CSCI 232:
Data Structures and Algorithms

Trees (Part 2)

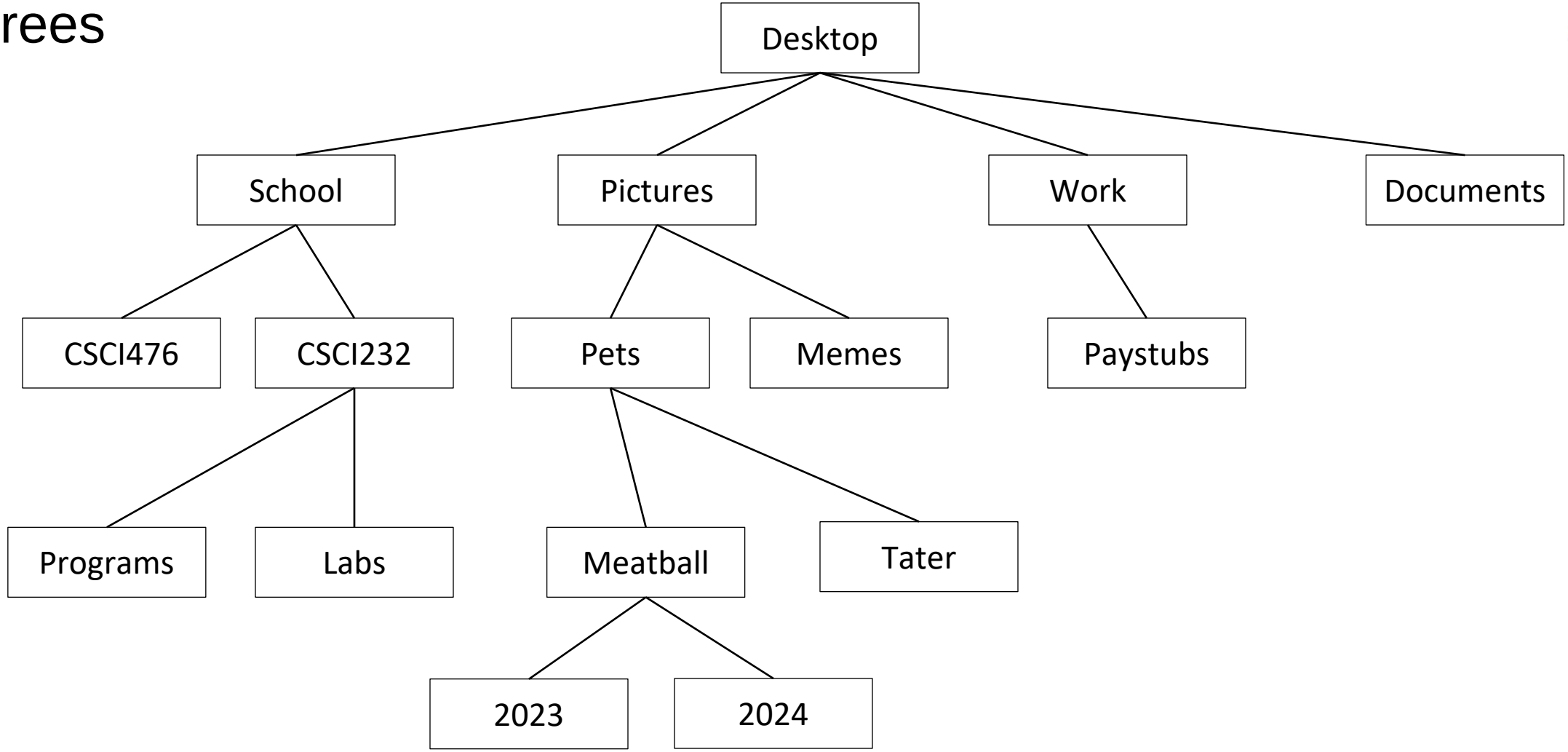
Reese Pearsall

Spring 2024

Announcements

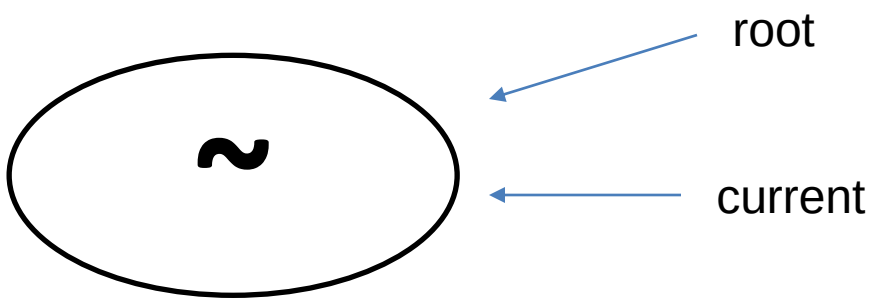
Lab 2 due **tomorrow** at 11:59 PM

Trees



Trees are data structures used to store elements hierarchically
(not linear like arrays and linked lists)

```
public FileTree() {
    this.root = new Node("~");
    this.current = root;
}
```



