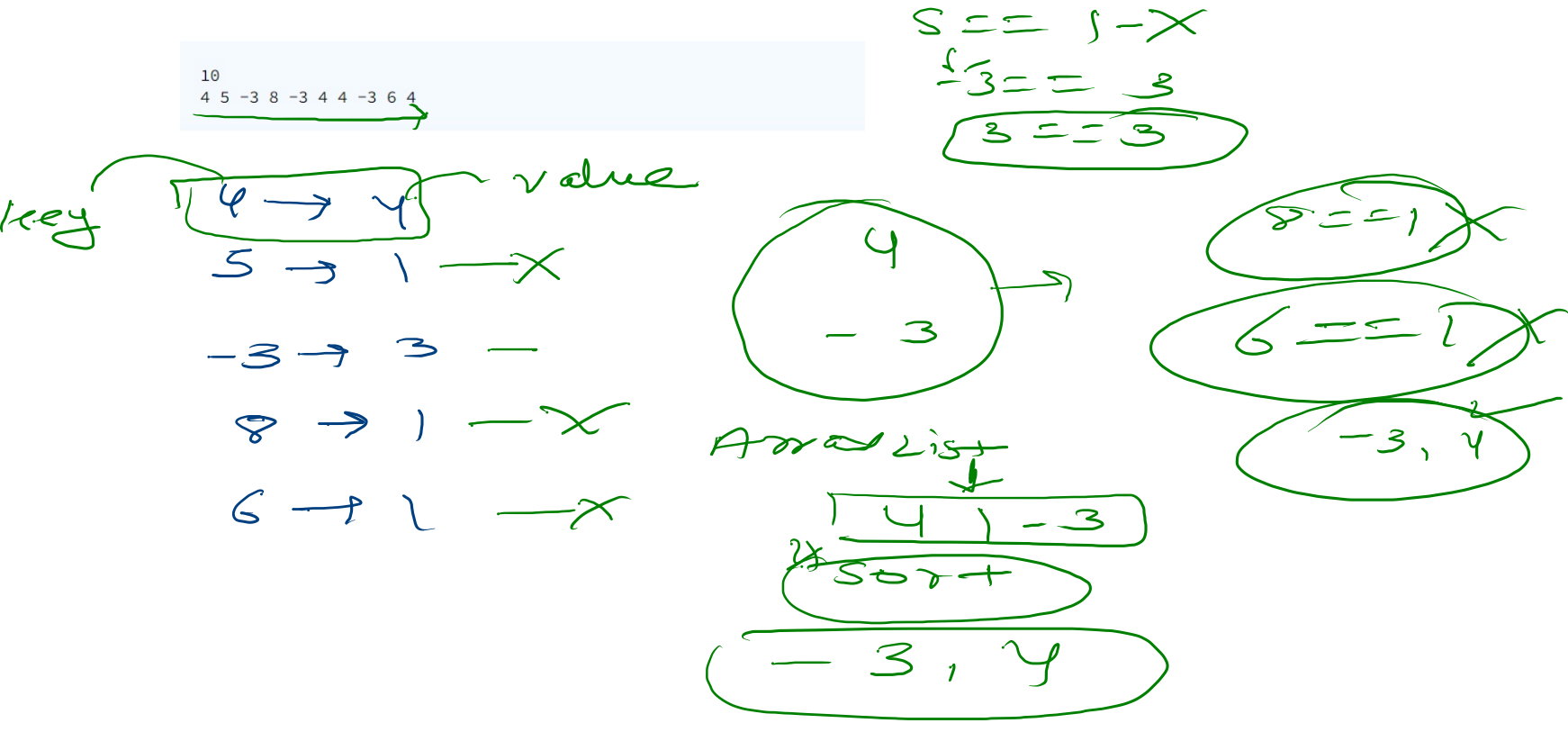
- If **N==1**, take **Name** and **Phone Number** as input from user and **add** it to the Phone Directory.
- If **N==2**, take a **Name** as input from the user and print corresponding **Phone Number**, if the **Name** is not found print **-1**.
- If **N==3**, take a **Name** as input from the user and delete it from the Phone Directory.
- If **N==4**, **Close** the Directory(**Exit** the program).

```
1
Geekster
9876543210
1
Geeku
0123456789
2
Geeku
2
Geekster
3
Geeku
2
Geeku
2
Geekster
4
```

