Introduction to iOS Development

Session 101

Alex Telek
Clarence Ji
KCL Tech iOS Engineers

What You Will Learn

What You Will Learn

iOS 9

What You Will Learn

iOS 9

watchOS 2

What You Will Learn

iOS 9

watchOS 2

tvOS 9

What You Will Learn

iOS 9

OS X 10.11

watchOS 2

tvOS 9

What You Will Learn

iOS 9

OS X 10.11

watchOS 2

tvOS 9

Swift 2.0

What You Will Learn

iOS 9

OS X 10.11

watchOS 2

tvOS 9

Swift 2.0

Xcode 7

iOS Sessions

iOS Sessions

Every week - Tuesday @ 6:30pm, JCMB B.16

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Start with basics (iOS, OS X, watchOS, tvOS, Swift, Xcode)

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UI

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UI

Custom Views and Animations

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Custom Views and Animations

Concurrency and Multithreading

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Custom Views and Animations

Concurrency and Multithreading

3D Touch

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UI

Custom Views and Animations

Concurrency and Multithreading

3D Touch

Foundation, UIKit, CoreLocation, CoreImage, CoreData, MapKit, CloudKit, WatchConnectivity, ClockKit….

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Custom Views and Animations

Concurrency and Multithreading

3D Touch

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Quickly becomes challenging

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Quickly becomes challenging

Learn by doing, not by listening!

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Custom Views and Animations

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3D Touch

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Quickly becomes challenging

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Slack #ios-programming

WWDC16

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World Wide Developer Conference in San Francisco

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300 Student Scholarship Recipients

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1. Create an App (Developer Account)
  - Development Projects
  - Educational background
  - Professional background
  - Technical skills
  - Interest

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1. Create an App (Developer Account)
   - Development Projects
   - Educational background
   - Professional background
   - Technical skills
   - Interest

2. Judging
   - Technical accomplishment
   - Creativity of ideas expressed in the app
   - Technical/work experience

WWDC16

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1. Create an App (Developer Account)
   - Development Projects
   - Educational background
   - Professional background
   - Technical skills
   - Interest

2. Judging
   - Technical accomplishment
   - Creativity of ideas expressed in the app
   - Technical/work experience

Deadline: April, 2016

Xcode 7

Xcode 7

Swift 2.0

Xcode 7

Swift 2.0

watchOS 2

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Visual debugging

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Visual debugging

Performance testing

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Visual debugging

Performance testing

UI Testing

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Visual debugging

Performance testing

UI Testing

Code Coverage

Xcode 7

Swift 2.0

watchOS 2

tvOS 9

OS X

Live design

Visual debugging

Performance testing

UI Testing

Code Coverage

Address Sanitizer

iOS 9

iOS 9

3D Touch

iOS 9

3D Touch

Slide Over

iOS 9

3D Touch

Slide Over

Split View

iOS 9

3D Touch

Slide Over

Split View

Picture in Picture

iOS 9

3D Touch

Slide Over

Split View

Picture in Picture

App Thinning

iOS 9

3D Touch

Slide Over

Split View

Picture in Picture

App Thinning

Safari View Controller

iOS 9

3D Touch

Slide Over

Split View

Picture in Picture

App Thinning

Safari View Controller

Search API

watchOS 2

watchOS 2

Digital Crown

watchOS 2

Digital Crown

Audio

watchOS 2

Digital Crown

Audio

Animation APIs

watchOS 2

Digital Crown

Audio

Animation APIs

Taptic Engine

watchOS 2

Digital Crown

Audio

Animation APIs

Taptic Engine

Core Motion

watchOS 2

Digital Crown

Audio

Animation APIs

Taptic Engine

Core Motion

ClockKit

watchOS 2

- Digital Crown
- Audio
- Animation APIs
- Taptic Engine
- Core Motion
- ClockKit
- Time Travel