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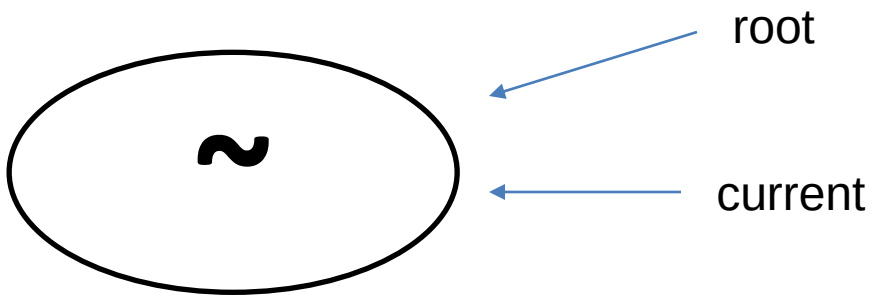
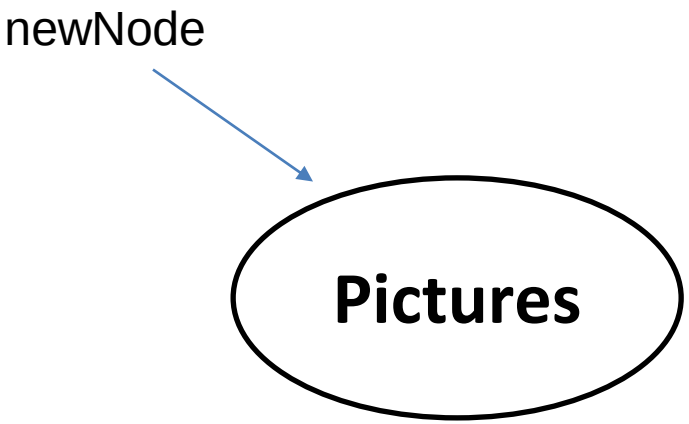
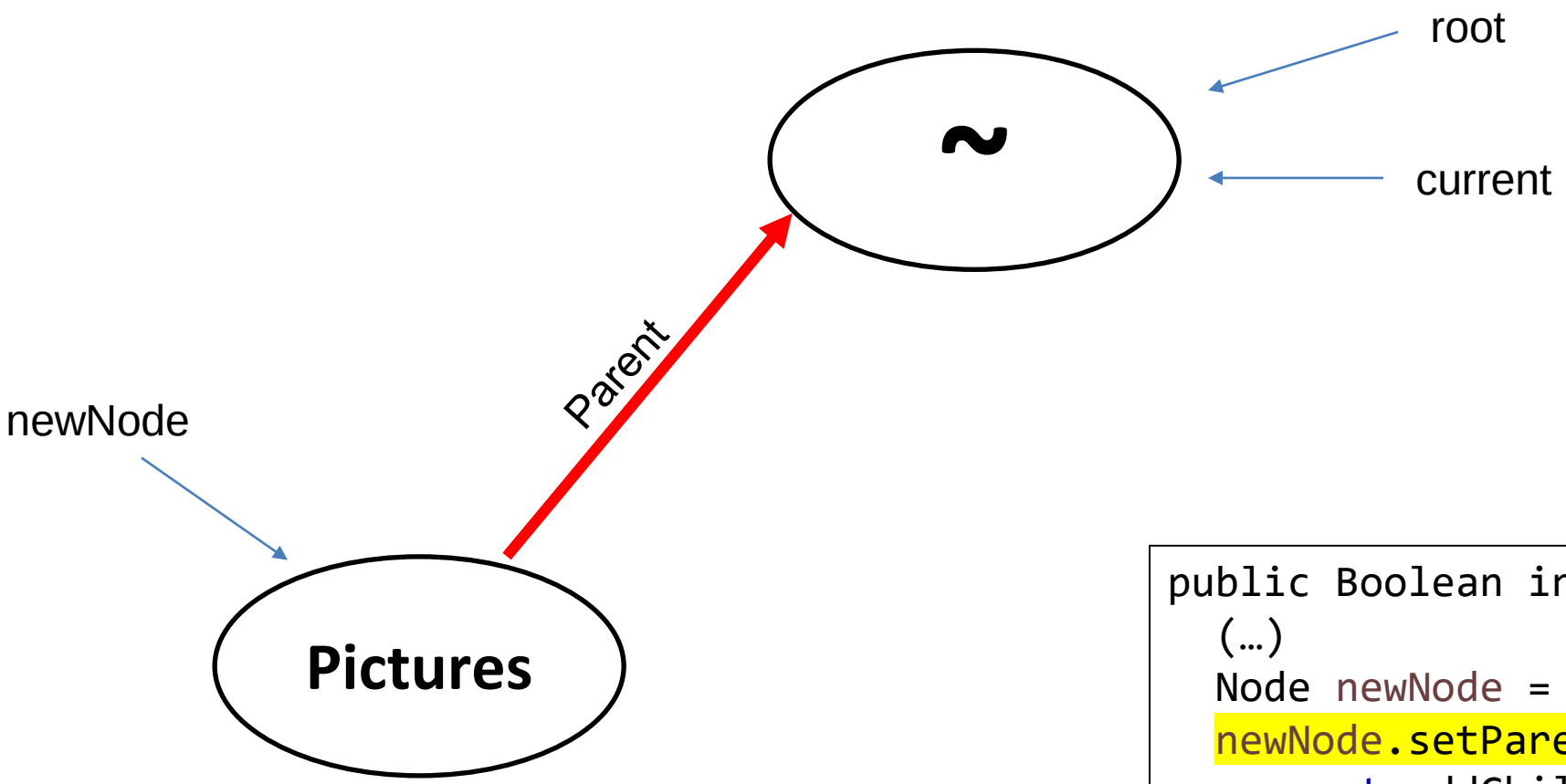




New node that needs to be added?

```
public Boolean insert(String directory){
  (…)
  Node newNode = new Node(directory);
  newNode.setParent(current);
  current.addChild(newNode);
  (…)
}
```