Phone Directory By Name

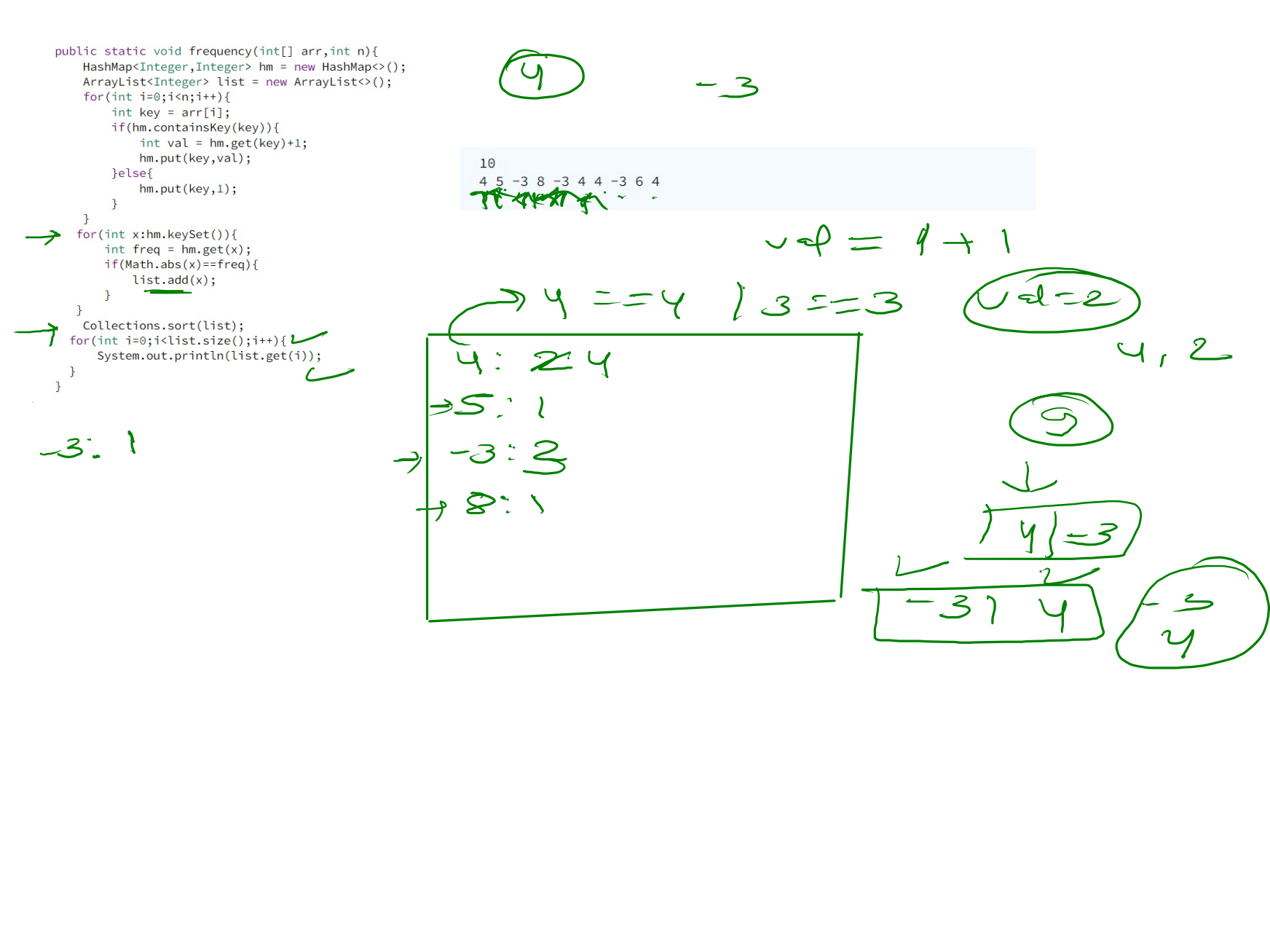
```
public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
        Scanner sc = new Scanner(System.in);
        int n;
        HashMap<String,String> hm = new HashMap<>();
        do{
            n=sc.nextInt();
            if(n==1){
                String name = sc.next();
                String phone = sc.next();
               hm.put(name,phone);
            }else if(n==2){
                String name = sc.next();
                if(hm.containsKey(name)){
                    System.out.println(hm.get(name));
                }else{
                    System.out.println(-1);
                }
            }
            else if(n==3){
                String name  = sc.next();
                hm.remove(name);
            }

        }while(n!=4);
    }
}
```

```
10
4 5 -3 8 -3 4 4 -3 6 4
```



```java
public static void frequency(int[] arr,int n){
    HashMap<Integer,Integer> hm = new HashMap<>();
    ArrayList<Integer> list = new ArrayList<>();
    for(int i=0;i<n;i++){
        int key = arr[i];
        if(hm.containsKey(key)){
            int val = hm.get(key)+1;
            hm.put(key,val);
        }else{
            hm.put(key,1);
        }
    }
    for(int x:hm.keySet()){
        int freq = hm.get(x);
        if(Math.abs(x)==freq){
            list.add(x);
        }
    }
    Collections.sort(list);
    for(int i=0;i<list.size();i++){
        System.out.println(list.get(i));
    }
}
```

