Here are some commonly asked interview questions on HashSet, HashMap, and TreeMap:

**HashSet**

1. **What is a HashSet and how does it work?**
   * A HashSet is a collection that does not allow duplicate elements. It uses a hash table for storage, meaning it provides constant time performance for basic operations like add, remove, and contains.
2. **How does HashSet handle collisions?**
   * HashSet uses a hash table internally, and collisions are handled using linked lists or binary trees (in Java 8 and later) within the buckets.
3. **Can you store null values in a HashSet?**
   * Yes, HashSet allows one null value.
4. **What is the time complexity for adding elements to a HashSet?**
   * The average time complexity for adding elements is O(1), but it can degrade to O(n) in the worst case due to collisions.

**HashMap**

1. **What is a HashMap and what are its key characteristics?**
   * A HashMap is a data structure that stores key-value pairs. It allows null values and one null key, and it does not maintain any order of its elements [[1]](https://interviewprep.org/hashmap-interview-questions/).
2. **How does HashMap handle collisions?**
   * HashMap handles collisions using linked lists or binary trees (in Java 8 and later) within the buckets.
3. **What is the difference between HashMap and Hashtable?**
   * HashMap is not synchronized and allows null keys and values, while Hashtable is synchronized and does not allow null keys or values.
4. **How does the get() method work in HashMap?**
   * The get() method calculates the hash code of the key, finds the corresponding bucket, and then searches through the linked list or tree in that bucket to find the value.

**TreeMap**

1. **What is a TreeMap and how does it work?**
   * A TreeMap is a map that maintains its entries in ascending key order. It is implemented using a Red-Black tree.
2. **What are the advantages of using a TreeMap over a HashMap?**
   * TreeMap maintains sorted order of keys, which can be useful for range queries and ordered traversal. However, it has higher time complexity (O(log n)) for basic operations compared to HashMap (O(1)).
3. **Can you store null values in a TreeMap?**
   * TreeMap allows multiple null values but does not allow null keys.
4. **How does TreeMap ensure the order of its elements?**
   * TreeMap uses a Red-Black tree to maintain the order of its elements.

**General Questions**

1. **How would you choose between HashSet, HashMap, and TreeMap?**
   * Use HashSet for unique elements without order, HashMap for key-value pairs without order, and TreeMap for key-value pairs with sorted order.
2. **What are the common use cases for these data structures?**
   * HashSet: Removing duplicates from a collection.
   * HashMap: Caching, indexing, and fast lookups.
   * TreeMap: Sorted data storage and range queries.
3. **How do you handle concurrent modifications in these data structures?**
   * Use ConcurrentHashMap for thread-safe operations on maps and CopyOnWriteArraySet for sets.

Would you like more details on any of these questions or additional topics?

[[1]](https://interviewprep.org/hashmap-interview-questions/): https://interviewprep.org/hashmap-interview-questions/ [[2]](https://www.geeksforgeeks.org/top-50-problems-on-hash-data-structure-asked-in-sde-interviews/): https://www.geeksforgeeks.org/top-50-problems-on-hash-data-structure-asked-in-sde-interviews/ [[3]](https://www.hirist.tech/blog/top-20-hashmap-interview-questions-with-answers/): https://www.hirist.tech/blog/top-20-hashmap-interview-questions-with-answers/

**References**

[1] [Top 25 Hashmap Interview Questions and Answers](https://interviewprep.org/hashmap-interview-questions/)

[2] [Top 50 Problems on Hash Data Structure asked in SDE Interviews](https://www.geeksforgeeks.org/top-50-problems-on-hash-data-structure-asked-in-sde-interviews/)

[3] [Top 20+ HashMap Interview Questions With Answers - Hirist Blog](https://www.hirist.tech/blog/top-20-hashmap-interview-questions-with-answers/)