# HASHTABLES IMPLEMENTATION

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SSP CCE 4TH TERM

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# INTRODUCTION



## What are hash tables?

- A hash table (hash map) is a data structure which implements an associative array abstract data type, a structure that can map keys to values

- A hash table uses a hash function to compute an index into an array of buckets or slots, from which the desired value can be found

# LINEAR PROBING

**In this strategy, all entry records are stored in the bucket array itself. When a new entry has to be inserted, the buckets are examined, starting with the hashed-to slot and proceeding in some probe sequence, until an unoccupied slot is found. When searching for an entry, the buckets are scanned in the same sequence, until either the target record is found, or an unused array slot is found, which indicates that there is no such key in the table.**

Tab 2

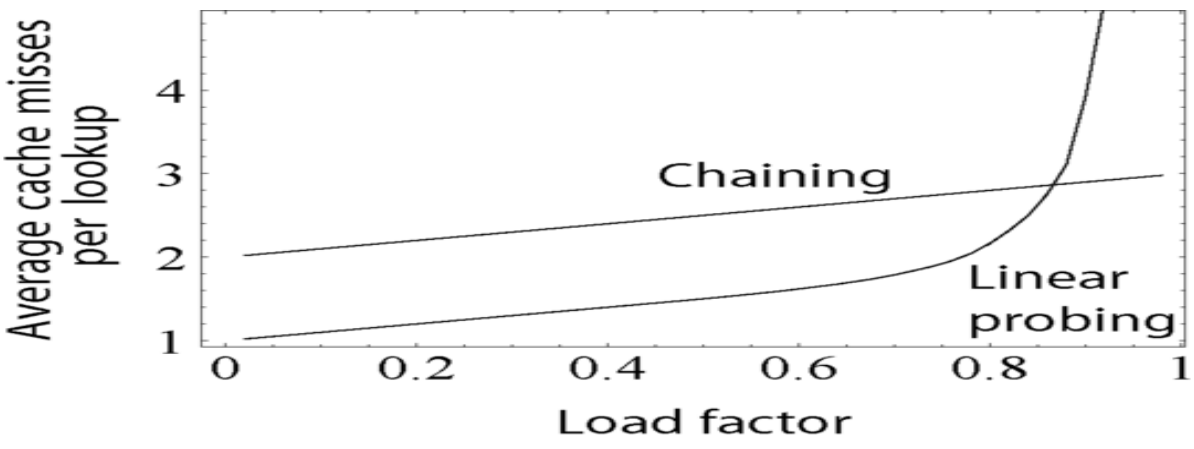
# SEPARATE CHAINING

In the method known as separate chaining, each bucket is independent, and has some sort of list of entries with the same index. The time for hash table operations is the time to find the bucket (which is constant) plus the time for the list operation.

