Fortran

Fortran was one of the biggest milestones in all of computer science history. It was the first high level code which strayed away from assembly language. Fortran made coding so much more efficient, that programmers coded 500% faster. Assembly code was very hard to understand and work around it especially when looking for a bug. When we chose this language it was because we had little to no knowledge of this language and we were curious on why/how it was made and that led us to discover

Fortran, being the oldest high level code, has a long history. It was created by an IBM team in 1957 and evolved heavily over time and it was focused heavily on mathematics. Fortran developed into many different dialects over time. The meaning of the name is explanatory in the fact that it is an acronym for Formula Translation which helped to translate math formulas into code. Many different dialects formed over time so the American Standards Association and Fortran IV was created. Fortran '77 was also revolutionary because the development of if statements and do while loops were created. Unfortunately, Fortran slowly became irrelevant over the next 13 years. When Fortran '90 was introduced, C++ and C were created already and because of that, most programmers stopped using fortran, as it was harder to use. Although other languages existed Fortran '90 introduced a lot of new concepts including case statements, do-while, derived data types, dynamic memory allocation, modules (packages containing variable and code), and Keyword argument passing. Fortran '95 added pointers and dynamic memory allocation, but there were already other languages that had those features.

Fortran should be used when working with algorithms that can be expressed using arrays and use simple data structures. There is a lot of functionality that is built in to Fortran making it easier to work with arrays and matrices. Additionally, due to the wide variety of optimization options that Fortran has, the language has kept its popularity among industries that use implement and use high-performance computing systems. While it's popularity in other industries has declined in recent years, the heightened need for parallel computing has caused Fortran to remain a popular programming language. Fortran 95 used a data-parallel model of computation which could speed up a program by spreading the computation power needed in a program over multiple processors. In terms of working and manipulating arrays, Fortran uses vectorization, which is the process of converting an algorithm from operating on a single value at a time to operating on a set of values at one time. With regular, serial calculation the individual vector or array elements are added in a sequence whereas in a vectorized calculation all elements of the vector or array can be added in one step.

It can also be argued that argued that Fortran is a better language for students that are new to high performance computing, because while C and C++ do have a large number of optimization problems, becoming proficient and writing efficient professional code seems to be more difficult to do in C and C++ than in Fortran. Nevertheless, it is important to remember that if a developer is writing a program or system that is not mathematically intensive or is not

centered around ‘number crunching,’ it is likely that Fortran is not the best option for choosing a programming language.

Fortran was made by scientists for scientists and has dominated the scientific field for just over thirty years. It gets used by designers of bridges, aeroplane structures, factory automation control, software storm drainage design, analysis of scientific data, astrophysical modeling of stars and galaxies and hydrodynamics. Fortran is still a very dominant language for physicists. An advantage of Fortran is the fact that it was built with “array slicing syntax” included, combined with how it lays out memory, and the default use of non-aliasing. Array slicing extracts a subset of elements from an array and packs the subsets a different array.

In conclusion, Fortran is one of the oldest programming languages and is often deemed as irrelevant. We all found that this is not the case and fortran is used widely, but often goes unnoticed. We also found that people that know Fortran programmers can get paid a lot more because of the fact that not a lot of people learn it anymore.