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Comparing Java and Python in Lower Level Computer Classes

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CSCI 365 : Organization of Programming Languages

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May 8, 2020

Introduction -

This paper will include the surveying of two programming languages, Java and Python, when viewed and taught in lower level programming courses. Thus the topics of history, class, motivation and areas of application will be explained and shared. Especially when using Java and Python interchangeably within lower level computer classes it is important to learn the differences and though both the languages are able to complete almost all of the same tasks, there are different ways of tackling each situation. While deciding what languages to examine, Java and Python came to mind because of its importance and how often they are mentioned out in the every day world, especially while in college, they are always one of the language taught in the lower level classes. This paper is going reflect the languages being taught in lower level languages and compare what is being taught about each other those languages, and how it prepares them to use their background knowledge of the syntaxes to be able to quicker learn other new languages.

Background -

Java was initiated back in 1991, by James Gosling and Sun Microsystem’s, to be their core component to run on their platform, which is now called Java platform. By 1995, it made its public debut as Java 1.0 with its motto of “Write Once, Run Anywhere.” Originally Gosling was wanting to name this language Oak, because of the tree he would see outside his office window, but after multiple random name lists they chose Java. Sun Microsystems’ was able to release most of Java as a free, open source software in 2006 with the help of the terms of the GNU General Public License. But after one year, Sun Microsystems’ was able to make all of Java’s code free and open source for the general public. Java was built and designed to be used to allow consumer electronics to communicate with each to each other, most importantly its ability to work with multimedia and how well it would work for the World Wide Web. It is able to be used around in nearly everything because it is an independent language which allows it to easily compliment other languages.

Unlike Java, Python was created as a hobby in 1989, and not until 2000, it was released with more features. Guido van Possum created the language at the National Research Institute for Mathematics and Computer Science in the Netherlands, which he was mainly wanting a new language so he could build off of ABC language with the capabilities of exception handling and interfacing. By 2008, Python 3.0 was released having been tested more and including many new features. What brought more people to notice Python was its readability, there were less words however, it had advanced productivity and had the capabilities of high level programming. This language is able to use a lot less code in order to complete the same concepts as other languages. In addition this is the language that is the foundation and inspiration to other languages as well. Many large companies use Python as their main programming language, and to build many different applications across different types of devices which makes for it to be a popular language to learn.

Analysis / Survey -

While examining Java and Python, not only were there multiple similarities but there were also differences that made them unique, including the simple syntax comparison towards each language, the speed of it and the ability for the programmer to learn. Each important, however, when looking at languages there are certain ones that are able to be interchangeable, like Java and Python, where they are able to complete the same tasks however just in different ways.

When using Java, syntax is important. Whether that be the use of a semicolon after most lines or having to define each created datatype. It is important for the user to not forget these tasks when completing a program to ensure for no errors. Also, Java likes to make code blocks, like the body of the program, where each specific function is created, and a main section where the user writes to call each of the functions. However, one of the most important parts of Python is the use of indentations, all must remain the same amount and be in order to ensure that everything is readable. However, both of the languages are case - sensitive and many things that are done in Java are not necessarily needed but can be used in Python, like calling from a main() function.

In addition to the syntax, the quickness to learn each of the languages is different. When beginning to learn, lots point to Python because it requires no background knowledge of the language, it is easy to pick up and very readable to the naked eye. Taking it as an introduction course prepares the students by teaching them how to code, but also being able to teach them the syntax of the languages without being confusing and overpowering. But when comparing it to Java, it takes a little bit of background knowledge of programming to understand the basic concepts of how to print simple lines and also how to call the function to run in the main program.

# Simple Python Program

print(“Hello World”)

//Simple Java Program

public class HelloWorld {  
 public class void main(String [] args) {  
 System.out.printIn(“Hello World”);

}

}

Also when learning about the two different languages, and most importantly learning how to run each of them, the largest difference is whether it needs to be compiled before being run or not. Java is a faster language because it requires the user to compile the language before running it, meaning that it is an object oriented programming language, and it does not need to be compiled into a specific machine, rather into its specific byte code. Python is also object oriented, general purpose language, and most importantly because there is datatype declarations is makes Python a slower language. Not having to be compile prior to running the program allows for a slower program because there is no check of the program before running it and ensure there are not any bugs.

Conclusion -

Throughout this research and while learning more about the languages themselves I was able to learn more about each language specifically and base what I had troubles understand when I came into college to take the lower level language classes and use that background knowledge in order to better the paper. Python and Java are both great languages and can be use interchangeably, and allows the user or companies to make their own preferences, but also allows for users to learn these languages easier because they are both able to accomplish the same tasks, so when knowing one language, learning the second will not be as difficult. Having to had to teach myself one of these languages, I was better prepared having been taught one of them already because their syntaxes are similar.

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