Report for candy warehouse management system

In this assignment we have to define/use a data structure for the management of candy warehouse.

1. Hashtable was the good approach for this problem.

2. Reason to use this data structure:
   - Time complexity:
     Search, Insert, and Remove these all operations take O (1).
   - Best for storing key-value pairs. Unlike a basic array, which uses index numbers for accessing elements, a hash table uses keys to look up table entries. This makes data management more manageable. It's easier to catalog data entries by their attributes rather than their count in a giant list.

3. To generate the keys I used helper function 'Hash Function'. It decides where to store and retrieve items in a hash table. To avoid collision in hash keys I used bitwise operation and prime number, it helps to minimize the collision.

4. HashTable has two parameters that affect its performance: initial capacity and load factor. The capacity is the number of buckets in the hash table. The load factor is a measure of how full the hash table is allowed to get before its capacity is automatically increased.
   Minimum size was defined for hash table, I also maintained the load factor, (0.75) offers a good tradeoff between time and space costs. When load factor reached it is rehashed.
5. Properly handled memory (no memory leak), deleted every object, vector after using it. When program exits all resources are released properly.