INTRODUCTION TO SWIFT

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Mobile Application Development
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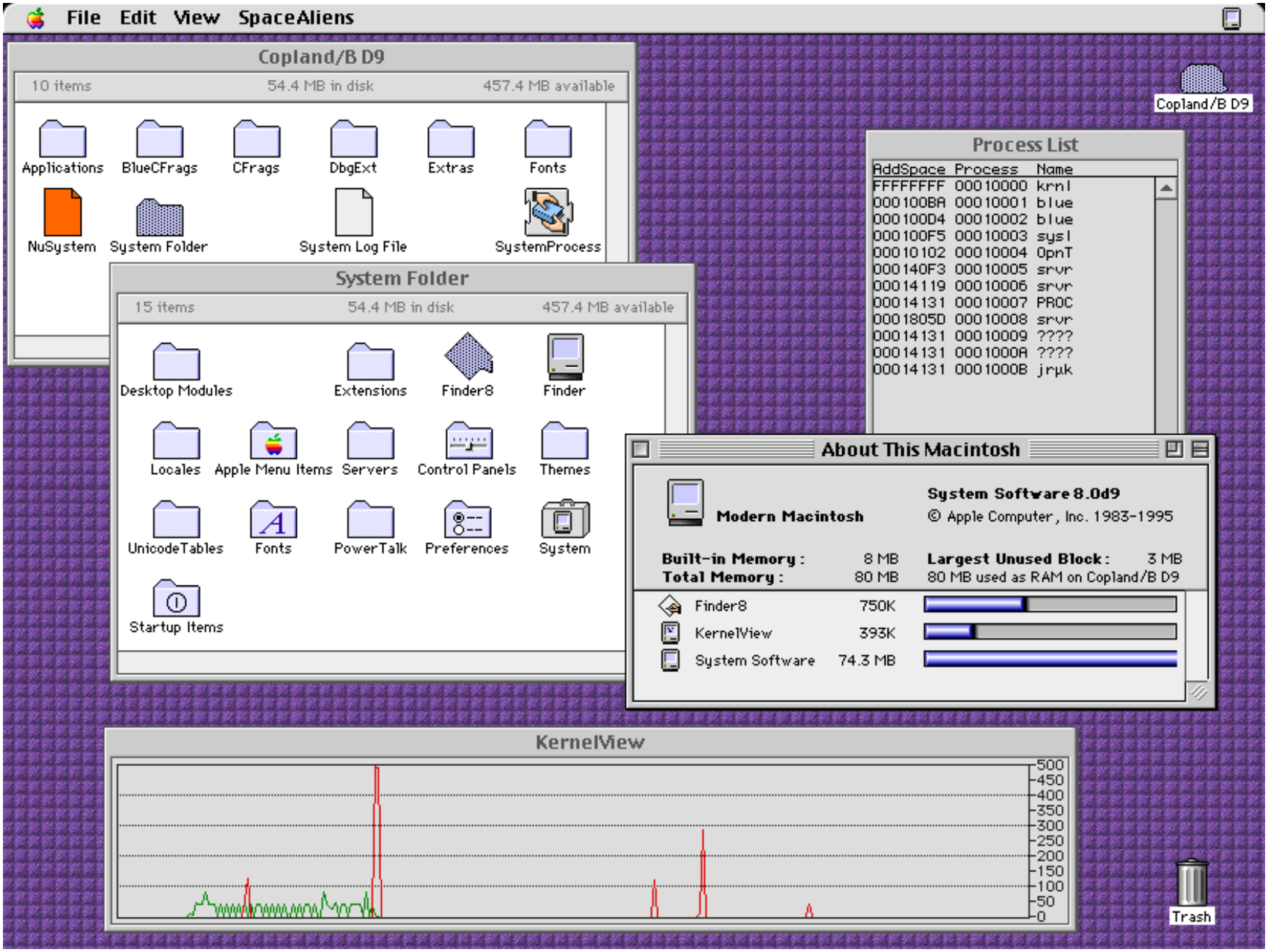
- Motivations of Swift
- Technical Background
- iOS App Development with Swift
- Live Programming
- Summary

