HACETTEPE UNIVERSITY

DEPARTMENT OF
COMPUTER ENGINEERING

BBM104 PROGRAMMING LAB.
Assigment 4
Stack and Queue Operations

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Main.java

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Problem Definition

Implementing stack and queue structure in java and solving various algorithms with usage of only stack and queue operations.

Algorithm Steps

1.Make initialization:
1.1 Read input file.
1.2 Initialize stack and queue from input files..
2. Execute according operation and write output for every line.
2.1 Check first word of line to determine stack or queue.
2.2 Call according action from queue operator or stack operator.
2.3 Write according output to output file.
3. Concluding:
3.1 Close output file.
3.2 Save final queue and stack to files.

Analysis of Commands

removeGreater

We check every element if they satisfy requirement we put them in a temp data structure and at the end put them back.
T = n(comparison) + n(putting back) (Worst case if we don't remove any element) + 2 (initializing lines)
T = 2n (Worst case at average some elements will be removed but it is still n dependent.)
T = n (Best case, if all removed at first part, non will be put back.
T = 1.5n (Average)
Time complexity = O(n)
We put every element to another data structure and 1 temporary int.
Space complexity = O(n)

addOrRemove

We perform according operation on data k times.
T = 1(comparison for determine operation) + |k|(Operation includes getting random int and/or performing operation.)
T = k (There is no worst case or best case because it is not dependent on anything but k.)
Time complexity = O(k)
No extra space is allocated.
Space complexity = O(1)

REFERENCES

Assignment Paper
LaTex Tutorials