

collection - an object that stores a group of other objects called elements

lists - ordered collection of elements, often accessed by integer indexes or by iteration

Linked List - a collection that stores a list of elements in a small object containers called nodes, which are linked together

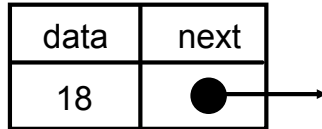
iterator - an object that allows the efficient retrieval of the elements of a list in sequential order

NOTES Linked Lists - part 2

Building Java Programs (Reges, Steppe) - Ch. 16

node - single element of a structure such as a linked list, each node contains one data value

ex.



```
public class ListNode {
    public int data;
    public ListNode next;
}
```



Code

```
ListNode list;
// refers to a node, but is NOT a node

list = new ListNode();
list.data = 3;
list.next = new ListNode();

list.next.data = 7;
list.next.next = new ListNode();

list.next.next.data = 12;
list.next.next.next = null;
//unnecessary, it's automatic

delete 1st node?
list = list.next; //bypasses 1st reference
```

automatic garbage collection - Java convenience, during runtime, things without reference get deleted from memory

```
//example, if after setting a bunch of nodes...
list = null; //no reference to the nodes = garbage nodes
```

Diagram

Manipulating Nodes example? BJP 936

Traversing a List

```
ListNode current = list;
while(current != null)
{
    //process variable, move forward
    System.out.println(current.data); //example output
    current = current.next;
}
```

← like an array
mvt.

BJP - 16.5 LinkedList<E>

```
public interface Iterable<E> {
    public Iterator<E> iterator();
}

1 //Generic interface for a List of Objects of type E
2
3 public interface List<E> extends Iterable<E> {
4     public int size();
5     public E get(int index);
6     public int indexOf(E value);
7     public boolean isEmpty();
8     public boolean contains(E value);
9     public void add(E value);
10    public void add(int index, E value);
11    public void addAll(List<E> other);
12    public void remove(int index);
13    public void set(int index, E value);
14    public void clear();
15 }

    public void addAll(List<E> other)
    {
        for(E value : other) {
            add(value);
        }
    }
```