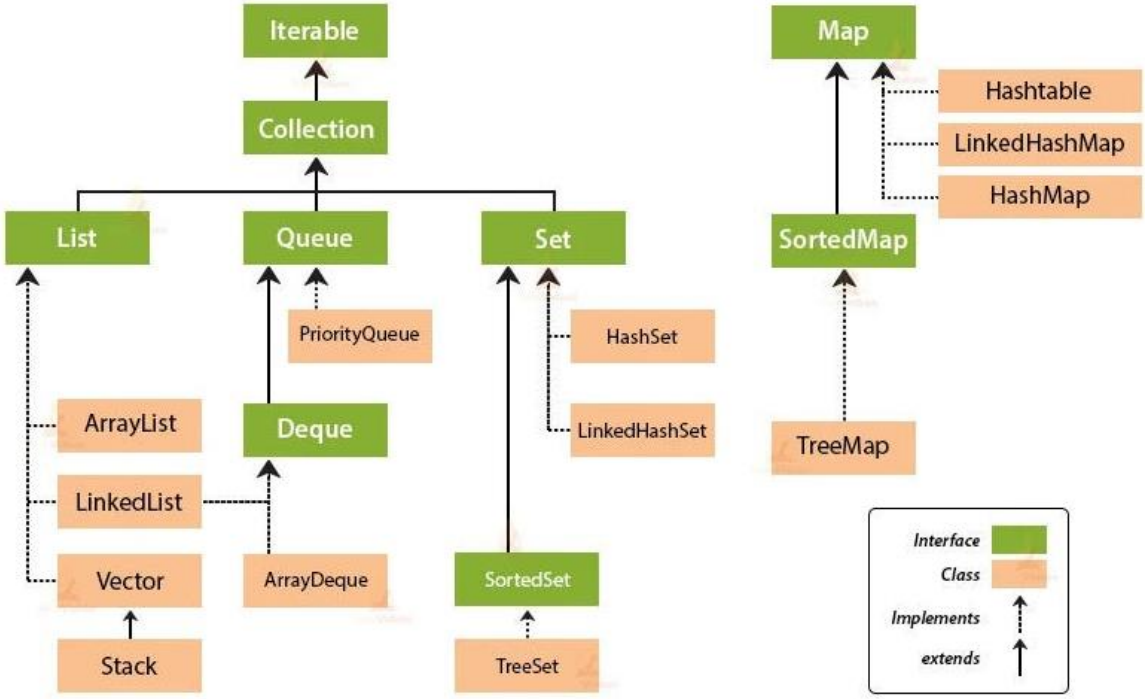
Day 22

Collections- HashSet

Hierarchy of Collection Framework:



HashSet

1. HashSet is implemented Set interface.
2. We can store Heterogeneous and Homogeneous Data.
3. Duplicate Elements Not Allowed
4. Insertion Order Not Preserved
5. Indexing is not supported
6. Only one Null is allowed.

Quiz: Java ArrayList & HashSet

1. **Which of the following is true about ArrayList in Java?**
    - a) It maintains insertion order.
    - b) It does not allow duplicate elements.
    - c) It allows multiple null values.
    - d) Both a and c.
2. **What is the initial size of an ArrayList when it is created using the default constructor?**
    - a) 10
    - b) 0
    - c) 5
    - d) 1
3. **Which method is used to remove all elements from an ArrayList?**
    - a) clear()
    - b) removeAll()
    - c) deleteAll()
    - d) empty()
4. **Can you store both homogeneous and heterogeneous data types in an ArrayList?**
    - a) Yes
    - b) No
5. **Which of the following is NOT true about HashSet?**
    - a) It does not maintain insertion order.
    - b) It allows duplicate elements.
    - c) It allows only one null value.
    - d) It does not support indexing.

6. **What happens if you try to add a duplicate element to a HashSet?**
    - a) It throws a DuplicateElementException.
    - b) The duplicate element is ignored.
    - c) It replaces the existing element.
    - d) It adds the duplicate element.
7. **Which method is used to check if an ArrayList contains a specific element?**
    - a) hasElement(Object o)
    - b) exists(Object o)
    - c) contains(Object o)
    - d) find(Object o)
8. **Which interface does ArrayList implement?**
    - a) Set
    - b) Map
    - c) List
    - d) Queue
9. **Which of the following is a key difference between ArrayList and HashSet?**
    - a) ArrayList allows duplicates, while HashSet does not.
    - b) ArrayList does not maintain order, while HashSet maintains order.
    - c) Both allow duplicate elements.
    - d) HashSet supports indexing, while ArrayList does not.
10. **Which method in HashSet is used to add elements?**
    - a) insert()
    - b) add()
    - c) put()
    - d) append()

Answers:

1. **d) Both a and c.**

   ArrayList maintains insertion order and allows multiple null values.

2. **b) 0**

   The initial size of an ArrayList is 0 when created with the default constructor.

3. **a) clear()**

   The clear() method removes all elements from an ArrayList.

4. **a) Yes**

   ArrayList can store both homogeneous and heterogeneous data types.

5. **b) It allows duplicate elements.**

   HashSet does not allow duplicate elements.

6. **b) The duplicate element is ignored.**

   If a duplicate element is added to a HashSet, it is ignored.

7. **c) contains(Object o)**

   The contains() method checks if an ArrayList contains a specific element.

8. **c) List**

   ArrayList implements the List interface.

9. **a) ArrayList allows duplicates, while HashSet does not.**

   ArrayList allows duplicate elements, but HashSet does not.

10. **b) add()**

    The add() method is used to add elements to a HashSet.