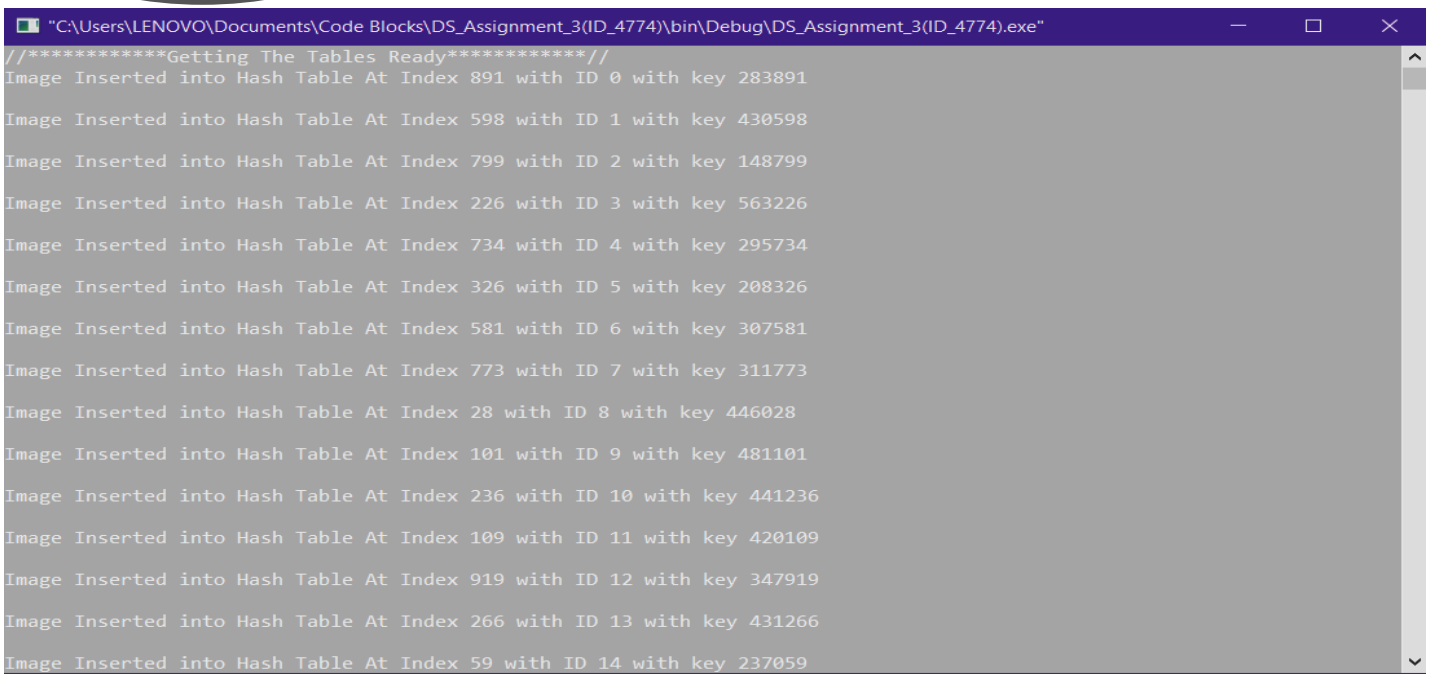
# COMPARISON

- Generally, linear probing is faster than separate chaining
- But, at the worst case (which is a big number of collisions), linear probing starts to consume too much time
- On the other hand, separate chaining keeps its change in time (slope) constant
- So, in case of few collisions, Linear probing is better. But, in case of many collisions, separate chaining has the advantage.

