

# How to synchronize ArrayList in java with example

BY CHAITANYA SINGH | FILED UNDER: [JAVA COLLECTIONS](#)

We have already discussed a bit about synchronization when we shared the tutorial on [Vector vs ArrayList](#). As we are aware that ArrayList is non-synchronized and should not be used in multi-thread environment without explicit synchronization. This post is to discuss how to synchronize ArrayList in Java.

**There are two ways to synchronize explicitly:**

1. Using Collections.synchronizedList() method
2. Using thread-safe variant of ArrayList: CopyOnWriteArrayList

## Example 1: Collections.synchronizedList() method for Synchronizing ArrayList

In this example we are using [Collections.synchronizedList\(\)](#) method. The important point to note here is that iterator should be in synchronized block in this type of synchronization as shown in the below example.

```
package beginnersbook.com;
import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;
import java.util.Collections;

public class Details {

    public static void main(String a[]){
        List<String> syncal =
            Collections.synchronizedList(new ArrayList<String>());

        //Adding elements to synchronized ArrayList
        syncal.add("Pen");
        syncal.add("NoteBook");
        syncal.add("Ink");

        System.out.println("Iterating synchronized ArrayList:");
        synchronized(syncal) {
            Iterator<String> iterator = syncal.iterator();
            while (iterator.hasNext())
                System.out.println(iterator.next());
        }
    }
}
```

Output:

```
Iterating synchronized ArrayList:  
Pen  
NoteBook  
Ink
```

## Method 2: Using CopyOnWriteArrayList

CopyOnWriteArrayList is a thread-safe variant of `ArrayList`.

```
package beginnersbook.com;  
import java.util.concurrent.CopyOnWriteArrayList;  
import java.util.Iterator;  
  
public class Details {  
  
    public static void main(String a[]){  
        CopyOnWriteArrayList<String> al = new CopyOnWriteArrayList<String>();  
  
        //Adding elements to synchronized ArrayList  
        al.add("Pen");  
        al.add("NoteBook");  
        al.add("Ink");  
  
        System.out.println("Displaying synchronized ArrayList Elements:");  
        //Synchronized block is not required in this method  
        Iterator<String> iterator = al.iterator();  
        while (iterator.hasNext())  
            System.out.println(iterator.next());  
    }  
}
```

Output:

```
Displaying synchronized ArrayList Elements:  
Pen  
NoteBook  
Ink
```