

The Swift Programming Language

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Swift is a powerful and intuitive programming language created by Apple in 2014. It is general purpose because it is very broad in its uses. It could be used in systems programming or in a back end cloud infrastructure service. It was designed from the ground up to make writing efficient, secure, and readable code very accessible to engineers.

One of the most novel features that Swift provides is **speed**. Swift is written using LLVM's dialect of C++. This dialect is very modular and reliable because it always ensures that it is using the cutting edge features which in turn, ensures very fast compile-time, and execution-times. Furthermore, it is converted into an intermediate language known as *SIL* or Swift Intermediate language. This state allows sophisticated optimizations to be performed that eventually generate very efficient LLVM IR.

Swift's modular design allows it to be elegantly integrated with developer tools such as Xcode where it could be used to target all Apple's platforms such as iOS, macOS, and tvOS. Furthermore, it design allow very compelling features such as semantic completion in editors, integrated debugging. Its binary builds plays very well with other LLVM tools and optimizations such as *address-sanitizers* and *ThinLTO*.