# Memory Diagram

**Customers – Stored using a hash with quadratic collision**

Selected a hash with quadratic collision for customers since the number of customers would not increase after the customers are set up initially. I have assumed that customers would never be more than 150 therefore and using a 223 array hash table.

Memory O(nc) where nc is the number of customers. For this case it would not exceed 223 which is the size of the hash

**Books – Stored using a hash with buckets**

There is a chance the books might increase after the initial set up. If unique books are traded in it would increase the book hash table. That is why I am using bucket collision for books.

Memory O(nb) where nb is the number of customers.

Also storing books in BST for ease of transversal. But since it just stores the pointers to the data in heap which already have been taken into account (line above), it would not have much of an impact.

**Transaction – Stored using a Queue**

Memory O(nt) where nt is the number of transactions at a given point which still have to get executed