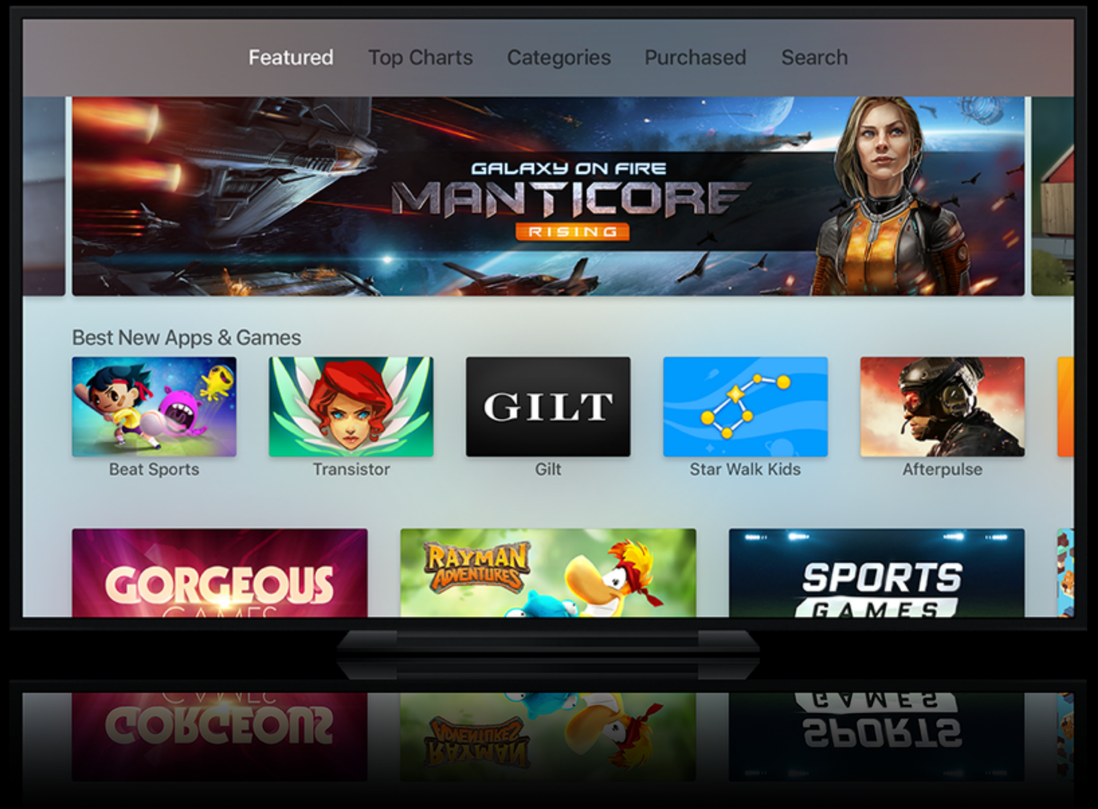
watchOS 2

- Digital Crown
- Audio
- Animation APIs
- Taptic Engine
- Core Motion
- ClockKit
- Time Travel
- WatchConnectivity

