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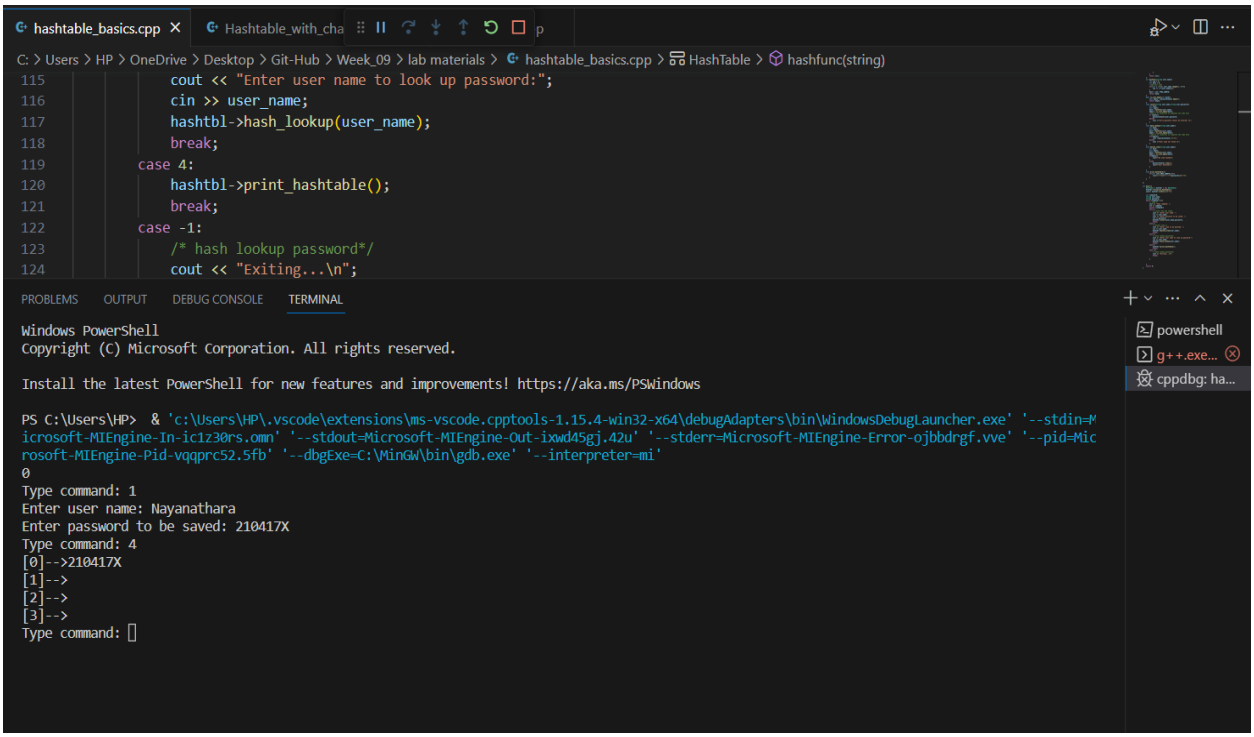
# In-Class Lab Exercise – Week 09

Git-Hub link :

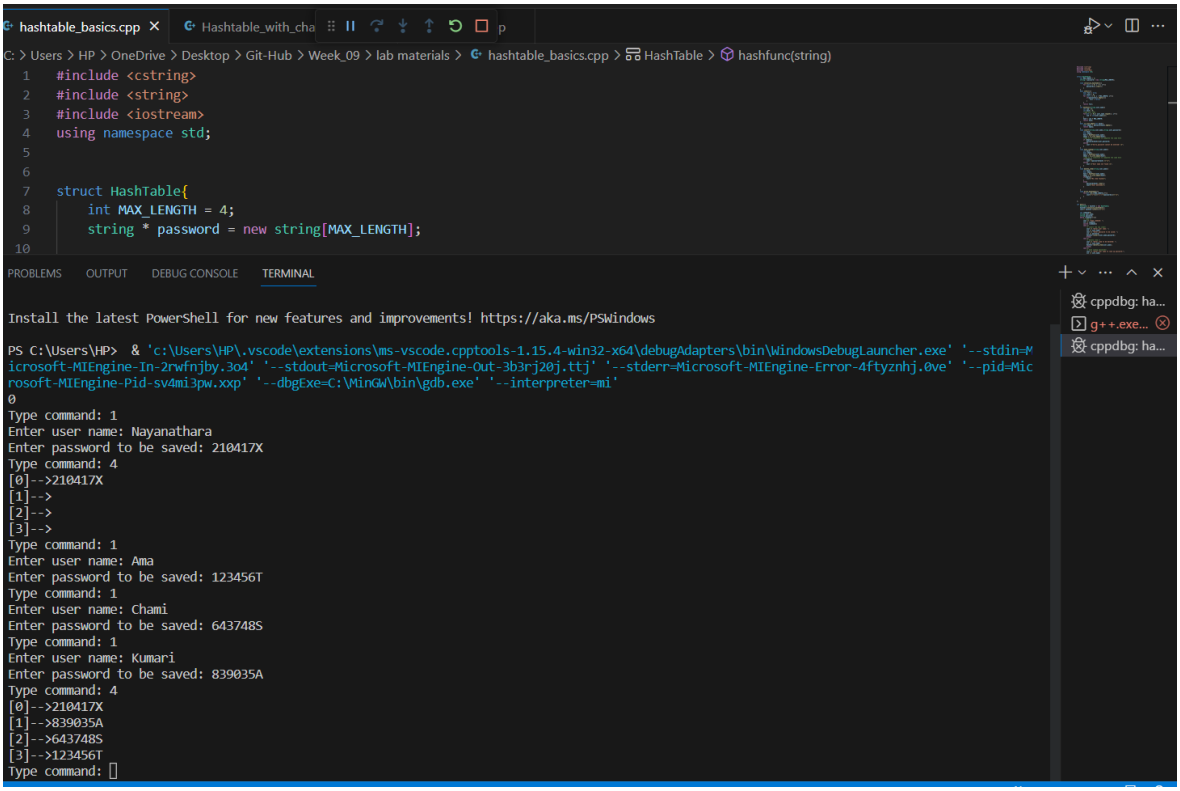
https://github.com/ChethmiNayanathara/Data-Structures-and-Algorithms