MOTIVATIONS FOR SWIFT

(for Apple)

"AVOIDING COPLAND 2010"

PROJECT COPLAND



MEMORY-MANAGED LANGUAGE / API

ENTER SWIFT

```
NSString *str = @"Hello,";
str = [str stringByAppendingString:@" world."];
```

```
var str = "Hello,"
str += " world."
```

TECHNICAL BACKGROUND

(for Developers)

SWIFT AT A GLANCE

- Imperative
- ...and Functional, too
- Block-structured
- Object-oriented
- Protocol-oriented
- Static Typing
- Type Inference
- Dot-Notation
- UTF-8

BEYOND THE BASICS

- Generics
- Extensions
- Closures
- Optionals
- Memory Management: ARC
- Error Handling
- Debugging: Assertions

GENERICS

```swift
func swapTwoStrings(_ a: inout String, _ b: inout String) {
    let temporaryA = a
    a = b
    b = temporaryA
}

func swapTwoDoubles(_ a: inout Double, _ b: inout Double) {
    let temporaryA = a
    a = b
    b = temporaryA
}
```

```swift
func swapTwoValues<T>(_ a: inout T, _ b: inout T) {
    let temporaryA = a
    a = b
    b = temporaryA
}
```

EXTENSIONS

```swift
protocol StringConvertible {
    func toString() -> String
}


extension String: StringConvertible {
    func toString() -> String {
        return self
    }
}



var thisMustHaveAToString: StringConvertible

/* ... */

print(thisMustHaveAToString.toString())
```

CLOSURES

```
let names = ["Chris", "Alex", "Ewa", "Barry", "Daniella"]

func backward(_ s1: String, _ s2: String) -> Bool {
    return s1 > s2
}
var reversedNames = names.sorted(by: backward)
// reversedNames is equal to ["Ewa", "Daniella", "Chris", "Barry", "Alex"]
```

```
reversedNames = names.sorted(by: { (s1: String, s2: String) -> Bool in
    return s1 > s2
})
```

```
reversedNames = names.sorted(by: { s1, s2 in s1 > s2 } )
```

```
reversedNames = names.sorted(by: >)
```

OPTIONALS

```
let possibleNumber = "123"
let convertedNumber = Int(possibleNumber)
// convertedNumber is inferred to be of type "Int?", or "optional Int"
```

```
if convertedNumber != nil {
    print("convertedNumber has an integer value of \(convertedNumber!).")
}
// Prints "convertedNumber has an integer value of 123."
```

MEMORY MANAGEMENT: ARC

```
class Person {
    let name: String
    init(name: String) {
        self.name = name
        print("\(name) is being initialized")
    }
    deinit {
        print("\(name) is being deinitialized")
    }
}
```

```
var reference1: Person?
var reference2: Person?
var reference3: Person?
```

```
reference1 = Person(name: "John Appleseed")
// Prints "John Appleseed is being initialized"
```

```
reference2 = reference1
reference3 = reference1
```

```
reference1 = nil
reference2 = nil
```

```
reference3 = nil
// Prints "John Appleseed is being deinitialized"
```

ERROR HANDLING

```
do {
    try makeASandwich()
    eatASandwich()
} catch SandwichError.outOfCleanDishes {
    washDishes()
} catch SandwichError.missingIngredients(let ingredients) {
    buyGroceries(ingredients)
}
```

DEBUGGING: ASSERTIONS

```
let age = -3
assert(age >= 0, "A person's age can't be less than zero.")
// This assertion fails because -3 is not >= 0.
```

IOS APP DEVELOPMENT

- Writing Swift
  - Calling CocoaTouch APIs
    - Using the UIKit Framework

ACTUALLY, LET'S JUST DO IT TOGETHER

TO SUM IT ALL UP

for Apple and the Rest of Us