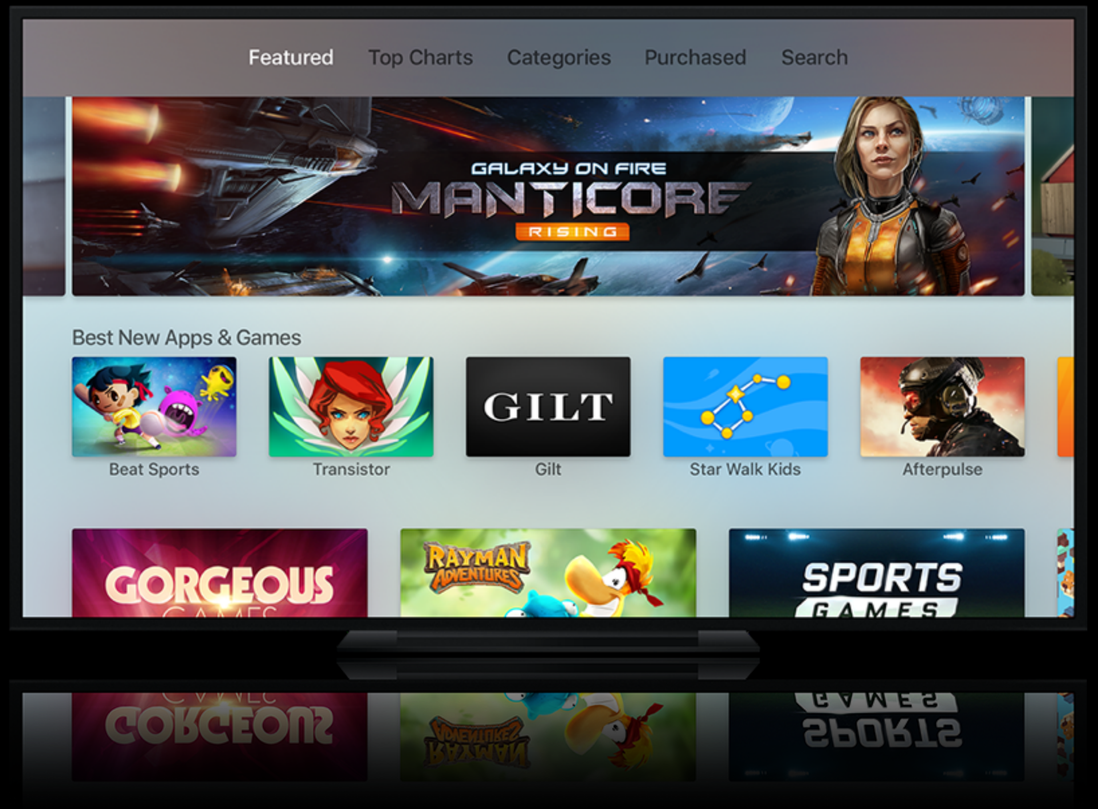
watchOS 2

- Digital Crown
- Audio
- Animation APIs
- Taptic Engine
- Core Motion
- ClockKit
- Time Travel
- WatchConnectivity
- NSURLSession