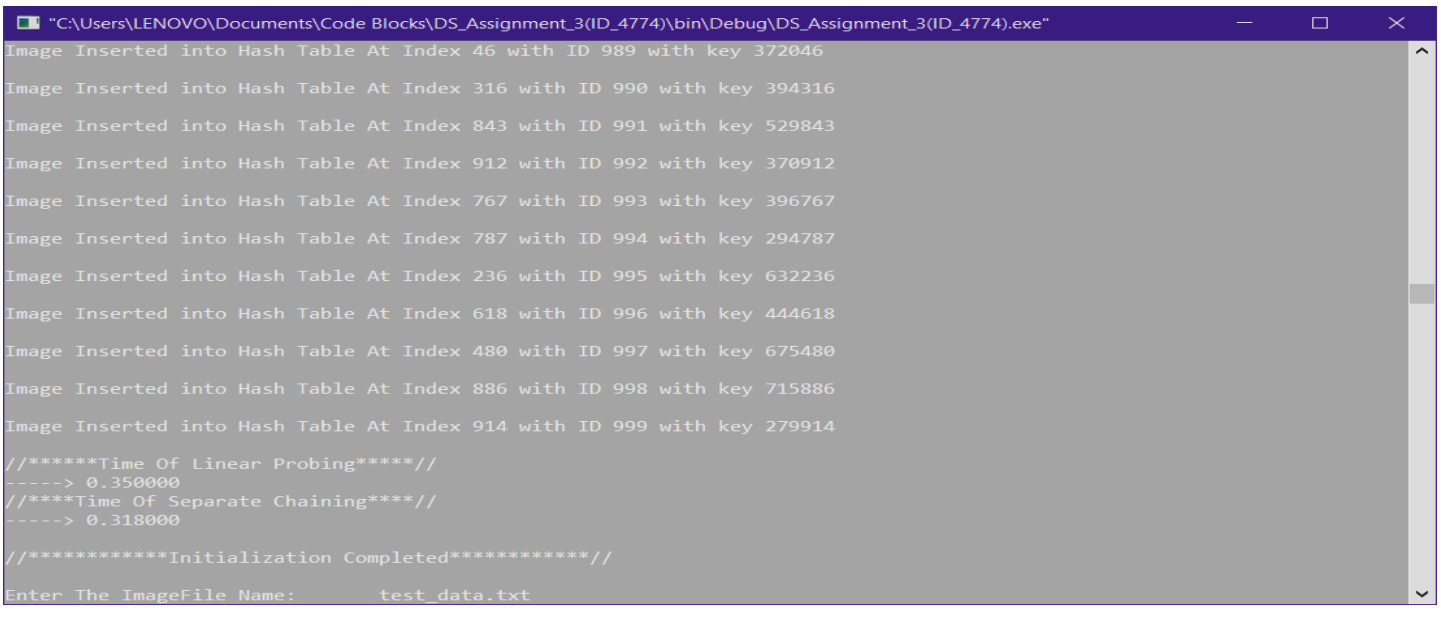




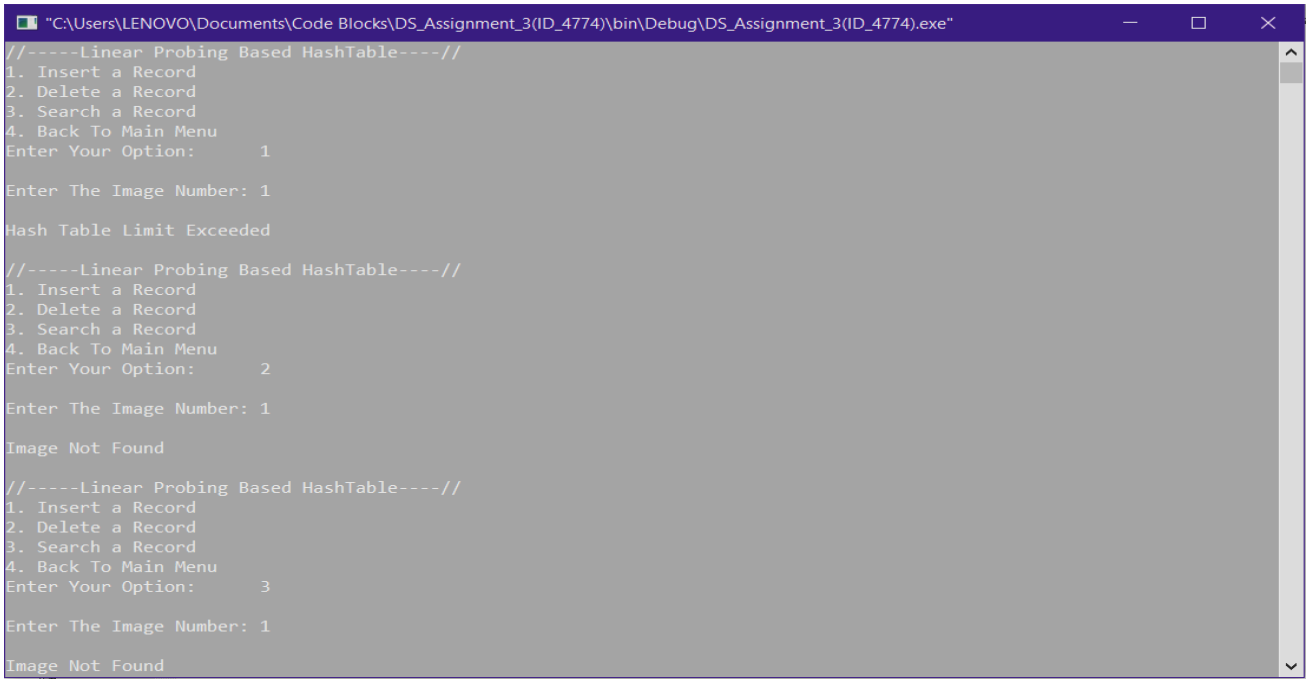