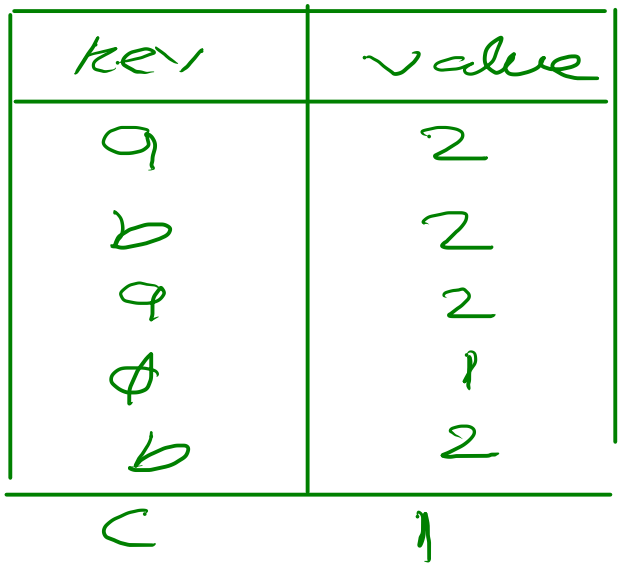
```
10
4 5 -3 8 -3 4 4 -3 6 4
```

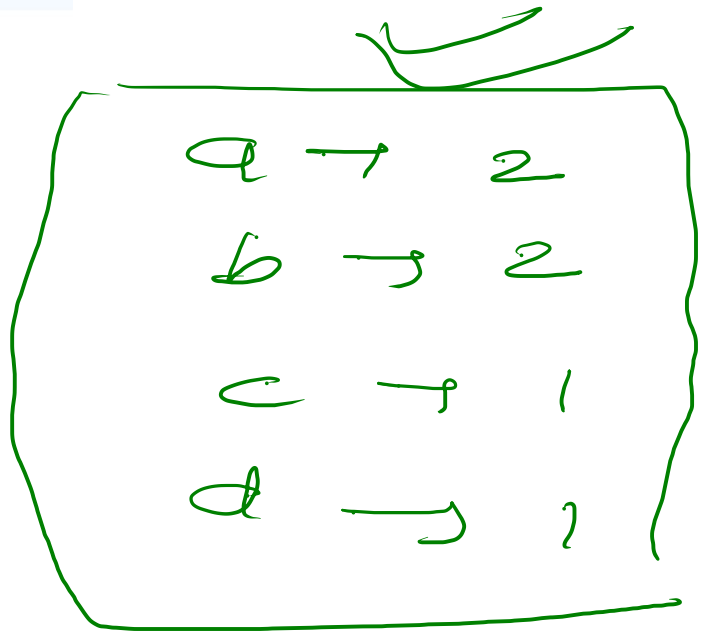


Same Number Same Frequency

```
public static void main(String[] args) {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solu
    Scanner sc = new Scanner(System.in);
    int n = sc.nextInt();
    int[] arr = new int[n];
    for(int i=0;i<n;i++){
        arr[i]=sc.nextInt();
    }
    frequency(arr,n);
}
public static void frequency(int[] arr,int n){
    HashMap<Integer,Integer> hm = new HashMap<>();
    ArrayList<Integer> list = new ArrayList<>();
    for(int i=0;i<n;i++){
        int key = arr[i];
        if(hm.containsKey(key)){