## Implementing basic hash table

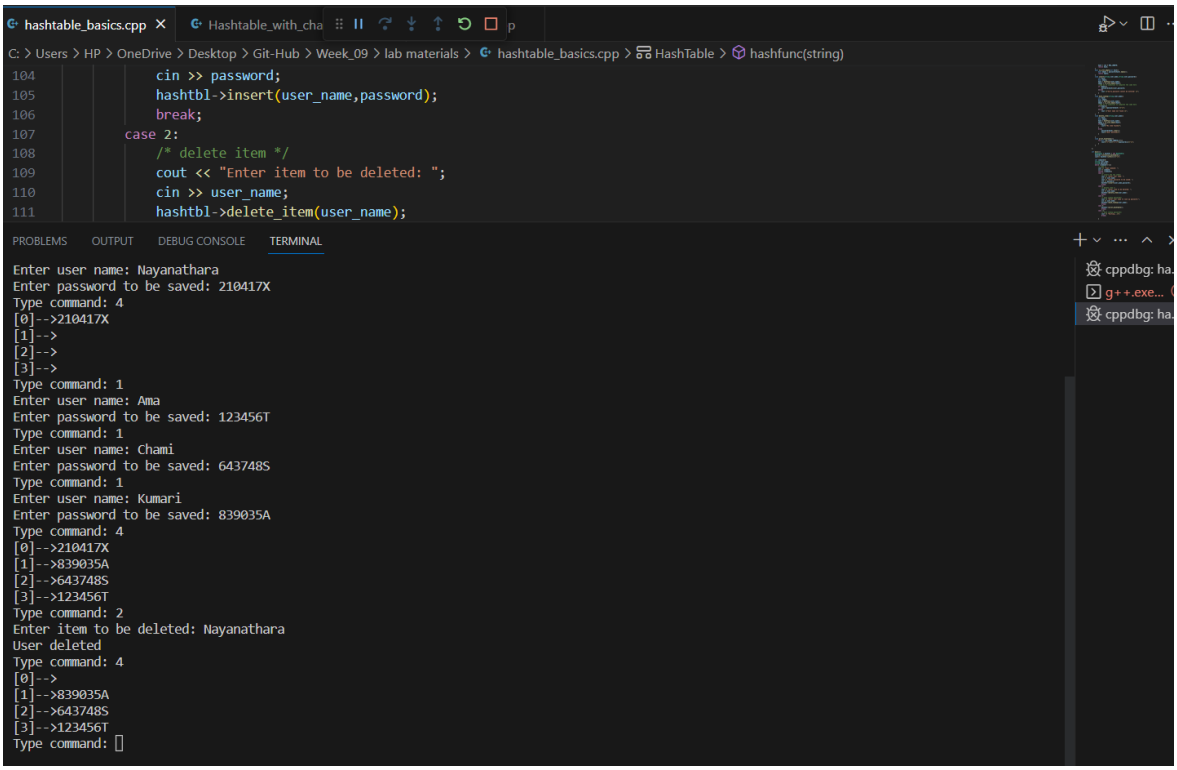
Annex 1 –



Annex 2 -




Annex 3 –



When implementing hashtables in this manner, various keys can result in the same hash value and there by collisions happen. And also this results in very long linked lists. Hence it become inefficient in searching and extracting data.

To overcome these difficulties techniques such as chaining and open addressing can be used.

1. Chaining
   - In this technique, each slot in the hashtable is a pointer to a linked list of key-value pairs.
   - When collisions occur, the new key-value pairs are simply added to the linked list of the corresponding slot.
   - By this method, a large number of collisions can be handled without increasing the size of the hashtable.
2. Open addressing
   - All the colliding keys are stored in a different location in the hashtable itself when the natural choice is full.
   - Searching for this different location is known as probing.
   - The exact open addressing strategy depends on the implementation of the probing method. There are various probing methods such as linear probing, quadratic probing and doubling hashing.

# Implementing hash table with chaining

Annex 4 -


Annex 5 -