Task 7:

**1.Find the applications of Hashtable data structure, demonstrate it with an example.**

**Applications of Hash table:**

1. In the inline chess program we need to keep track of the positions and we should backtrack the positions when ever required , this id done using hash tables
2. Whenever we are dealing with trees , the internal node access can ne easily and quickly done by hash table
3. The data on the internet are generally stored in the form of a table where there will we a mapping to website and url, this information can be stores in table and can be easily accessed

->**The example which is used to give the full name of student**

Here we can store the values in the forma of keys and values pairs, we can retrieve the values by passing the keys which are uniques

**import** java.util.Map.Entry;

**import** java.util.HashMap;

**import** java.util.Hashtable;

**import** java.util.Set;

**public** **class** TestHashTable {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Hashtable<String, String> a=**new** Hashtable<String, String>();

a.put("Smith", "John Smith");

a.put("ABC", "AAA ABC");

a.put("smith", "henry Smith");

a.put("Sena", "John Sena");

Set<Entry<String,String>> b=a.entrySet();

System.***out***.println("students names");

**for**(Entry<String,String> ent: b)

{

System.***out***.println("Lastname: "+ent.getKey()+ " "+"Fullname: "+ent.getValue());

}

}

}

**Output:**

**students names**

**Lastname: ABC Fullname: AAA ABC**

**Lastname: smith Fullname: henry Smith**

**Lastname: Sena Fullname: John Sena**

**Lastname: Smith Fullname: John Smith**

**2.Find out the details about the data structure used by java.util.LinkedHashSet.**

The linked Hash Set is one of the version of hash set , this uses doubly linked list to store the elements and whenever we want to iterate the elements we use this set.

When we iterate through elements we get an ordered list

LinkedHashSet() – this is a default constructor

LinkedHashSet(Collection c) -- This creates LinkedHashSet from collection c

LinkedHashSet( int capacity) --It creates LinkedHashSet with initial capacity mentioned

LinkedHashSet(int capacity, float loadFactor) ---This creates LinkedHashSet with capacity

**3.Find out the details about the data structure used by java.util.TreeSet.**

The TreeSet is a sorted collections .TreeSet extends AbstractSet and implements the NavigableSet interface. It creates a collection that uses a tree for storage. Objects are stored in sorted, ascending order according to the natural order. We can construct a Treeset with a constructor which allows us to write a set of collections

Access and retrieval times are quite fast, It stores large amounts of sorted information that can be found quickly. TreeSet might not be used when application has requires some modification of set in terms of addition of elements.

TreeSet( ); ---Default Constructor

TreeSet(Collection<? extends E> c); --TreeSet from Collection C

TreeSet(Comparator<? super E> comp); -- TreeSet with custom ordering as per Comparator

TreeSet(SortedSet<E>ss); --TreeSet that contains the elements of ss.