# SAMPLE RUNS

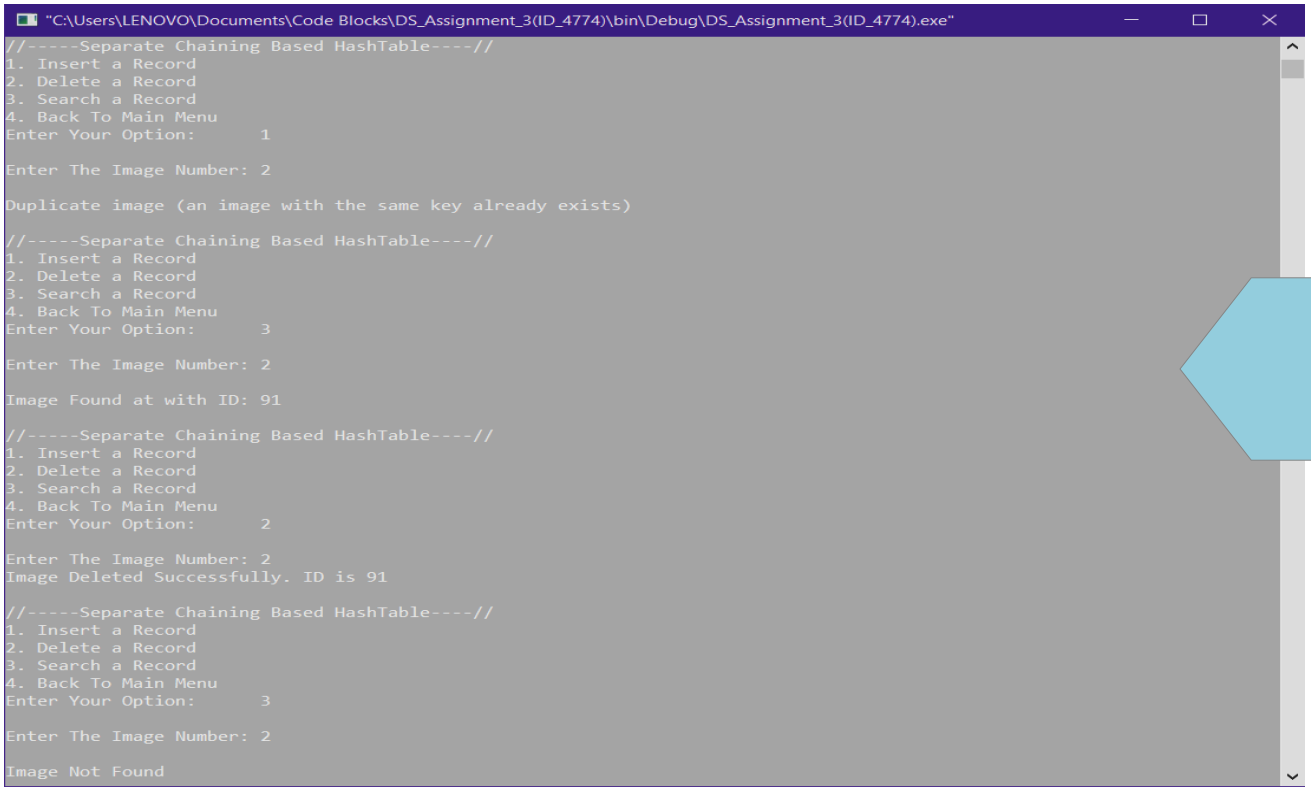



Tab 5



# SAMPLE RUNS




Tab 6