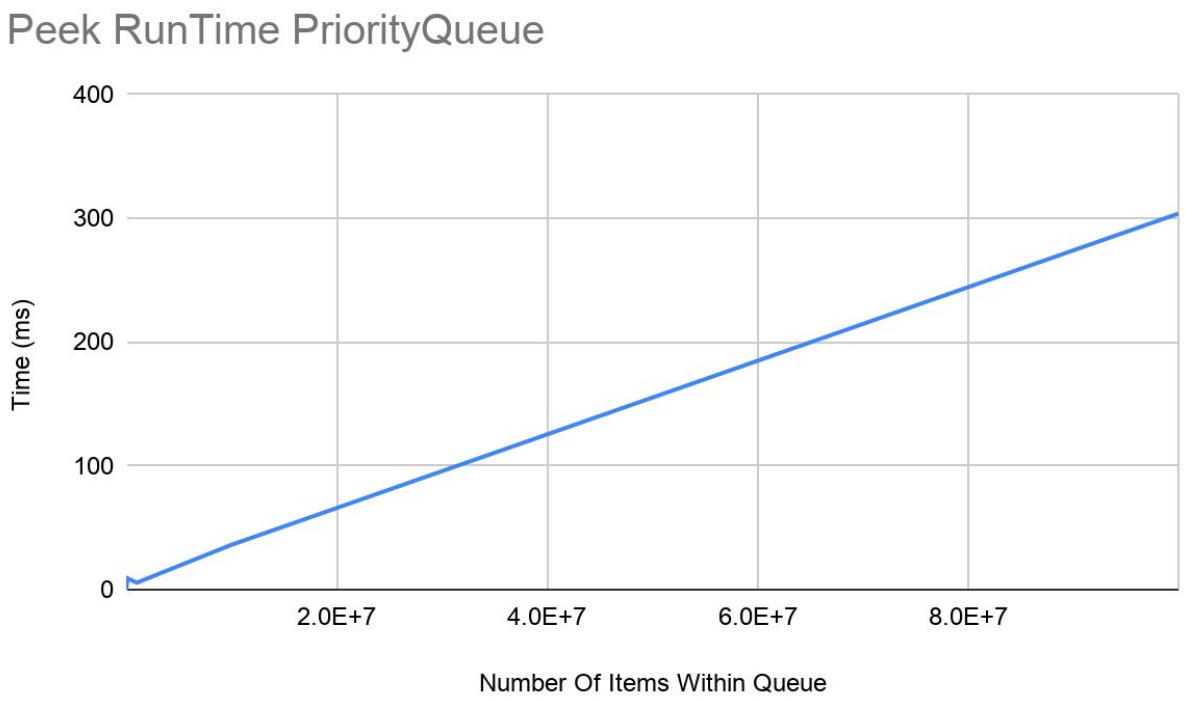
Unit Test

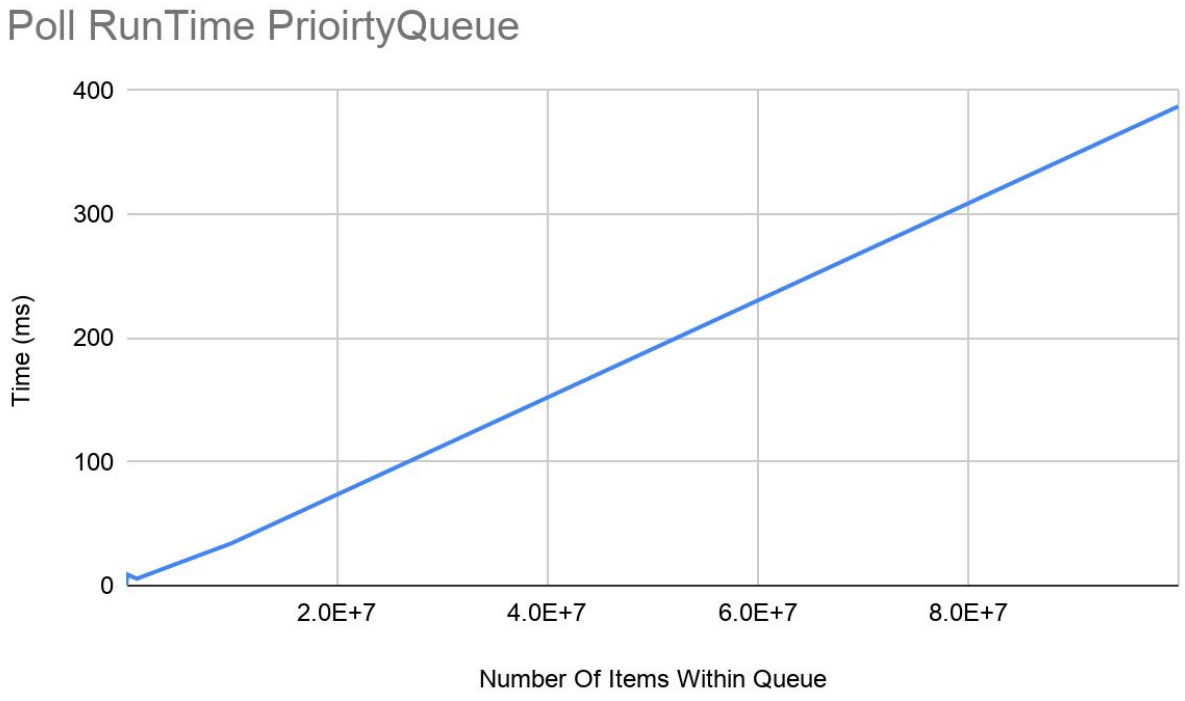
The add() method for the priorityqueue took no time regardless of whether the elements were of Integer or String type. This can be found under method TestType.

The following data was found using the testInt method. It recorded times for peek and poll for various amounts of items within the queue for 5 separate trials. The averages were calculated and graphed for each numberOfItems.

numOfItems/Test(Peek)	1	2	3	4	5	Average Time (ms)	numOfItems
100	0	0	0	0	0	0	100
1000	0	0	0	0	3	0.6	1000
10000	1	1	1	1	1	1	10000
100000	16	8	7	8	7	9.2	100000
1000000	6	6	6	5	5	5.6	1000000
10000000	34	37	43	42	25	36.2	10000000
100000000	313	292	317	294	303	303.8	100000000
numOfItems/Test(Poll)	1	2	3	4	5	Average Time (ms)	numOfItems
100	0	1	0	0	0	0.2	100
1000	0	0	0	0	0	0	1000
10000	0	1	1	1	1	0.8	10000
100000	9	13	7	8	8	9	100000
1000000	6	5	5	7	5	5.6	1000000

10000000	32	34	35	31	39	34.2	10000000
100000000	346	387	342	398	463	387.2	100000000





Both Poll and Peek had very similar runtimes with elements of 10000000 and under. At 100000000 elements, Poll had a less efficient runtime by approximately 40 ms.

Required Output

No required output

Trouble Report

I was unable to utilize my testMethod method. It was designed to do the exact same tests as above with WeightedElements. I was unable to determine whether or not this was required by the lab notes, but my attempt at this did not work.

References

(2020, June 24). Retrieved October 19, 2020, from https://docs.oracle.com/javase/7/docs/api/java/util/PriorityQueue.html