tvOS

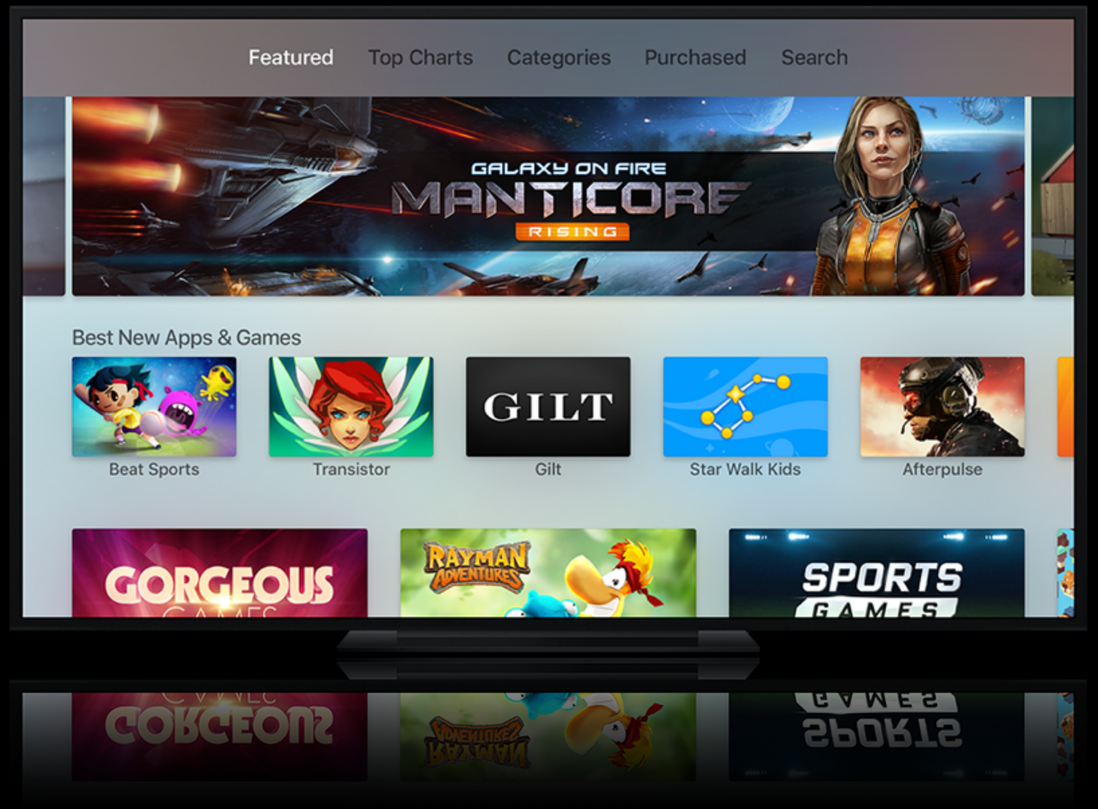


tvOS



Most Frameworks

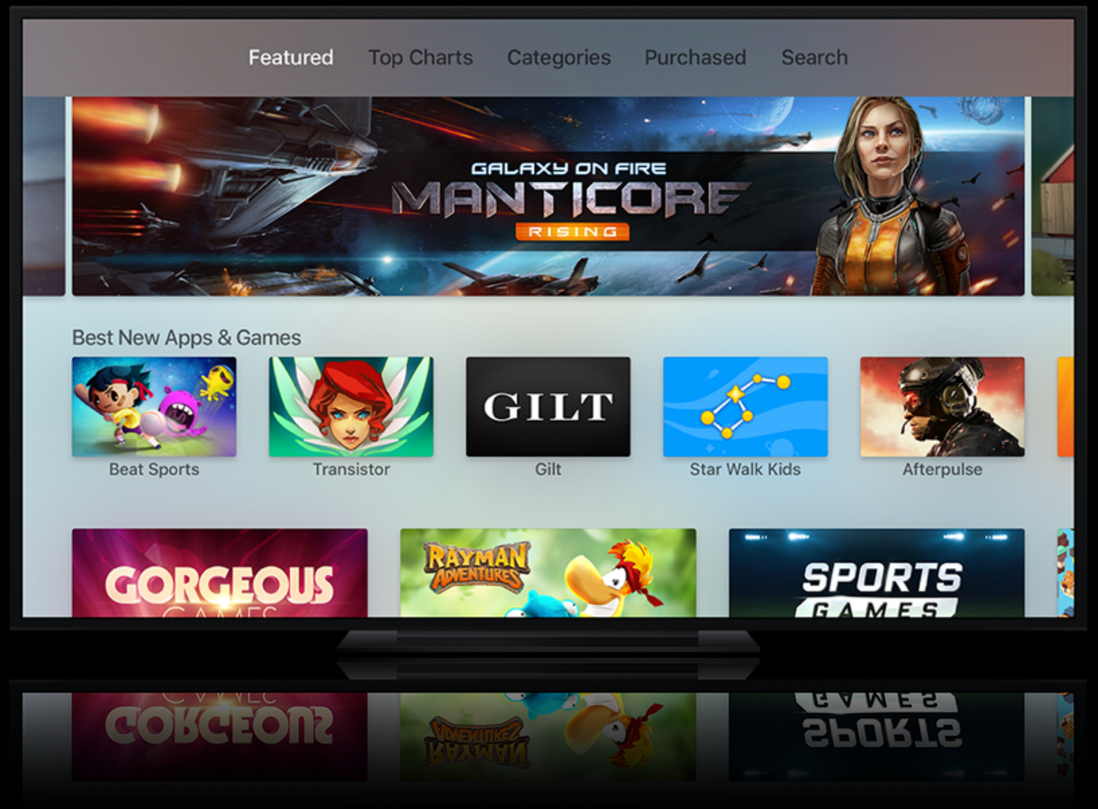
tvOS



Most Frameworks

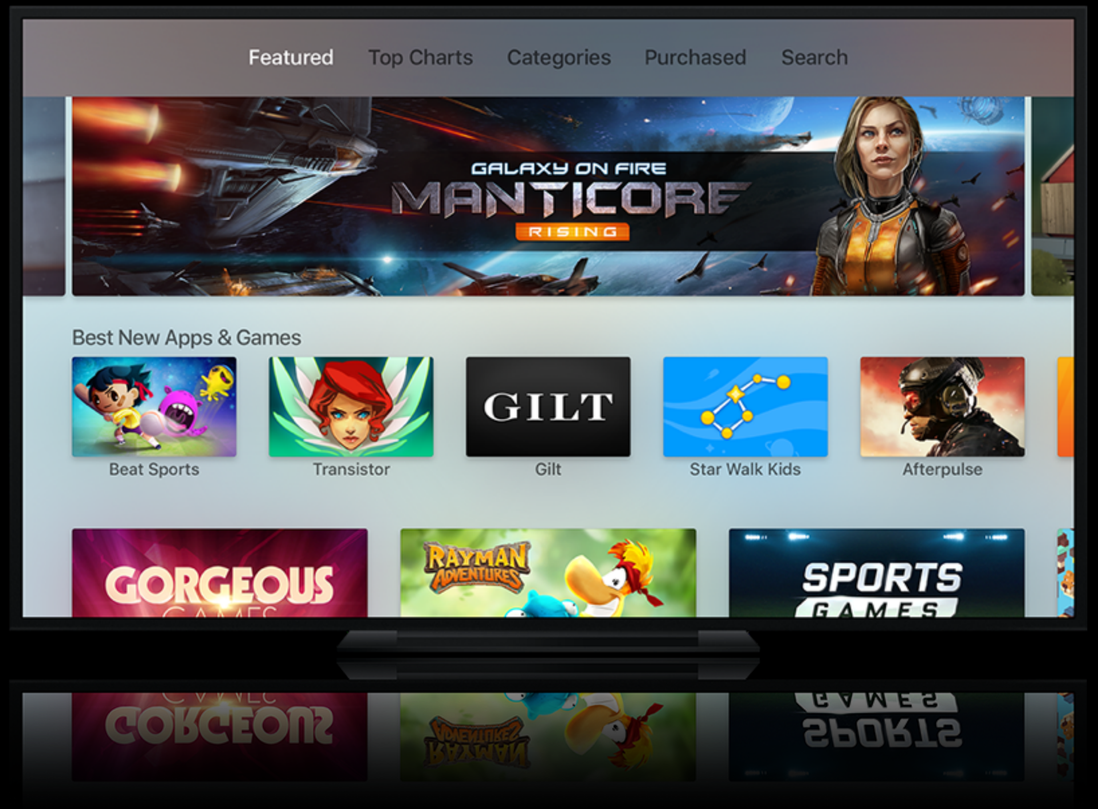
Javascript + TVML

tvOS



- Most Frameworks
- Javascript + TVML
- Remote

tvOS



- Most Frameworks
- Javascript + TVML
- Remote
- Siri

Demo

Xcode 7

Swift 2.0

Swift 2.0

Swift 2.0

Swift 2.0

```c
#include <stdio.h>

int main()
{
  printf("Hello, KCL Tech\n");
  return 0;
}
```

```
print(“Hello, KCL Tech”)
```

Variables

Variables

```
var languageName: String = “Swift”
```

Constants and Variables

```
let languageName: String = “Swift”
```

Constants and Variables

SAFE

```
let languageName: String = “Swift”
```

Constants and Variables

SAFE

```
let languageName: String = “Swift”
var version: Double = 1.0
```

Constants and Variables

SAFE

```
let languageName: String = “Swift”
var version: Double = 1.0
var introducedIn: Int = 2014
```

Constants and Variables

SAFE

```
let languageName: String = “Swift”
var version: Double = 1.0
var introducedIn: Int = 2014
var isAwesome: Bool = true
```

Constants and Variables

SAFE

```
let languageName: String = “Swift”
var version: Double = 1.0
let introducedIn: Int = 2014
let isAwesome: Bool = true
```

Type Inference

SAFE

```
let languageName: String = “Swift”
var version: Double = 1.0
let introducedIn: Int = 2014
let isAwesome: Bool = true
```

Type Inference

SAFE

```
let languageName = “Swift”
var version = 1.0
let introducedIn = 2014
let isAwesome = true
```

Unicode Names

```
let languageName = “Swift”
var version = 1.0
let introducedIn = 2014
let isAwesome = true
```

Unicode Names

```
let languageName = “Swift”
var version = 1.0
let introducedIn = 2014
let isAwesome = true
let π = 3.14159265
```

Unicode Names

```
let languageName = “Swift”
var version = 1.0
let introducedIn = 2014
let isAwesome = true
let π = 3.14159265
let 🐶🐮 = “dogcow”
```

Combining Strings and Characters

Combining Strings and Characters

```
let dog = “dog”
```

Combining Strings and Characters

```
let dog = “dog”
let cow = “cow”
```

Combining Strings and Characters

```
let dog = “dog”
let cow = “cow”
let dogCow = dog + cow
// dogCow is “dogcow”
```