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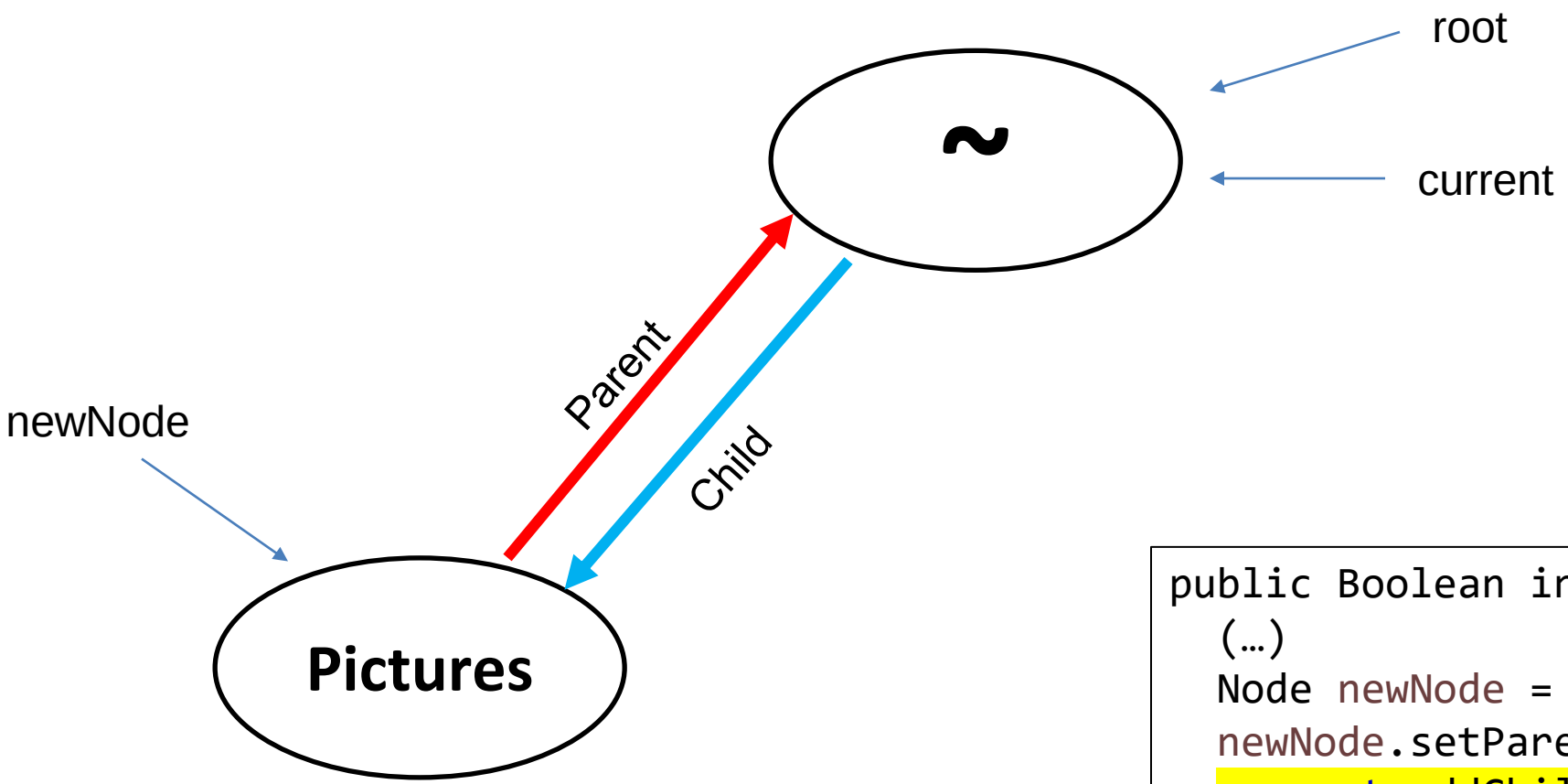


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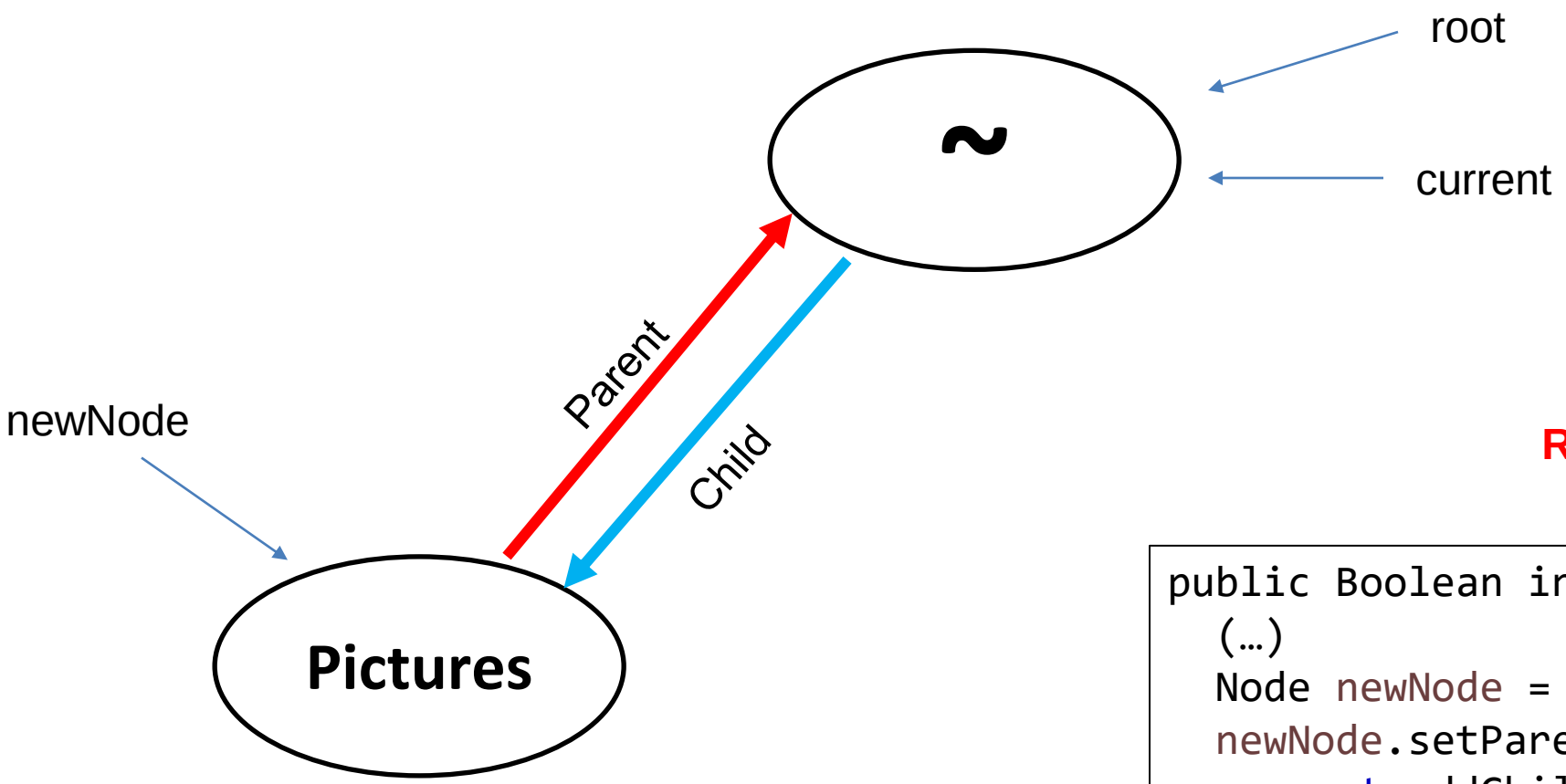