            int val = hm.get(key)+1;
            hm.put(key,val);
        }else{
            hm.put(key,1);
        }
    }
   for(int x:hm.keySet()){
       int freq = hm.get(x);
       if(Math.abs(x)==freq){
           list.add(x);
       }
   }
    Collections.sort(list);
  for(int i=0;i<list.size();i++){
      System.out.println(list.get(i));
  }
}
```

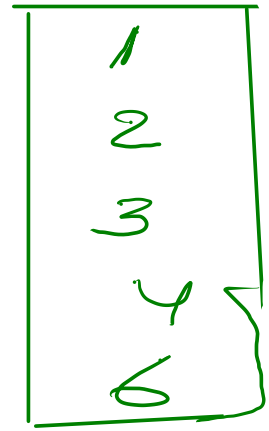
```
6
a b a d b c
```





HashSet (does not contain duplicates)

Set



[1, 1, 2, 3, 4, 6, 4, 3]

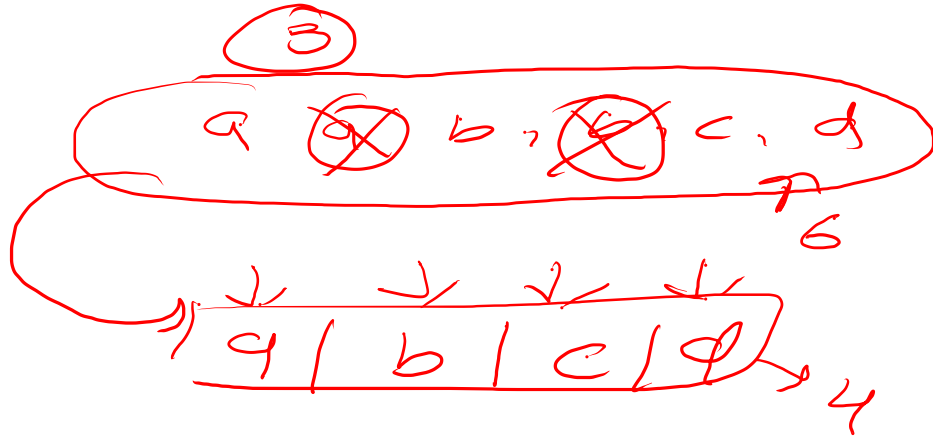
	Array
Insert / ~~Add~~ → O(1)	O(1)
Search / Contains → O(1)	O(n)
Delete / remove → O(1)	O(n)

```
HashSet<Integer> obj = new HashSet<>();
```

