I wrote the following program in java:

```
public class untitled {
        public static void main (String args[]) {
                int i = 1;
                String s;
                while(true) {
                        i = 2;
                }
                i = 3;
        }
}
```

My compiler refused to compile the document, reporting that $i = 3$ was an "unreachable statement." Since the while loop runs forever, we never exit it and never execute the line $i = 3$.

```
However, if I modify my code like this:
public class untitled {
        public static void main (String args[]) {
                int i = 1;
                String s;
                while(true) {
                        i = 2;
                        break;
                }
                i = 3;
        }
}
```

then the while loop only runs a finite number of times and no error is reported. However, we run into a problem here:

```
public class untitled {
        public static void main (String args[]) {
                int i = 1;
                String s;
                while(true) {
                        i = 2;
                        if(false) {
                                break;
                        }
                }
                i = 3;
        }
}
```

The compiler does not report an error for this code even though the loop is infinite.

Please think about the following questions:

- Given the information above, how do you think the compiler checks for unreachable statements?

- Do you think it's possible to write a compiler that would be able to notice any unreachable statements in the code? Why or why not?