Building Complex Strings

POWER

Building Complex Strings

POWER

```
let a = 3
let b = 5

// “3 times 5 is 15”
```

Building Complex Strings

POWER

```
let a = 3
let b = 5

// “3 times 5 is 15”

let result = “\(a) times \(b) is \(a * b)”
```

String Mutability

String Mutability

```
var variableString = “Horse”
```

String Mutability

```
var variableString = “Horse”
variableString += “ and carriage”
//variableString is now “Horse and carriage”
```

String Mutability

```
var variableString = “Horse”
variableString += “ and carriage”
//variableString is now “Horse and carriage”

let constantString = “Horse”
```

String Mutability

```
var variableString = “Horse”
variableString += “ and carriage”
//variableString is now “Horse and carriage”

let constantString = “Horse”
constantString += “ and carriage”
//error
```

Array and Dictionary

```
var names = [“Anna”, “Brian”, “Jack”]
```

```
var numberOfLegs = [“ant”: 6, “snake”: 0]
```

Typed Collections

```
var names = [“Anna”, “Brian”, “Jack”]
```

Typed Collections

```
var names = [“Anna”, “Brian”, “Jack”, 42]
```

Typed Collections

```
var names = [“Anna”, “Brian”, “Jack”, true]
```

Typed Collections

```
var names: Int[] = [“Anna”, “Brian”, “Jack”]
```

```
var ages = Int[]()
let values = Int[](count: 5, repeatedValue: 1)
```

Typed Collections

SAFE

Typed Collections

SAFE

```
var names = [“Anna”, “Brian”, “Jack”]
// an array of String values
```

Typed Collections

SAFE

```
var names = [“Anna”, “Brian”, “Jack”]
// an array of String values
```

```
var numberOfLegs = [“ant”: 6, “snake”: 0]
// a Dictionary with String keys and Int values
```

Loops

Loops

```
while hungry {
  eatCake()
}
```

Loops

```
while hungry {
  eatCake()
}
```

```
for var i = 0; i < 10; i++ {
  eat(i)
}
```

Loops

```
while hungry {
  eatCake()
}
```

```
var index = 0
repeat {
  index++
} while index < 5
```

```
for var i = 0; i < 10; i++ {
  eat(i)
}
```

For-In: Strings and Characters

POWER

For-In: Strings and Characters


```
for character in "🐭🐭🐭🐭🐭" {
  print(character)
}
```

For-In: Strings and Characters

POWER

```
for character in "🐭🐭🐭🐭🐭" {
  print(character)
}
```

```
🐭
🐭
🐭
🐭
🐭
```

For-In: Ranges

POWER

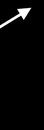
For-In: Ranges

POWER

```
for number in 1…5 {
  print(“\(number) times 4 is \(number*4)”)
}
```

For-In: Ranges

POWER



```
for number in 1…5 {
  print(“\(number) times 4 is \(number*4)”)
}
```

For-In: Ranges

POWER

1..<5

```
for number in 1…5 {
  print(“\(number) times 4 is \(number*4)”)
}
```

For-In: Ranges

POWER

1..<5

```
for number in 1…5 {
  print(“\(number) times 4 is \(number*4)”)
}
```

```
1 times 4 is 4
2 times 4 is 8
3 times 4 is 12
4 times 4 is 16
5 times 4 is 20
```

For-In: Arrays

POWER

For-In: Arrays

POWER

```
for name in [“Anna”, “Brian”, “Jack”] {
  print(“Hello, \(name)!”)
}
```

For-In: Arrays

POWER

```
for name in [“Anna”, “Brian”, “Jack”] {
  print(“Hello, \(name)!”)
}
```

```
Hello, Anna!
Hello, Brian!
Hello, Jack!
```

For-In: Dictionaries

POWER

For-In: Dictionaries


```
var numberOfLegs = [“ant”: 6, “snake”: 0, “cheetah”: 4]
```

For-In: Dictionaries


```
var numberOfLegs = [“ant”: 6, “snake”: 0, “cheetah”: 4]

for (animal, leg) in numberOfLegs {
  print(“\(animal)s have \(leg) legs”)
}
```

For-In: Dictionaries

POWER

```
var numberOfLegs = [“ant”: 6, “snake”: 0, “cheetah”: 4]

for (animal, leg) in numberOfLegs {
  print(“\(animal)s have \(leg) legs”)
}
```

```
ants have 6 legs
snakes have 0 legs
cheetahs have 4 legs
```

