Assignment: **Programming Language I Might Like to** Learn

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Abstract: This assignment features a brief description for each of 6 programming languages I have an interest in learning for various reasons. The short texts collectively aim to highlight key features of these programming languages. All data has been sourced from the referenced websites.

Language 1: Ada

https://en.wikipedia.org/wiki/Ada (programming language)

Ada is a high-level, statistically typed, object-oriented programming language that was first introduced in February 1980. The name Ada derives from the renowned mathematician, Ada Lovelace, who is widely considered to be the first computer programmer. It has roots and influences from Pascal, C++, Smalltalk, Eiffel, Java, COBOL, ALGOL 68, and Modula-2. Ada was initially developed by a team of computer scientists led by the French researcher Jean Ichbiah, working under the United States Department of Defense (DoD) from 1977 to 1983. Ada was designed to replace over 450 other programming languages that were used by the DoD at the time. Ada has integrated support for design by contract, strong typing, explicit concurrency, protected object manipulation, parallel processing, and non-deterministic operations.

What interests me about this programming language is its emphasis on readability and code safety. These are both crucial for large complex software projects. Ada can prevent syntax errors before they appear by utilizing the compiler to find and report errors rather than relying on the runtime errors. Ada's high level of code safety makes learning Ada a valuable skill for someone who plans to work in the medical field or aviation. Another feature of Ada that interests me is its high-level abstraction. What is special about Ada is that it simplifies complex programming concepts with abstraction that makes it easy for someone to write and understand their code.

F# is a strongly typed, multi-paradigm programming language created by the Microsoft Research in Development (R&D) team in 2005. Don Syme, a member of the team, developed the language. F# combines functional, imperative, and object-oriented programming approaches. F# provides developers with a functional-first language that could be used for numerous different applications, such as data science, finance, and web development. F# is mainly influenced by the programming languages OCaml and Haskell, and concepts such as parallel and distributed programming, and reactive programming. In terms of its impact, F# has influenced and helped popularize functional programming concepts in the software development industry.

F#'s concise syntax intrigued me. The idea that developers can write more code with fewer lines being used sparked my interest in being able to write more maintainable code. F# also has an important use in game development. While F# is not commonly used for game development, it can create automation scripts and AI algorithms. I am interested in understanding F#'s constructs that are used for mathematical and data processing tasks.

Language 3: Groovy

https://en.wikipedia.org/wiki/Apache Groovy

Groovy is a static and dynamic, object-oriented programming language designed by James Strachan and Guillaume Laforge, and released in 2007. James' goal for this program was to provide programmers with a more expressive, dynamic, and readable alternative to Java. Groovy was influenced by languages such as Python, Smalltalk, and Ruby. Some of Groovy's features include support for metaprogramming and simplified syntax. As time went on, Groovy became popular among developers for its flexible and efficient code. As a result, numerous different organizations specialized in software testing, web development, and scientific simulations adopted this language.

My first coding language was Java and Groovy's purpose of providing an easier alternative to Java interested me and made me want to learn how to write programs in that language. Groovy's active community of developers and its simple syntax is very useful for developers of all different experiences. This makes it easier for someone who is interested in this language to learn it hastily.

Language 4: Dart

https://en.wikipedia.org/wiki/Dart (programming language)

Dart is a programming language designed by Lars Bak and Kasper Lund and developed by Google. Dart first appeared in 2011 with the goal of improving upon existing web programming technologies. Dart is mainly tailored for client development for mobile and web applications. Dart gets its inspiration from the programming languages JavaScript, Java, and C#, and has been driven by the need to make it easier for developers to build complex web applications.

One reason why I would be interested in learning Dart is for its growing community. Dart is supported by Google which has a consistently growing ecosystem of tools and libraries. This makes it easy to build applications quickly. Another reason for interest is its mobile development. Dart's libraries and easy to learn tools allow developers to create cross-platform applications for Android and IOS.

Language 5: Julia

https://en.wikipedia.org/wiki/Julia (programming language)

https://docs.julialang.org/en/v1/

https://juliadatascience.io/julia_wild#:~:text=NASA%20uses%20Jul ia%20in%20a,in%20the%20GPU%20and%20CPU.

Julia is a dynamic programming language created by Jeff Bezanson, Stefan Karpinski, Viral B. Shah, and Alan Edelman in 2009, and introduced in February 2012. Julia was influenced by and features a syntax like MATLAB, Python, and R. When asked about the name, Stefan Karpinski states "There's no good reason, really. It just seemed like a pretty name." The main goal the designers aimed for was to create a language that is easy to learn and to use a just-in-time compiler that provides high performance with high-level syntax. Julia's features are commonly used for numerical analysis, scientific computing, and machine learning.

I'm always interested in exploring different languages that are similar in syntax to other languages that I am familiar with. I would like to learn Julia because of its easy to write coding structure and strong performance that is similar in speed to C. Overtime, Julia has been used in many different companies such as IBM, Amazon, ASML, and NASA. Julia's use in NASA sparked my interest in learning its syntax. NASA uses Julia in a supercomputer to inspect the "Largest Bath of Earth-Sized Planets Ever Found."

Language 6: Swift

https://en.wikipedia.org/wiki/Swift (programming language)

Swift is a multi-paradigm programming language released in 2014 by Apple Inc. It serves as a substitute for Apples other language Objective-C and is now a popular choice of app development for iOS, watchOS, macOS, and tvOS. In 2010, Chris Lattner initiated the development of Swift before he was accompanied by other Apple programmers. Swift's syntax is aimed to be a language that is easy to learn and write for developers with or without experience. Swift is commonly used by independent app or software developers for Apple's operating systems.

Apple Inc's popularity as the biggest tech company is a major reason as to why I am strongly interested in learning Swift. With Swift's fast-growing, easy to read programming and secure safety, learning a language that is being used for a company with such a strong brand reputation is a great reason for my interest. Another reason why I am interested in further learning this language is because of its emphasis on safety and clarity. Swift focuses on designing ways to lower errors such as buffer overflows and null pointer dereferencing. This reduces the frustration and irritation of learning a new language.