

Python should be taught in first-year Computer Science classes

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Python should be taught in first-year CS, because its syntax is simpler than other languages. Simple syntax is important because students who are new to programming often have great difficulty with syntax, and lowering this barrier will help them focus on learning algorithmic concepts, which is the purpose of first-year CS.

Python is simpler than languages like C++ and Java, because Python is a scripting language, and scripting languages have simpler syntax than system languages. In Python, statements are terminated with an end-of-line, rather than a semicolon; block structure is indicated by indentation, rather than with brackets. Simplifying these elements is valuable because semicolons and brackets are common stumbling blocks for beginning programmers. For example, the following code is a common bracketing error in C++ or Java:

```
if (x < 0)
    cout << "x was negative";
    x = -x;
```

However, the corresponding code executes as expected, since the indentation itself determines the block:

```
if x < 0:
    print "x was negative"
    x = -x
```

Although Python's indenting rules provide a simple mechanism for determining a block, one of the criticisms of Python is that students may have difficulty with the strict indenting rules. Indentation, however, is not likely to be a problem, because current editors and IDEs for Python provide extensive indentation support, such as automatic indenting and highlighting the current block, as can be seen in the popular SPE editor shown in Figure 1.

In addition, researchers in the area of CS education have suggested that correct program indentation is an important skill that should be taught early; Python's focus on indentation helps students practice and master this skill from the start (Zelle, 2000).

In summary, Python's simple syntax, which allows students to focus on important concepts, and its lack of substantial drawbacks, make it an ideal choice for first-year computer science.