If Statements

If Statements

```
if legCount == 0 {

  print(“It slides”)

} else {

  print(“It walks”)
}
```

More Complex If Statements

More Complex If Statements

```
if legCount == 0 {

  print(“It slides”)

} else if legCount == 1 {

  print(“It hops”)

} else {

  print(“It walks”)
}
```

Switch

Switch

```
switch legCount {
  case 0:
    print(“It slides”)

  case 1:
    print(“It slides”)

  default:
    print(“It slides”)
}
```

Switch

Switch

```
switch legCount {
  case 0:
    print(“It slides”)

  case 1,3,5,7,9:
    print(“It hops”)

  case 2,4,6,8,10:
    print(“It walks”)

  default:
    print(“No idea”)
}
```

Switch

Switch

```
switch textField {
  case userNameTextField:
    print(“You tapped the username text field”)

  case passwordTextField:
    print(“You tapped the password text field”)

  default:
    print(“You tapped some other object”)
}
```

Switch

Switch

```
let point = (1, -1)

switch point {
  case let (x, y) where x == y:
    print(“x equals with y”)

  case let (x, y) where x == -y:
    print(“x is the abs of y”)

  case let (x, y):
    print(“x and y are two coordinates”)
}
```

Functions

Functions

```
func sayHello() {
  print(“Hello!”)
}
```

Functions

```
func sayHello() {
  print(“Hello!”)
}

sayHello()
```

Functions

```
func sayHello() {
  print(“Hello!”)
}

sayHello()
```

```
Hello
```

Functions with Parameters

Functions with Parameters

```
func sayHello(name: String) {
  print(“Hello \(name)!”)
}
```

Functions with Parameters

```
func sayHello(name: String) {
  print(“Hello \(name)!”)
}

sayHello(“WWDC”)
```

Functions with Parameters

```
func sayHello(name: String) {
  print(“Hello \(name)!”)
}

sayHello(“WWDC”)
```

```
Hello, WWDC!
```

Functions with Parameters

Functions with Parameters

```
func sayHello(name: String, age: Int) {
  print(“Hello \(name), \(age)!”)
}
```

Functions with Parameters

```
func sayHello(name: String, age: Int) {
  print(“Hello \(name), \(age)!”)
}

sayHello(“Alex”, age: 21)
```

Functions with Parameters

```
func sayHello(name: String, age: Int) {
  print(“Hello \(name), \(age)!”)
}

sayHello(“Alex”, age: 21)


func sayHello(name: String, _ age: Int) {
  print(“Hello \(name), \(age)!”)
}
```

Functions with Parameters

```
func sayHello(name: String, age: Int) {
  print(“Hello \(name), \(age)!”)
}

sayHello(“Alex”, age: 21)


func sayHello(name: String, _ age: Int) {
  print(“Hello \(name), \(age)!”)
}

sayHello(“Alex”, 21)
```

Functions with Parameters

Functions with Parameters

```
func addListOfParams(params: String…) {
  // Do something with params
}
```

Functions with Parameters

```
func addListOfParams(params: String…) {
  // Do something with params
}

addListOfParams(“Name”, “Alex”, “Age”, “21”)
```

Returning Values

Returning Values

```
func sayHello(name: String) -> String {
  return “Hello ” + name
}
```

Returning Values

```
func sayHello(name: String) -> String {
  return “Hello ” + name
}

let greeting = sayHello(“WWDC”)
```

Returning Values

```
func sayHello(name: String) -> String {
  return “Hello ” + name
}

let greeting = sayHello(“WWDC”)

println(greeting)
```

Returning Values

```
func sayHello(name: String) -> String {
  return “Hello ” + name
}

let greeting = sayHello(“WWDC”)

println(greeting)
```

```
Hello, WWDC
```

Returning Multiple Values

MODERN

Returning Multiple Values

MODERN

```
func refreshWebPage() -> (Int, String) {
  //…try to refresh…

  return (200, “Success”)
}
```

Functions in General

Functions in General

```
func functionName(variableName: ParamType) -> ReturnType {
  return Variable as ReturnType
}
```

Demo

Swift in Playground

KCL TECH SOCIETY