We can rehash to a larger table to make the search time of a hash table better. Similarly, when the load factor of an open-addressed hash table gets too small, a lot of space gets wasted.

Take an open-addressed hash table that uses double hashing.

After every 100 insertions, when the average probe count of search becomes larger than 2, rehash to a larger table having size approximately double of the current size, but the new size should also be prime.

After deletion, when the load factor falls below 0.4, rehash to a smaller table having size approximately half of the current size, but the new size should also be prime.

Report the average search time and average number of probes for each case (both before and after rehashing). For calculation, search for 10% of the elements randomly.