Abstract

The purose of this assignment is to strengthen my knowlege of the programming language world by exploring a variety of different languages - Fortran, INTERCAL, Lua, R, Go, and Swift. The purpose is to gain a deeper understanding of the unique qualities that make each language special and valuable, giving us a better overall picture of the programming language landscape

Fortran

Fortran, short for Formula Translation, was developed in 1957 by a team at IBM led by John Backus. It was one of the first high-level programming languages and was designed to be used for scientific and engineering calculations. COBOL and assembly programming languages were heavy influences on the development of Fortran, and was very influential on the development of future computing languages. ((Wikipedia))

Fortran is still worth learning for multiple reasons including the following.

- Fortran is still highly used for high-performance computing and complex numerical simulations. This makes it a highly valuable skill in the scientific and engineering communities.
- Fortran has a long history and has been evolving, incorporating newer features and more capabilities. Given that fact makes it a powerful and flexible language.
- Many legacy software such as the one used by Southwest Airlines for flight simulations use this language, which means that learning this language is important for the maintenance of these pre-existing systems. Keeping these legacy codes up-to-date is essential, as demonstrated by recent news.

INTERCAL

INTERCAL is a programming language that was created in the early 1960s by James H. Reynolds and Donald R. Woods as a parody of existing computer languages of the time, taking influence from Cobol and Fortran. The language was designed to be intentionally obscure and difficult to use, and was created as a humorous response to the perceived boredom and monotony of early computer programming. Despite its nature, INTERCAL has had a lasting impact on the computer science community, and is still remembered and studied as a classic example of early computer humor and a demonstration of the creative potential of programming languages. ((Wikipedia))

The value of learning this language are as follows:

- INTERCAL provides a glimpse of how it felt programming in the early days, offering a unique perspective on the history and evolution of computing.
- INTERCAL's intentional obscure and humorous design challeges normal programming practices and underlines the potential of code as a form of expression and communication.
- Studying INTERCAL can help improve programming skills and increase understanding of language design and implementation. It can, in addition, encourage more thoughtful and effective use of modern programming languages

Lua

Lua is an extremely lightweight high-level programming language designed for scripting and embedding in other software. It was created by Roberto Ierusalimschy, Waldemar Celes, and Luiz Henrique de Figueiredo at the Pontifical Catholic University of Rio de Janeiro, Brazil in July of 1993. Lua was influenced by Sol, Scheme, and Pascal, and went on to influence popular languages such as Javascript and Ruby. It is known for its small size, fast execution, and ease of embedding in other software and is widely used as a scripting language in game development, as well as in various applications in fields such as finance, medicine, and engineering. ((Wikipedia))

Lua is a very beneficial language to learn for the following reasons:

- Lua's small size and fast execution make it a great choice for use in resource-constrained environments, such as games, where performance is a must. It is known for its efficiency and ability to handle demanding computational tasks.
- Lua's ease of embedding into other software makes it a valuable tool for adding scripting capabilities to existing applications or customizing the behavior of other software, one such example being “game modding”. This versatility and adaptability makes it a valuable skill to have.
- Lua's flexible and dynamic type system, along with its ease of use, make it a great choice for quick little experiments, as well as writing small scripts and utilities. Its versatility and adaptability make it a great language for a wide range of projects and use cases

R

R is both a programming language and software environment used for statistical computation and graphics. It was developed by Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand and had its first release in August of 1993. R was influenced by its predecessors, S, Lisp, and Scheme, and has become a popular choice for data analysis, visualization, and statistical computing. It has also influenced the development of other statistical software and programming languages such as Python and has a large, active user community. ((Wikipedia))

R is worth learning for the following reasons:

- It’s a powerful but flexible language for data analysis and statistics. This makes it widely used and a very valueable skill for someone working in the data science, statistical, or any other related fields.
- R has a large user community with a vast amount packages and libraries for use in data manipulation, visualization, and many more, making it an excellent choice for any task needing visualizing data.
- R has a strong and knowledgable user-base that actively contributes to the development of new packages and features as well as provide support for learning the language. Making this a good language to get help with.

Go

Go is a programming language designed by a team at Google led by Robert Griesemer, Rob Pike, and Ken Thompson. Released in 2009 it was designed to be a simple and fast language that could be used for large scale systems programming. Go is syntactically similar to C, C++ but with memory safety, garbage collection and structural typing. It has become a popular choice for web services, cloud computing, and data processing. ((Wikipedia))

Go is worth learning for the following reasons:

- Go is a statically typed, multi-threadable language with garbage collection. This makes it well-suited for large scale systems and for memory management.
- Go is a simplistic and very human readable language, which makes it an excellent choice for a first programming language or for those who want to write code that is easy to understand.
- Companies like Google, Uber,and Dropbox all use Go, which makes it a very valuable skill going into the job market and a great choice for cloud-base services.

Swift

Swift is a general-purpose, compiled programming language developed by Apple in 2014. It was created by Chris Lattner with contributions from other engineers at Apple and was designed to be fast, safe, and interactive, with syntax influenced by Python. It has since become a popular choice for iOS and macOS app development. ((Wikipedia))

Reasons to learn Swift.

- Swift is the primary language used by Apple for developing applications on iOS and macOS. This makes it a valuable skill for developers interested in developing for Apple's platform.
- It has a modern and easy to read syntax designed with safety in mind, making it a good choice for new developers.
- Swift is very fast and efficient, and can be used from everything from small scripts to large-scale applications. Making it versatile in many different use cases.