Running time?

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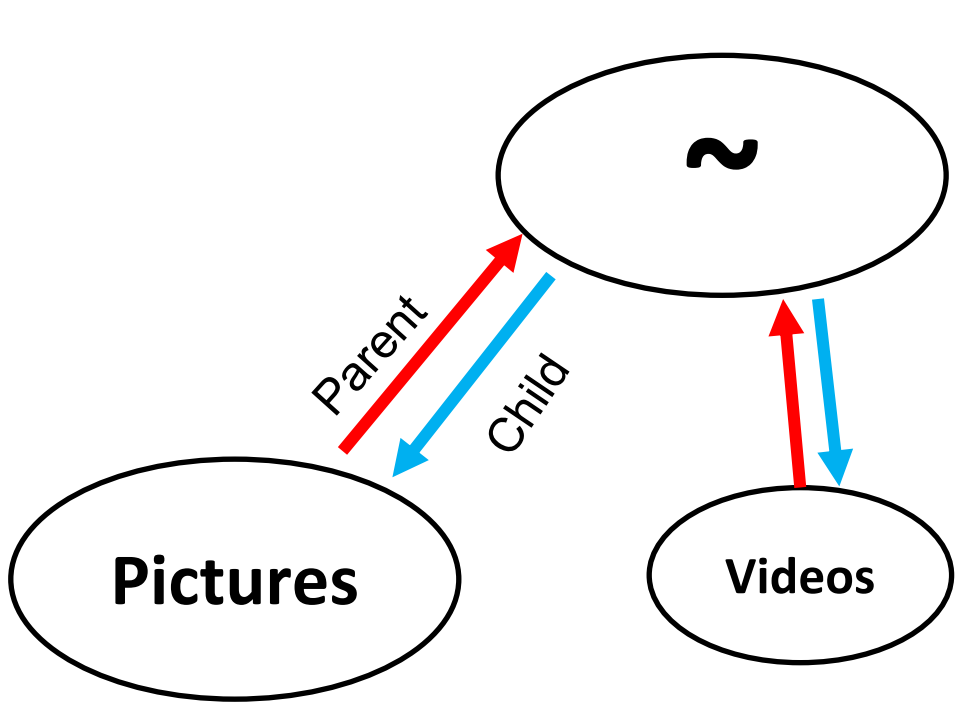


