

Question

Some programming languages--for example, Pascal--have used the semicolon to separate statements, while Java uses it to terminate statements. Which of these, in your opinion, is most natural and least likely to result in syntax errors? Support your answer.

Response

Summary

- Pascal uses semicolons as separators
- Java uses semicolons as terminators.

Analysis

It's difficult to say whether one is more natural or less error prone than the other. I feel that any programmer with enough experience in the particular language; be it Java or Pascal, would become comfortable reading and writing with either method. In fact, arguing which method is less likely to cause syntax errors, is almost irrelevant, since syntax errors are often the best kind of error a programmer can get. It is better to have code fail to run, than succeed in running with unexpected behavior. A more interesting analysis would be whether either method can cause valid code to be accidentally written which performs in a way that the programmer did not intend.

For Example: someone without a lot of experience in Java, might write something like this:

```
if (false); {  
    System.out.println("will still output");  
}
```

Programmer: "I was separating my boolean expression from my print statement."
The following code will still run, but it will execute code that the programmer most likely did not intend.

Removing statements in Pascal or Java can cause a programmer to accidentally turn two separate "if statements" into one "nested if statement":

```
begin  
if(false) then writeln('some statement');  
if(true) then writeln('will no longer print')  
end
```

If we look at the English language, Pascal's use of the semi-colon is more analogous. Semi-colons don't terminate statements in English; punctuation characters do. Pascal uses semi-colons to separate statements in a similar fashion to the way that English uses semi-colons., and Java uses semi-colons like punctuation in order to terminate the end of a statement, in a similar way to how English terminates a sentence.

Opinion:

I come from a C background, and having a semicolon at the end of the statement makes the most sense to me; It's what I'm most familiar with. If I came from a Pascal background, I would perhaps think the opposite. However, I also feel that Java's use of the semicolon is more intuitive than Pascal's for a list of other reasons:

- Programmers are often in a statement-by-statement mindset. When writing and reading code, semicolons allows the programmer to know the entirety of the statement, and helps them begin evaluating it in their head, much like the computer would.
- Pascal has the risk of having to move the semicolon when you edit code.

For example:

```
if n = 0 then  
result := 1;
```

will have the semicolon moved when an else statement is added:

```
if n = 0 then  
result := 1  
else  
result := 2;
```

For these additional reasons, I believe Java's use of the semicolon is better than Pascal's use of it. This is for both read/write-ability.