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Q1. Read and store 'n' no. of integer values to Array List object, sort the elements.

Find the frequency of a specific element inside the array list. (while store storing element give duplicate entities)

E.g.: 12,1,45,12,56,-34,56,0,23,13,12,56

Frequency of 12 : 3

```
package Lab3;
import java.util.*;
public class ArrayList_Lab {

   public static void main(String[] args)
   {
       ArrayList al = new ArrayList();

       int i, n;
       Scanner sc = new Scanner (System.in);

       System.out.println("How many elements ");
       n=sc.nextInt();

       for(i=0;i<n;i++)
       {
          System.out.println("Enter "+ i + " Element ");
          al.add(sc.nextInt());
       }

       System.out.println("Array elements "+ al);

       System.out.println("Enter element to find frequency");
       int element = sc.nextInt();

       int freq=0, value;

       for(i=0;i<n;i++)
       {
          Object obj= al.get(i);
          value= (int)obj;
          if(value==element)
             freq++;
       }

      System.out.println("Frequency of "+element+" is "+freq);
```

```
    }
}
```

Output:

```
How many elements
8
Enter 0 Element
34
Enter 1 Element
45
Enter 2 Element
12
Enter 3 Element
67
Enter 4 Element
34
Enter 5 Element
67
Enter 6 Element
34
Enter 7 Element
87
Array elements [34, 45, 12, 67, 34, 67, 34, 87]
Enter an element to find frequency
34
Frequency of 34 is 3
```

Q2. Create a user defined class to store Books information(bookid, title, author name, price)

Add 5 books record into vector and display the same information from vector.

```
package Lab3;

public class Book {

   public String bkid,bktitle, author;
   public float price;

   public Book(String id,String title, String author,float p)
   {
          bkid=id;
          bktitle=title;
          this.author=author;
          price=p;
    }

}
```

```
package Lab3;
import java.util.*;
public class Book_Implementation {
    public static void main(String[] args) {

    Book obj[] = new Book[5];

    obj[0]= new Book("1","java programming", "james",340f);
    obj[1]= new Book("2","C progrmming", "Dennis", 1340f);
    obj[2]= new Book("3","Mysql ", "william", 300f);
    obj[3]= new Book("4","AI", "Jegan", 99940f);
    obj[4]= new Book("5","java programming", "Gosling",
2240f);

    Vector<Book> v = new Vector<Book>();

    v.add(obj[0]);
    v.add(obj[1]);
    v.add(obj[2]);
    v.add(obj[3]);
    v.add(obj[4]);

    for(Book b : v) {
```

```
        System.out.println(b.bkid +" "+ b.bktitle + "
"+b.author +" "+b.price);

        }

    }

}
```

Output:

```
1 java programming james 340.0
2 C progrmming Dennis 1340.0
3 Mysql william 300.0
4 AI Jegan 99940.0
5 java programming Gosling 2240.0
```

Q3. Use Hastable to Store key and value pair of book title and category. Store 10 records and display the same.

```
package Lab3;
import java.util.Enumeration;
import java.util.Hashtable;
public class Book_Categories {

   public static void main(String[] args) {

      Hashtable<String, String> hashtable = new Hashtable<>();

      hashtable.put("C programming", "IT");
      hashtable.put("Tom And Jerry", "Cartoon");
      hashtable.put("Merchant of venice", "Comedy Novel");
      hashtable.put("The Chronicles of Narnia", "Fantasy
Novel");
      hashtable.put("The Girlfriend", "Fiction Novel");
      hashtable.put("The Golden Age", "Graphic Novel");
      hashtable.put("Geethanjali", "Poetry");
      hashtable.put("Mahabharatha", "Mythology");
      hashtable.put("Chandamama Kathalu", "Magical stories");
      hashtable.put("Sundarakanda", "Mythology");

      String valueA = hashtable.get("Tom And Jerry");
      System.out.println("Value of Tom And Jerry: " + valueA);
      System.out.println();

      Enumeration<String> keys = hashtable.keys();

      while (keys.hasMoreElements())
      {

          String key = keys.nextElement();
          System.out.println("Key: " + key + ", Value: " +
hashtable.get(key));


      }

   }

}
```

Output:

```
Value Of Tom And Jerry: Cartoon

Key: Chandamama Kathalu, Value: Magical stories
Key: The Chronicles of Narnia,Value: Fantasy Novel
Key: Tom And Jerry, Value: Cartoon
Key: The Golden Age, Value: Graphic Novel
Key: Geethanjali, Value: Poetry
Key: Mahabharatha, Value: Mythology
Key: The Girlfriend, Value: Fiction Novel
Key: C programming, Value: IT
Key: Sundarakanda, Value: Mythology
Key: Merchant of venice, Value: Comedy Novel
```