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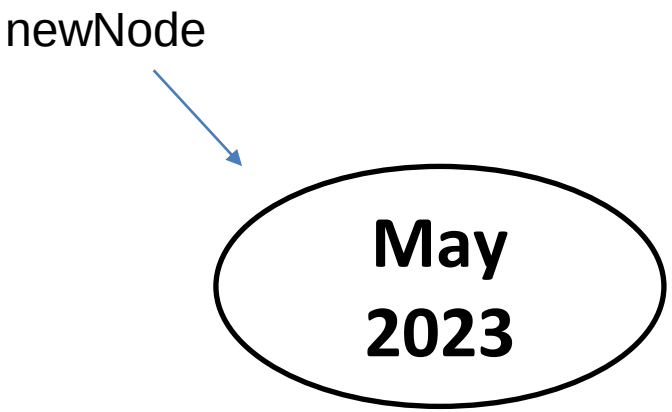
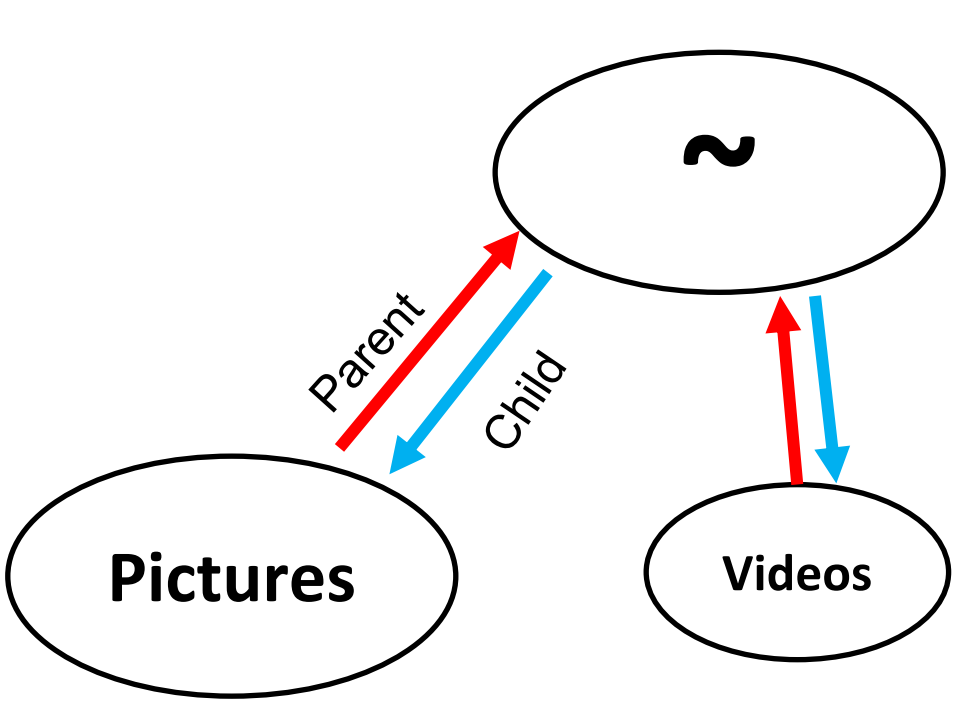


```
tree.moveDown("Pictures");
```

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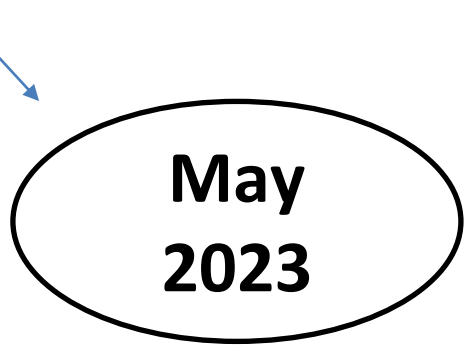
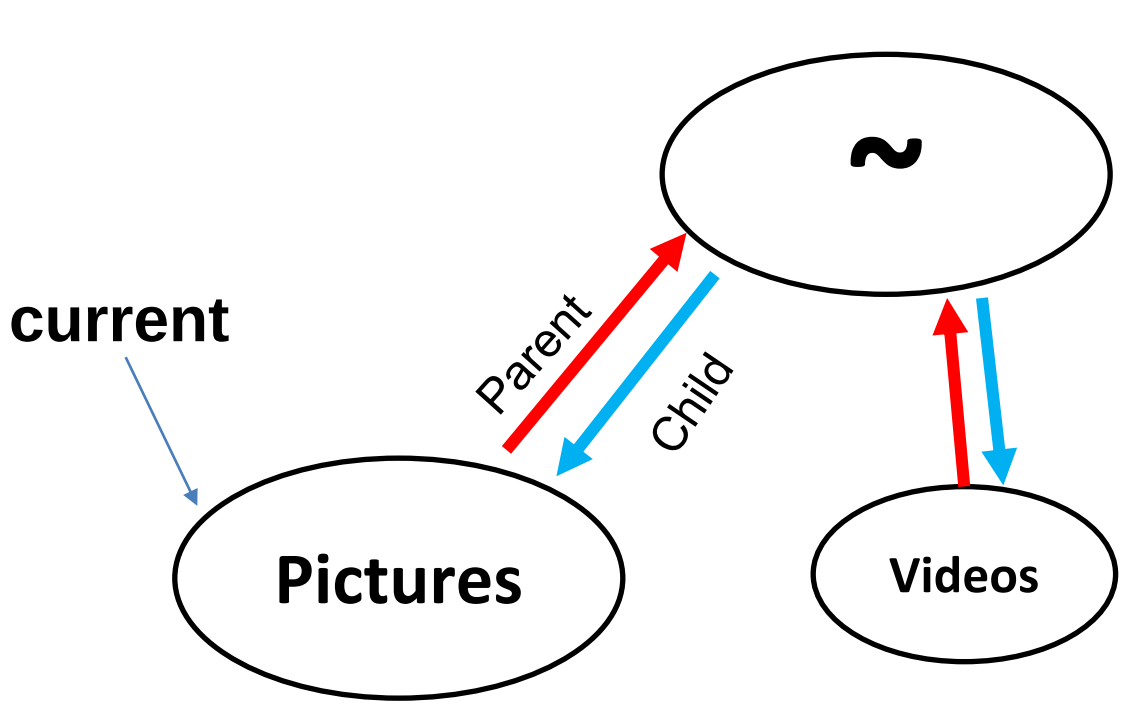
}
```

newNode




```
public boolean moveDown(String directory) {
   ArrayList<Node> children = current.getChildren();
      for(Node child: children) {
         if(child.getName().equals(directory)) {
            current = child;
            return true;
         }
   }
    return false;
}
```

