CPS 130 Homework 16
Amortized Analysis

due Wed June 12th

Write and justify your answers in the space provided.\textsuperscript{1}

1. (CLRS 17.2-1) A sequence of stack operations is performed on a stack whose size never exceeds $k$. After every $k$ operations, a copy of the entire stack is made for backup purposes. Show that the cost of $n$ stack operations, including copying the stack, is $O(n)$ by assigning suitable amortized costs to the various stack operations.

\textsuperscript{1}Collaboration is allowed, even encouraged, provided that the names of the collaborators are listed along with the solutions. Students must write up the solutions on their own.
2. A sequence of $n$ operations is performed on a data structure. The $i$th operation costs $i$ if $i$ is a power of 2, and 1 otherwise. Using the accounting method, determine the amortized cost per operation.