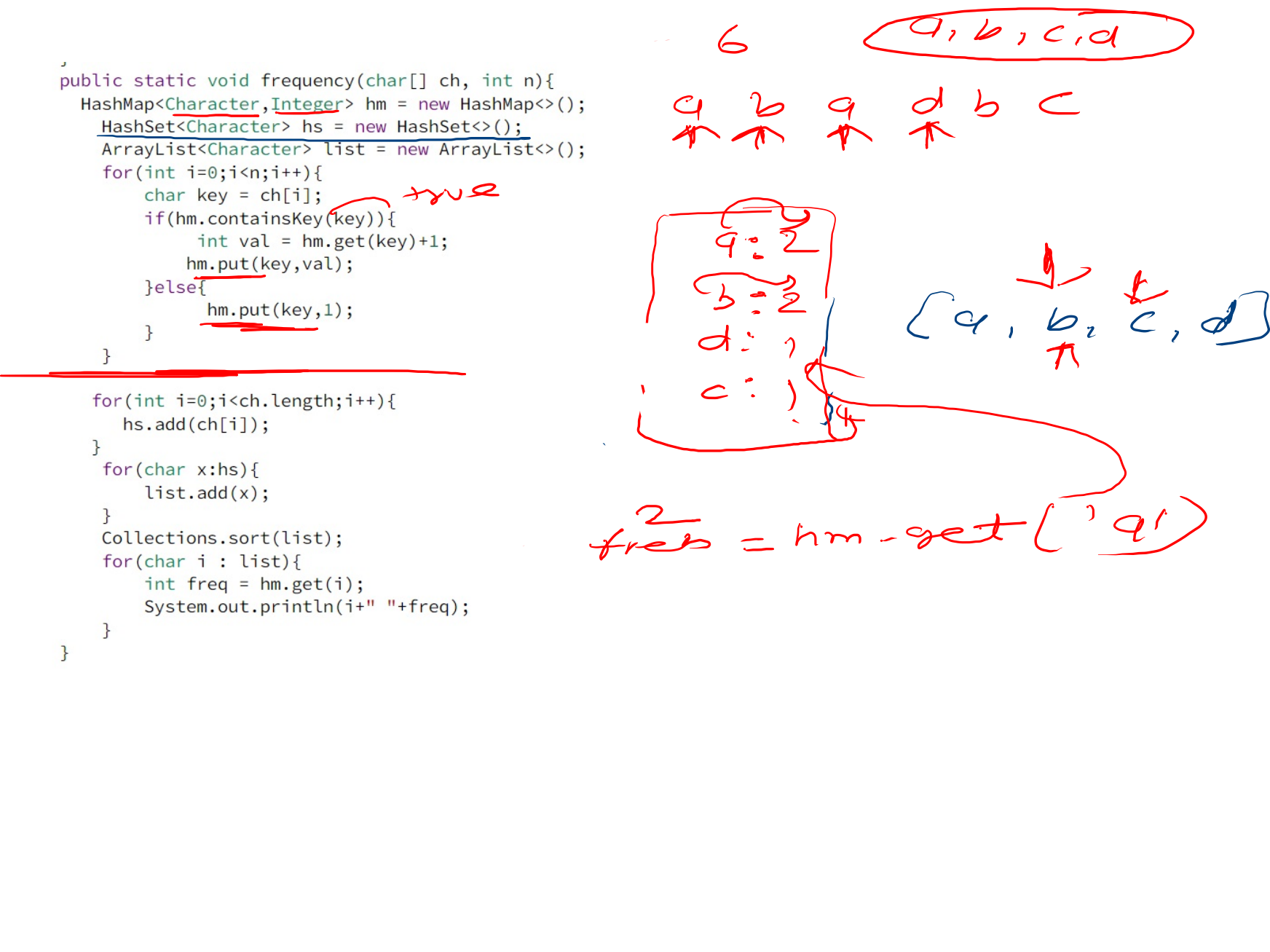
{1, 1 2, 2 3, 3}

↓

{1, 2, 3}



```java
public static void frequency(char[] ch, int n){
  HashMap<Character,Integer> hm = new HashMap<>();
    HashSet<Character> hs = new HashSet<>();
    ArrayList<Character> list = new ArrayList<>();
    for(int i=0;i<n;i++){
        char key = ch[i];
        if(hm.containsKey(key)){
             int val = hm.get(key)+1;
            hm.put(key,val);
        }else{
             hm.put(key,1);
        }
    }

   for(int i=0;i<ch.length;i++){
      hs.add(ch[i]);
   }
    for(char x:hs){
        list.add(x);
    }
    Collections.sort(list);
    for(char i : list){
        int freq = hm.get(i);
        System.out.println(i+" "+freq);
    }
}
```



Character and it's Frequency

```java
public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. *
           Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        char[] ch = new char[n];
        for(int i=0;i<n;i++){
            ch[i]=sc.next().charAt(0);
        }
        frequency(ch,n);
    }
    public static void frequency(char[] ch, int n){
      HashMap<Character,Integer> hm = new HashMap<>();
        HashSet<Character> hs = new HashSet<>();
        ArrayList<Character> list = new ArrayList<>();
        for(int i=0;i<n;i++){
            char key = ch[i];
            if(hm.containsKey(key)){
                 int val = hm.get(key)+1;
                hm.put(key,val);
            }else{
                  hm.put(key,1);
            }
        }

       for(int i=0;i<ch.length;i++){
          hs.add(ch[i]);
        }
        for(char x:hs){
            list.add(x);
        }
        Collections.sort(list);
        for(char i : list){
            int freq = hm.get(i);
            System.out.println(i+" "+freq);
        }
    }
}
```