```
tree.moveDown("Pictures");
```

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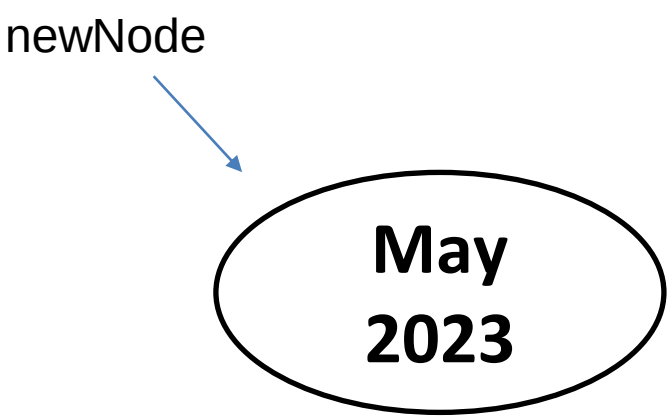


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}
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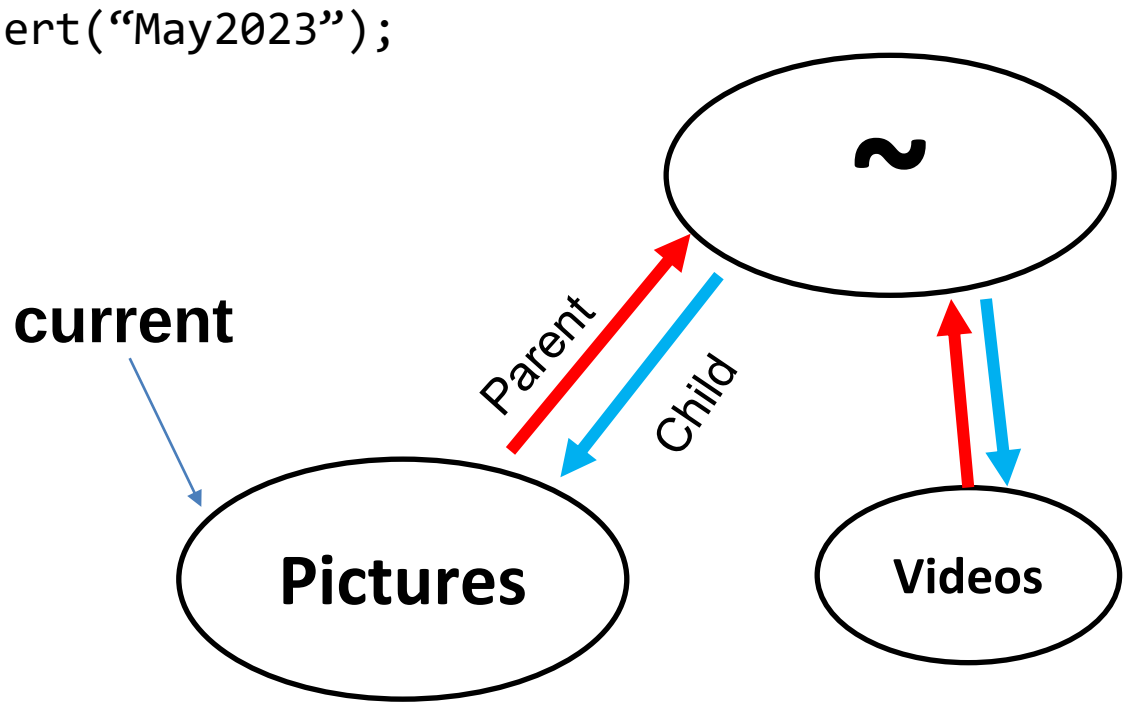
```
tree.moveDown("Pictures");
tree.insert("May2023");
```

