COURSE SYLLABUS

App Development Summer Camp NYC (High School)

In this 2-week hands-on course, students will build several apps, including two in the very first week! Students move from programming basics to complex app development concepts including software integration, user interface design, and data analysis.

> Group classes (NYC) and onsite training are available for this course. For more information, email hello@nextgenbootcamp.com or visit: https://www.nextgenbootcamp.com/classes/app-development-summer-camp



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Course Outline

Week 1

Introduction to Tools of the Course

- Xcode
- iOS
- Swift

Hello World App

Roll The Dice App

The Swift Programming Language

- The Swift Playground
- Comments
- The print() function

Variables

- Variables
- Constants
- Data types
- Optionals
- Type inference

Conditional Statements & Operators

- The if statement
- The else statement
- The else if statement

- Comparison operators
- Arithmetic operators
- Logical operators

Strings

- Literals
- Mutable strings
- Comparing strings
- Concatenating strings

Week 2

Tip Calculator App

Functions

- Functions with parameters
- Functions with returned values

Optional Unwrapping

- Forced optional unwrapping
- Implicitly unwrapped optionals
- Optional binding

Loops

- For loops
- While loops
- For in loops
- Iterating over arrays

Creating a Class

- Object-oriented programming
- Objects & classes
- Methods
- Properties

Methods

- Methods with parameters
- Methods with return values

Structs

- Creating a struct
- Accessing a struct

Inheritance

- Creating a subclass
- Method overriding

Extensions

- Extending existing classes
- Using extensions

Protocol & Delegates

- Defining & implementing protocol
- Delegate design pattern
- Implementing & using delegates

Closures

- Defining a closure
- Closures with parameters
- Closures with returned values
- Closures as callbacks

Week 3

ENUMS

Creating & using enumerations

Type Casting

- Type checking
- Type casting
- Downcasting

Tuples

Creating & using tuples

Type aliases

Creating & using type aliases

ARC

- Strong & weak references
- Avoiding strong reference cycles

Card War App

- Importing the images
- Adding the button that draws the cards
- Labeling the deck & each player’s score
- Adding constraints to our labels
- Adding a button to restart the game & constraining it
- Adding & constraining the background image

Week 4

Auto Layout

- Stacks
- Nested Stacks
- Downcasting
- Constraints
- Content Hugging Priority
- Compression Resistance Priority

Card War: The Data Model & Linking the UI to Code

- Connecting the UI to the View Controller
- Modeling a single card by adding a Card class
- Modeling all the cards by adding a Deck class
- Adding the shuffle functionality

Card War: Adding Variables to the View Controller

- Declaring variables
- Responding to changes in a variable's value using the didSet property observer
- Starting with the drawingCards function

Card War: Displaying the Cards & Score

- Creating the UIImageViews that will hold the cards
- Setting the size & position of the cards that are drawn
- Revealing the cards & updating the winner's score
- Defining what happens when the game is restarted

Card War: Animating the Cards

- Animating the cards' move from the deck button to their respective positions
- Revealing the cards' values after they are done moving
- Revealing the cards' values with a flipping transition
- Incorporating the final code into the animation

Week 5

Building the Lists App

Previewing on iPhone without Developer Account

Establishing an Apple Developer Account

- Creating an Apple Developer Account
- Registering your device to run apps directly from Xcode

Lists: UI with Two View Controllers That Display Table Cells

- Creating files for a dual View Controller app
- Adding a Navigation Controller to manage our two views
- Adding UI elements to the first View Controller
- Constraining the UI objects on the first View Controller
- Copying the first View Controller to create the second

Lists: Refining & Beautifying the UI

- Adding images from the designer
- Improving the UI design on our Storyboard screens
- Differentiating the two View Controllers
- Setting View Controller & Table View Cell classes

Outline Your App Idea

Week 6

Building the Lists App, Continued

Lists: The Data Model & Linking the UI to Code

- Cleaning up the View Controller & Table View Cell files
- Connecting both UI screens to their respective files
- Creating List & List Item classes in the data model

Week 7

Weather Forecast App

- Acquiring an API Key
- Using the Weather Underground API
- Reading JSON
- App Transport Security Settings
- Adding Error Messages
- Linking to an Outside Website
- Completion Handlers
- Do... Catch
- Converting Strings into Floats
- Displaying the Keyboard in the Simulator
- Dismissing the Keyboard

Week 8

Met Gallery App Part 1

Met Gallery: Assets, Launch Screen, & Home View Controller

- Creating files for a multiple View Controller app
- Adding assets & using the Assets Catalog
- Creating a launch screen
- The Home View Controller & UI elements
- Adding constraints to the UI elements
- Connecting the View Controller to its code file

Met Gallery: View Controller with a Collection View

- The gallery view controller UI
- Refining the collection view
- Connecting the view controller to its respective files

Met Gallery: The Painting Detail View Controller

- Adding the UI objects to the Painting Detail VC
- Constraining the UI objects
- Adding Swipe & Tap Gesture Recognizers
- Connecting the View Controller to its code file

Final Project: Start Coding!

Week 9

Met Gallery App Part 2

Met Gallery: Full Screen View Controller with a Scroll View

- Creating the full screen painting View Controller
- Setting size classes
- Constraining the scroll view & connecting the code

Met Gallery: Adding a Spinner, Data Model, & Gallery VC

- Adding a Spinner
- Creating the data model
- Adding the Collection View methods

Met Gallery: Painting Detail & Adding Gesture Recognizers

- Loading the painting details
- Refining the Image View
- Making the online reference button functional
- Segueing to the full screen scroll view
- Adding the image to the full screen view
- Implementing the swipe gestures

Work on Final Project

Week 10

- Course Wrap Up
- TestFlight and Submitting to the App Store
- Final Projects
- Final Project Presentations