

Adding a "Null node" as a sentinel in binary trees. We can make the code for the methods we wrote in Days 10-11 much simpler by replacing every null pointer by a pointer to a special node, the NULLNODE. I have placed code for this new version in your repository, in the BinaryTreesWithNullNode project.

The NULLNODE is declared in the BinaryNode class:

```
public static final BinaryNode NULLNODE = new BinaryNode(null, null, null);
```

The second BinaryNode constructor becomes:

```
public BinaryNode(T elt) {
    this(elt, NULLNODE, NULLNODE);
}
```

Example of simplification--the contains method:

	Original version	With NULLNODE
BinaryTree method	<pre>public boolean contains(T obj){ return (this.root != null) && this.root.contains(obj); }</pre>	<pre>public boolean contains(T obj){ return this.root.contains(obj); }</pre>
BinaryNode method	<pre>public boolean contains(T obj) { if (this.element.equals(obj)) return true; return ((this.left != null) && this.left.contains(obj)) ((this.right != null) && this.right.contains(obj)); }</pre>	<pre>public boolean contains(T obj) { return this != NULLNODE && (this.element.equals(obj) this.left.contains(obj) this.right.contains(obj)); }</pre>

See the code in your repository for additional examples.