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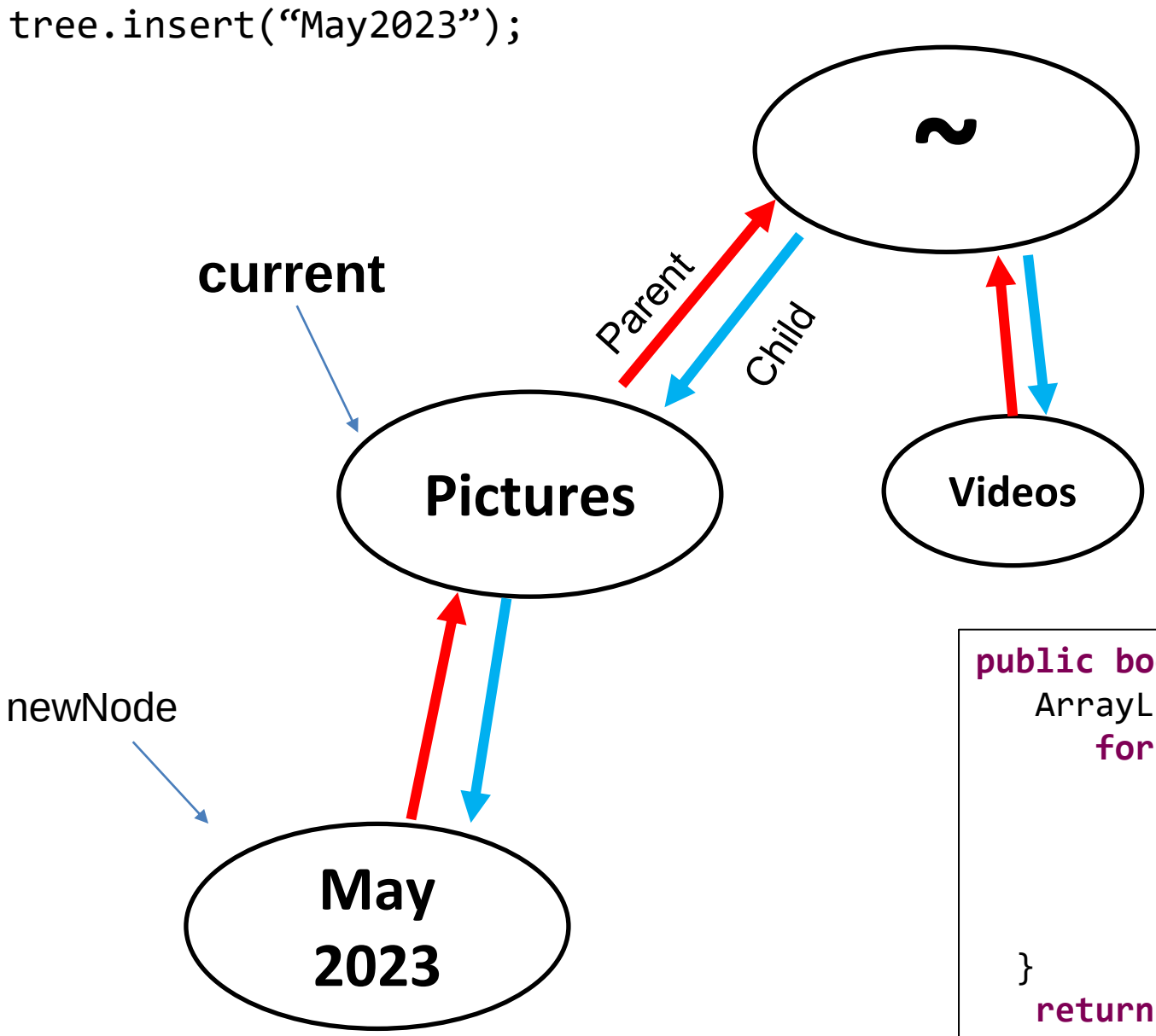


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            current = child;
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         }
   }
   return false;
}
```
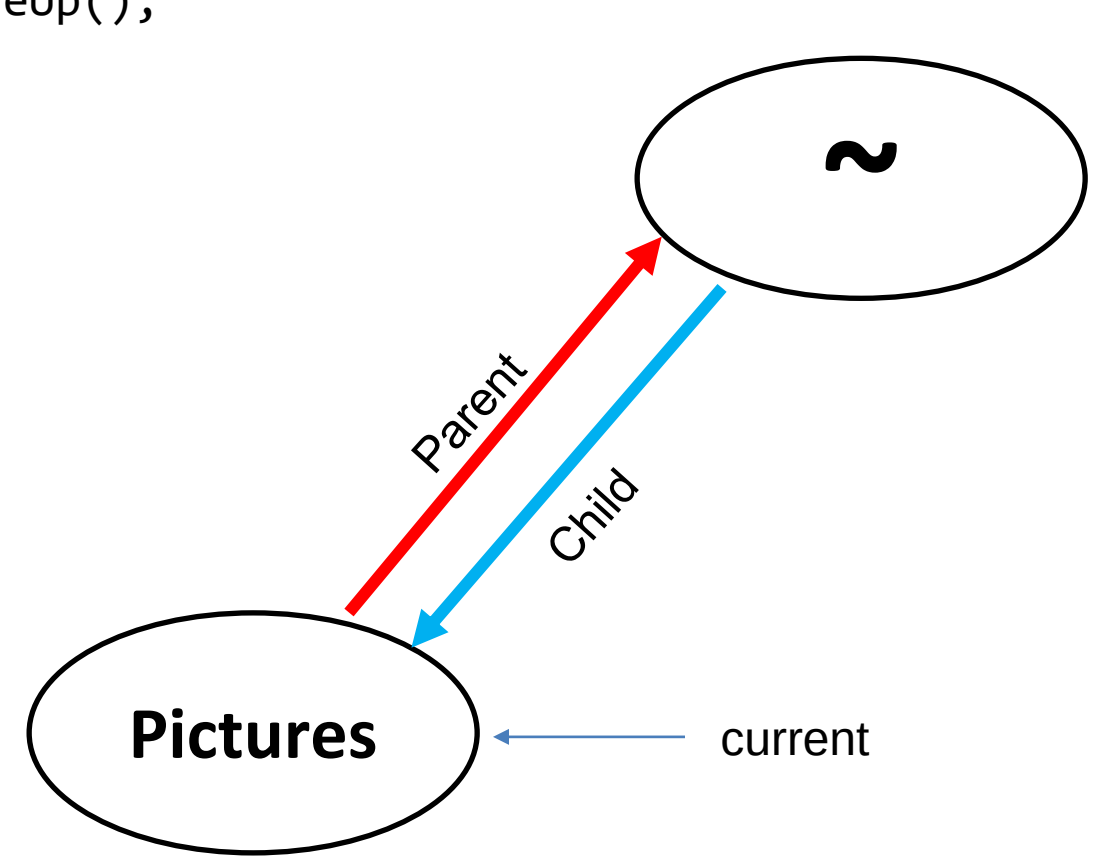
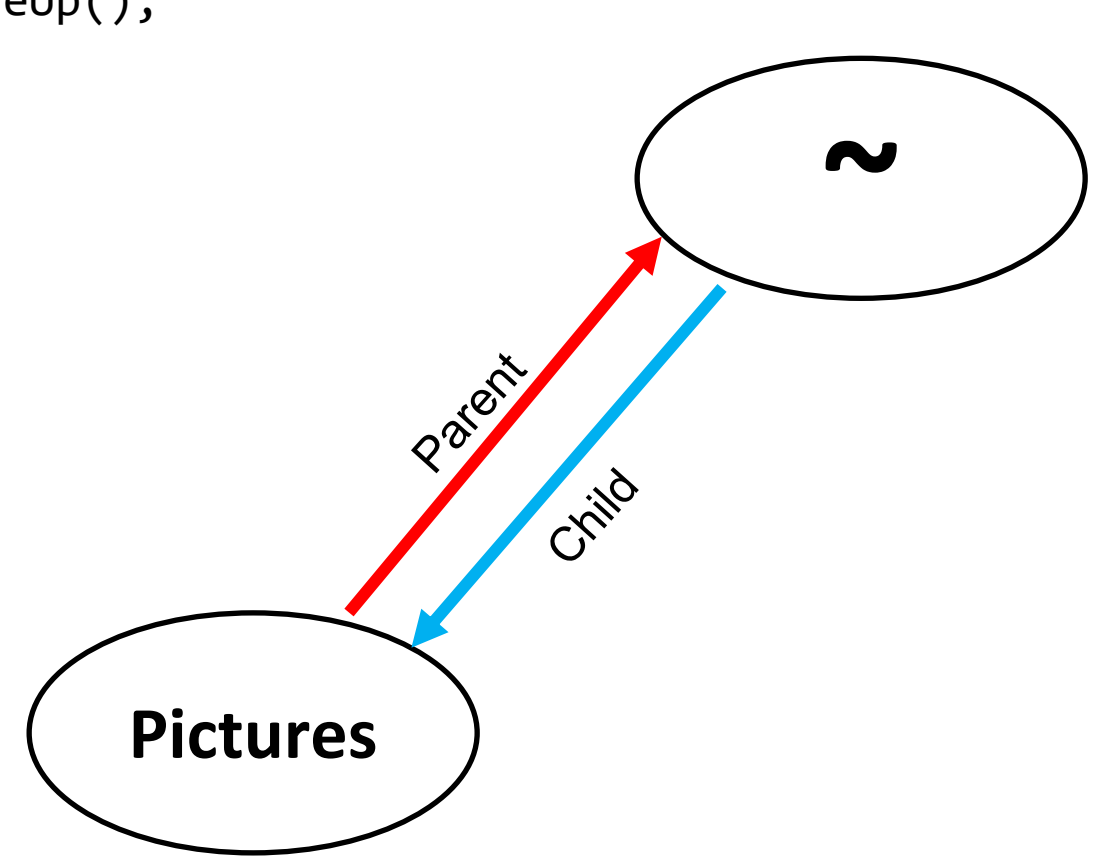

