1. A function that maps keys to integers, usually to get an even distribution on a smaller set of values is called hash function. A dictionary in which keys are mapped to array positions by hash functions is called hash table. A hash function f defined as f(key) = key mod 7, with linear probing, is used to insert the keys 37,38,72,48,98,11,56 into a table indexed from 0 to 6. Show the steps for inserting the keys into the hash table and also show the final configuration of the hash table.
2. Given input {4371, 1323, 6173, 4199, 4344, 9679, 1989} and a hash function h(x) = x(mod 10), show the resulting open addressing hash table using quadratic probing.
3. The given set of key elements is hashed into the hash table using linear probing and separate chaining. The hash function h(x) = first character of key x. Draw the hash table after insertion.

Input: GA, D, A, E, G, A1, A2, A4, A3, Z, ZA, L. Compare the average searching time for all the identifiers.