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Assignment 2

- As we analyze from the test times we can see the RobinHood runs are faster most of the times but there are some cases where they aren't. Sorted Database is clearly the slowest as it has to take more operations/actions to do the same things the other databases do but in a different way.. Inserting and removing in the sorted database are always longer as they would have to do lots more operations and if there are larger number of elements in the table we see that through shifting over to other elements which will take longer. The hashtable compared to the robinhood are often close as the speed difference isn't a huge gap because of the use of linear probing.
- The robin hood is slightly faster than the hashtable as in robinhood there are gonna be cases where we shift based on the psl would take quicker to compare, but overall robin hood is seemed to be faster than both database. Robinhood is also faster than hashing as it hashes closer to original hash index. Hashtables and robinhood are clearly way faster than sorted as we see when there are more accounts there is a high time difference. They both do a linear probing technique which generates faster times and to allow the table to work with larger numbers.
- Yes, the robin hood is a improvement towards the hashtable. In this assignment we see how different these two are as one is setting using the psl and one is not which can create a quicker time and based on how organized the robin hood can get we can expect a faster time.
- Yes I do expect the result to happen as we see through coding this assignment, the difference between robinhood and sorted. Sorted would have to do many more executions as we see in insert ,delete,search. As shifting will take way more executions and time to find the right account or index we need. For hashtables hashes which will cause a reduction of executions made compared

to the sorted. Robinhood is just a slight reduction of executions as it also checks the psl values to create a better comparison to each index.

- If the datasize was 2 million we would see that the sorted will have a very significant effect on the time of the speed, we can expect it will decrease the speed of the sorted array as it is not meant to take that many elements. Hashtables would have a decrease in speed but still faster than the sorted as it is meant to take more elements, the use of linear probing will be way more beneficial and less executions to the overall time. Robinhood we should expect that the time slightly decreases but still faster than both databases.