

## for each

```
for (int i : arr){}
```

traverse forward

used on arrays

can't access index

elements are unmodifiable

can not add elements

```
int arr[] = {1, 2, 3, 4};
for (int i : arr)
    System.out.println(i);
```

## Iterator◊

```
Iterator<Integer> it = arr.iterator();
```

traverse forward

used on Collections objects

can't access index

elements are unmodifiable

can not add elements  
(ConcurrentModificationException)

```
ArrayList<> arr = new ArrayList<Integer>();
arr.add(1);
arr.add(2);
arr.add(3);
arr.add(4);
arr.add(5);
arr.add(6);
arr.add(7);
arr.add(8);
arr.add(9);
Iterator<Integer> it = arr.iterator();
while (it.hasNext()){
    System.out.println(it.next());
}
```

## ListIterator◊

```
ListIterator<Integer> lit = arr.listIterator();
```

traverse both directions

used on Collections objects

nextIndex() and previousIndex()

set() to change and replace elements

add() to add elements

```
ArrayList<> arr = new ArrayList<Integer>();
arr.add(1);
arr.add(2);
arr.add(3);
arr.add(4);
arr.add(5);
arr.add(6);
arr.add(7);
arr.add(8);
arr.add(9);
ListIterator<Integer> lit = arr.listIterator();
while (lit.hasNext()){
    System.out.println(lit.next());
}
while (lit.hasPrevious()){
    System.out.println(lit.previous());
}
```