Programming Languages

Group 2 – Python vs. Swift
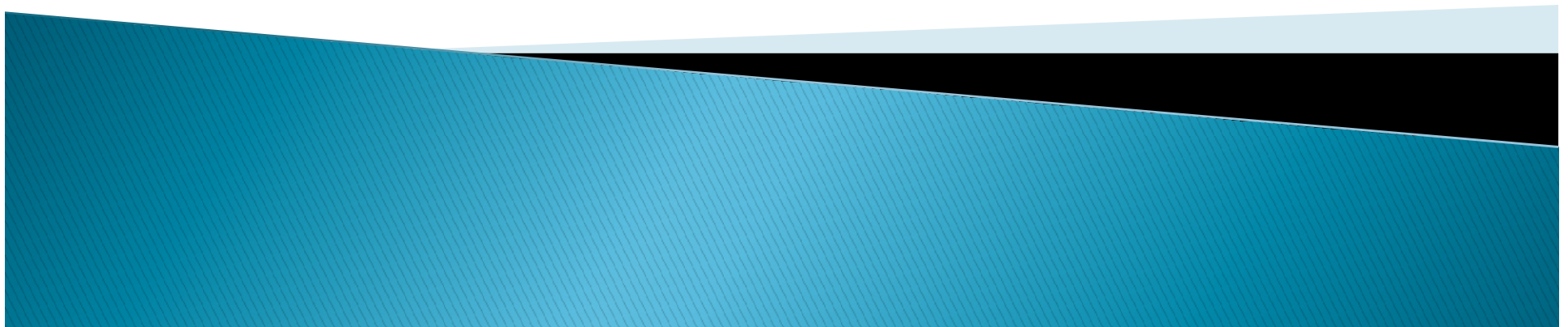
Comparision

Category	Python	Swift
Ease of use	Simple syntax and readability	Simple syntax and readability
Availability	Open Source	Open Source
Age and Community	Since 1991 – huge Community – hundreds of libraries and frameworks	Since 2015 – smaller Community (top 11 programming language)
Usability	All common OS	macOS & Linux (windows planned)
Safety	Plenty of known Vulnerabilities	Statically typed language and enables programmers to quickly find bugs before compilation
Performance	Less good	better

Echo innovate IT (N.D.)

Security Aspects of Swift

- Compiled

- Memory is managed via automatic reference counting → frees the object once it is no longer in use. (76 % of the CPU time is spent incrementing and decrementing reference counters (Emmerich et al., 2019)

- Swift mostly does away with pointers (but allow them).

- Swift includes dynamic checking.

- In Swift, there is less information exposed in the binary, and function names are mangled.

- Swift uses optional types feature.

- Swift implements definite initialisation.

- Swift uses array bounds checking.

- Swift uses safe arithmetic operators and enables arithmetic overflow checking

Emmerich et al., 2019; Stürt, 2017; Dobzhanskiy, 2015

References

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▸ Stürt, K. (2017) Secure Coding in Swift 4. Envato tuts+. Available from: https://code.tutsplus.com/tutorials/secure-coding-in-swift-4--cms-29835 [Accessed 11 April 2022].

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