SWIFT + LINUX = <3

Filip Klembara - https://github.com/LeoNavel

7.3. 2018

INSTALL

- Official - download from official site
  - https://swift.org/download/
- Vapor - use third party apt repository
  - https://docs.vapor.codes/2.0/getting-started/install-on-ubuntu/

OFFICIAL

1. open https://apple.com/swift

2. `$ sudo apt-get install clang libicu-dev`

3. download correct swift version and platform

4. check keys (optional)

5. `$ tar xzf swift-<VERSION>-<PLATFORM>.tar.gz`

6. `$ export PATH=/path/to/usr/bin:"${PATH}"`

THIRD-PARTY APT

Vapor - https://docs.vapor.codes/

1. `$ eval "$(curl -sL https://apt.vapor.sh)"`
2. `$ sudo apt-get install swift ~~vapor~~`

IDE

- Hacking atom to create a swift IDE[1]

1. Install Atom[2]

2. `$ apm install swift-debugger language-swift`

3. Set swift executable

1. https://medium.com/@Aciid/hacking-atom-to-create-a-swift-ide-that-runs-on-linux-and-mac-c7d9520a0fac
2. https://flight-manual.atom.io/getting-started/sections/installing-atom/

VIM

- Vim highlighting plugin[1]

1. `Plug 'keith/swift.vim'`

2. `:PlugInstall`

1. https://github.com/junegunn/vim-plug

SWIFT

- `swift package [options] subcommand`
  - `init [--type empty|library|executable|system-module]`
  - `update`
  - `resolve`
  - `generate-xcodeproj`
- `swift build [options]`
- `swift run [options] [executable [arguments ...]]`
- `swift test [options]`

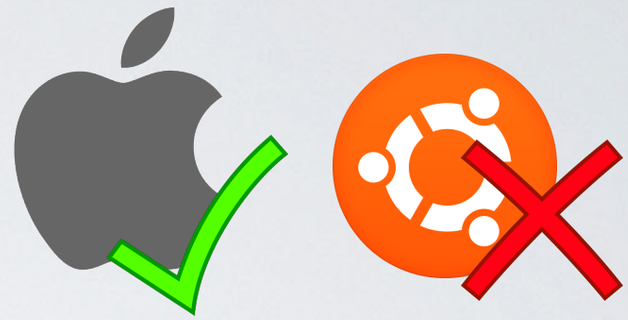
LIMITATIONS

- Ubuntu (16.10, 16.04, 14.04)
- UIKit, Cocoa
- ObjectiveC runtime
- Foundation

OBJECTIVE C RUNTIME

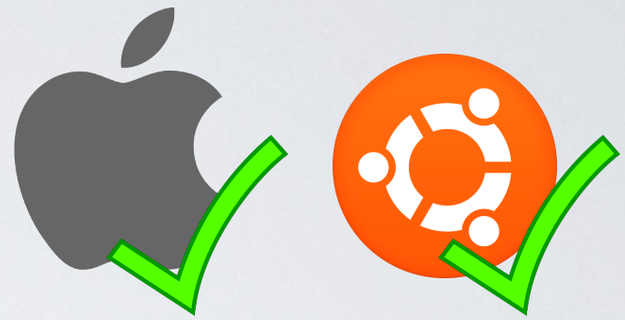
```
#if _runtime(_ObjC)
    print("There is objective C runtime")
#else
    print("No objective C :(")
#endif
```

OBJECTIVE C AUTO BRIDGING



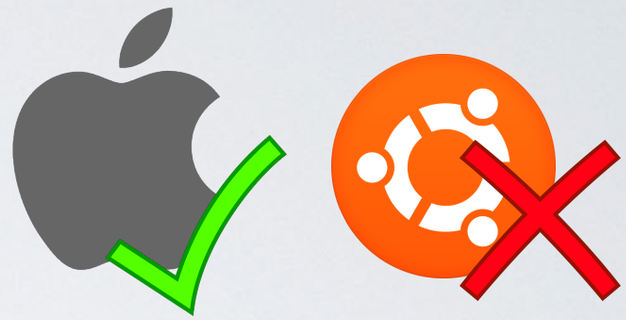
```
import Foundation

let someNSString: NSString = "Hello!"

let someString = someNSString as String

let anotherNSString = someString as NSString

print(anotherNSString)
```

OBJECTIVE C AUTO BRIDGING



```
import Foundation

let someNSString: NSString = "Hello!"

let someString = someNSString.description

let anotherNSString = NSString(string: someString)

print(anotherNSString)
```

LINUX FOUNDATION IS NOT FULLY IMPLEMENTED



```
import Foundation

let path = "notImplemented.swift"
let name = FileManager.default.displayName(atPath: path)
print(name)
```

BRIDGING C

- C API

```
int quotient(int dividend, int divisor, int *remainder);

struct Point2D createPoint2D(float x, float y);
float distance(struct Point2D from, struct Point2D to);
```

- Swift imports

```
func quotient(_ dividend: Int32, _ divisor: Int32,
   _ remainder: UnsafeMutablePointer<Int32>) -> Int32

func createPoint2D(_ x: Float, _ y: Float) -> Point2D
func distance(_ from: Point2D, _ to: Point2D) -> Float
```

THIRD-PARTY LIBRARIES?

Of course - Swift Package Manager

https://github.com/Awesome-Server-Side-Swift/TheList

SWIFT PACKAGE MANAGER

- Open Package.swift
- Add github repository to dependencies

```
.package(url: /* package url */, from: /* version */)
```

- Add github repository to dependencies

```
.dependencies: [/* library name */]
```

- $ swift package update ($ swift package generate-xcodeproj)

SOME APPS

- Web
  - Swift Squirrel open source web framework
    - https://squirrel.codes
- GUI
  - GTK3 wrapper
  - https://github.com/TomasLinhart/SwiftGtk

SWIFT VS C++

- switch
  - operator ~=
    - allows for switching Strings
- enum with associated values
- no multiple inheritance

SWIFT PERFORMANCE

C
C++ < Swift < Java
PHP
Python

- Swift is generally 1.7x slower then C++

- Java is generally 1.3x slower then Swift

QUESTIONS?

https://github.com/LeoNavel/IZA