Running time?

```
tree.moveUp();
```




```
public void moveUp() {
    if( current != root ) {
        current = current.getParent();
    }
}
```

```
tree.moveUp();
```

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tree.moveUp();
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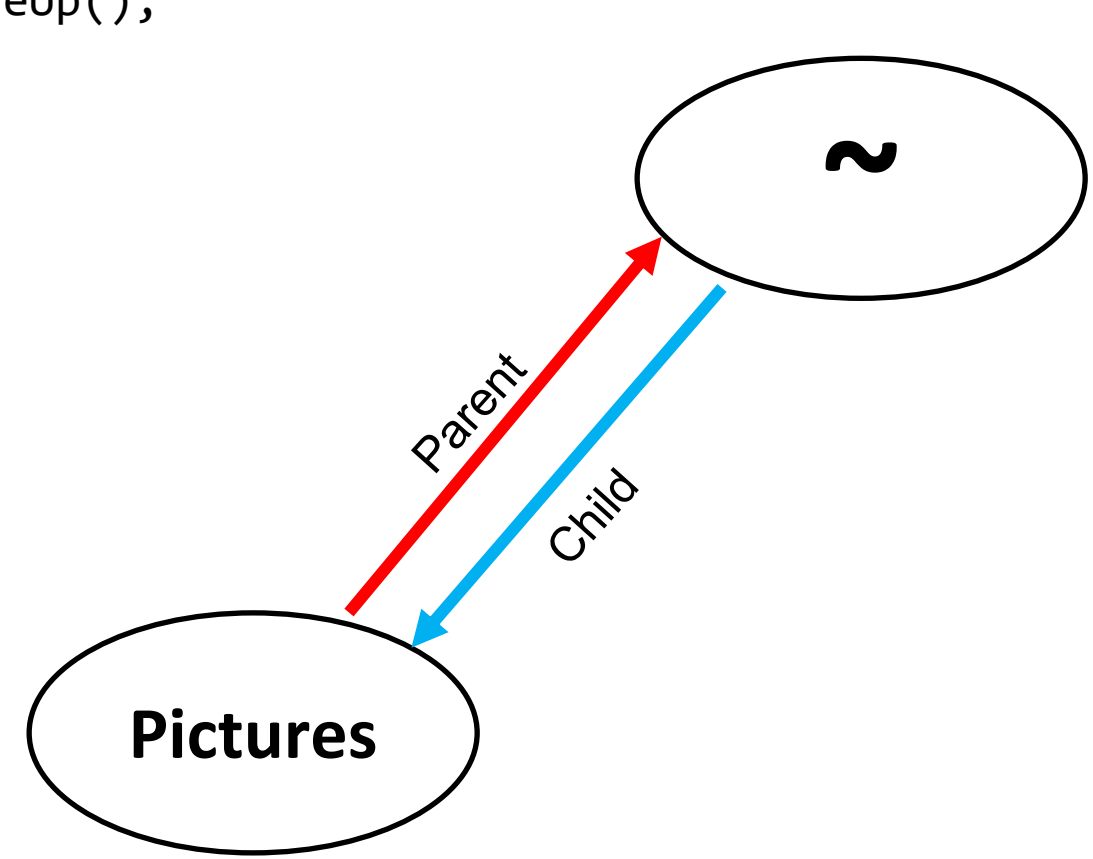


```
public void moveUp() {
    if( current != root ) {
        current = current.getParent();
    }
}
```

Running time?

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```
public void goHome() {
    current = root;
}
```