Homework 2

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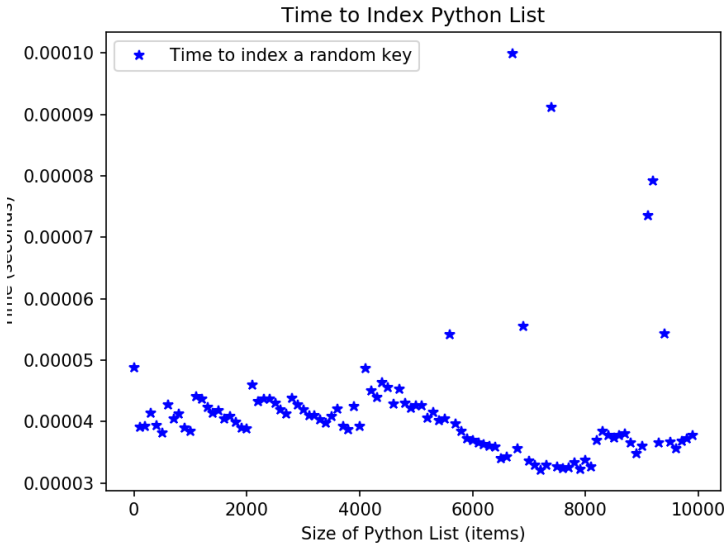
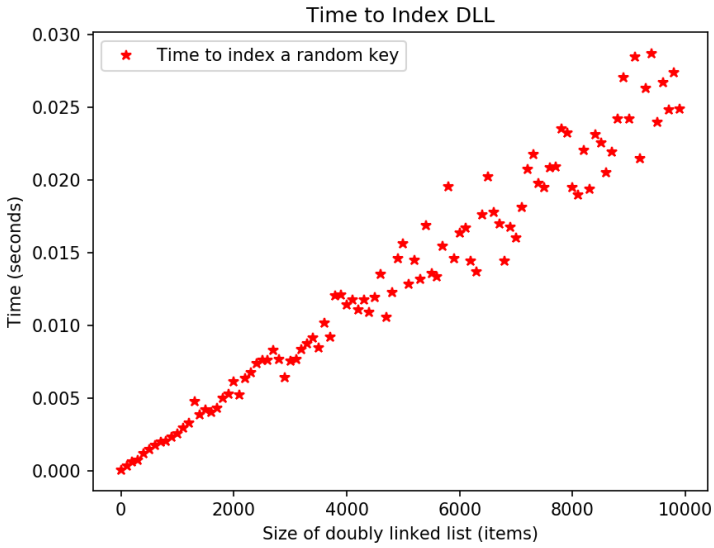
1. See `./sdaitzman.py` for solutions. All functions are tested.
2. Runtime analysis
    a. Comparing the behavior of the DLL I implemented to a Python list, my DLL seems noticeably slower to index. It almost looks as though the Python list's behavior is much more proportionally variable, but may amortize to $O(1)$, whereas my DLL is clearly behaving as $O(n)$. Plots are attached.





b. My DLL algorithm to multiply all pairs is noticeably slower. Perhaps its performance could be improved with a more intelligent algorithm, or by tracking a portion (or all) of the sum as the DLL changes. It seems to be performing at $O(n^2)$. A plot is attached.