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1.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

Program:

```
package Likhitha;
import java.util.*;
public class Array_Frequency {

	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);
		al.sort(null);
		System.out.println("Array elements after sorting " + al);
		System.out.println("Enter an 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
12
Enter 0 Element
3
Enter 1 Element
4
Enter 2 Element
7
Enter 3 Element
3
Enter 4 Element
1
Enter 5 Element
6
Enter 6 Element
7
Enter 7 Element
8
Enter 8 Element
9
Enter 9 Element
3
Enter 10 Element
7
Enter 11 Element
1
Array elements [3, 4, 7, 3, 1, 6, 7, 8, 9, 3, 7, 1]
Array elements after sorting [1, 1, 3, 3, 3, 4, 6, 7, 7, 7, 8, 9]
Enter an element to find frequency
3
Frequency of 3 is 3
```

2. 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.

Program:

```
package Likhitha;

public class Books {

public String Bkid,Bktitle,Author ;
float Price;
public Books(String id,String title,String Auth,float Pri)
```

```
{
	Bkid=id;
	Bktitle=title;
	Author=Auth;
	Price=Pri;

}
}
```

```
package Likhitha;
import java.util.*;
public class Vector_Books {

	public static void main(String[] args) {
	Books obj[] = new Books[5];

		obj[0]= new Books("101","java programming", "james", 6340f);
		obj[1]= new Books("201","C progrmming", "Dennis", 1340f);
		obj[2]= new Books("301","Mysql ", "william", 5600f);
		obj[3]= new Books("401","HTML", "Tim Berners-Lee ", 5000f);
		obj[4]= new Books("501","Python programming", "Gudio van
Rossum", 2040f);



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

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



		for(Books b : v) {

			System.out.println(b.Bkid +"-"+ b.Bktitle + "-"+b.Author
+"-"+b.Price);
		}



	}
}
```

Output:

```
101- java programming-james-6340.0
201- C progrmming-Dennis-1340.0
301- Mysql -william-5600.0
401- HTML-Tim Berners-Lee -5000.0
501- Python programming-Gudio van Rossum-2040.0
```

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

Program:

```
package Likhitha;
import java.util.*;
public class Hashtable_Books {

	public static void main(String[] args) {
		Hashtable ht = new Hashtable();
		ht.put("communication","analog and digital");
		ht.put("Horror","The hunthing of hill house");
		ht.put("Fantasy","Harry potter");
		ht.put("Comedy","Good Omens");
		ht.put("Electronics","Digital Electronics");
		ht.put("Horror","The Ghost");
		ht.put("Poetry","The Pillow Thoughts");
		ht.put("Poetry","Leaves of Grass");
		ht.put("Mystery","Paper Towns");
		ht.put("Novel ","Beloved");
		Enumeration keys = ht.keys();
		while (keys.hasMoreElements())
		{
		String key = (String) keys.nextElement();
		Object value = ht.get(key);
		System.out.println(key + "-" + value);
		}
	}
}
```

Output:

```
Comedy-Good Omens
Electronics-Digital Electronics
communication-Analog and digital
Novel -Beloved
Mystery-Paper Towns
Nature-Leaves of Grass
Fantasy-Harry potter
Poetry-The Pillow Thoughts
Horror-The hunthing of hill house
Fear-The Ghost
```