

# App Development with Swift

Certified User



## Objective Domains

Individuals who earn the App Development with Swift Certified User certification exemplify knowledge of core concepts and practices that Swift programmers use daily and build a basic fluency in Xcode source and UI editors. Students will be able to create iOS apps that adhere to standard practices, including the use of stock UI elements, layout techniques, and common navigation interfaces.

### Xcode Developer Tools

- 1.1 Identify and use the features of the Xcode interface
  - 1.1.1 Navigate Xcode
  - 1.1.2 Create and modify views with Interface Builder
  - 1.1.3 Demonstrate how to access documentation and help
- 1.2 Demonstrate how to build and run an app
  - 1.2.1 on the iOS simulator
  - 1.2.2 on the iOS device
- 1.3 Use debugging techniques to resolve errors
  - 1.3.1 Set breakpoints and step through code line by line
- 1.4 Position and lay out UIKit objects
  - 1.4.1 Use auto layout
  - 1.4.2 Embed objects in stack view
  - 1.4.3 Use alignments and constraints
  - 1.4.4 Navigate UI components via Document Outline
  - 1.4.5 Implement app personality

### Swift Programming Language

- 2.1 Declare and use basic Swift types
  - 2.1.1 Describe and use data types and operators
  - 2.1.2 Demonstrate the use of type casting in both safe and unsafe ways
  - 2.1.3 Demonstrate when to use constants and variables
  - 2.1.4 Interpret and use basic types
- 2.2 Manage data using collection types
  - 2.2.1 Arrays
  - 2.2.2 Dictionaries
- 2.3 Know how and when to apply control flow and loops
  - 2.3.1 Use logical operators
  - 2.3.2 Use Guard
  - 2.3.3 Use range operators
- 2.4 Use functions
  - 2.4.1 Organize and structure code



# App Development with Swift

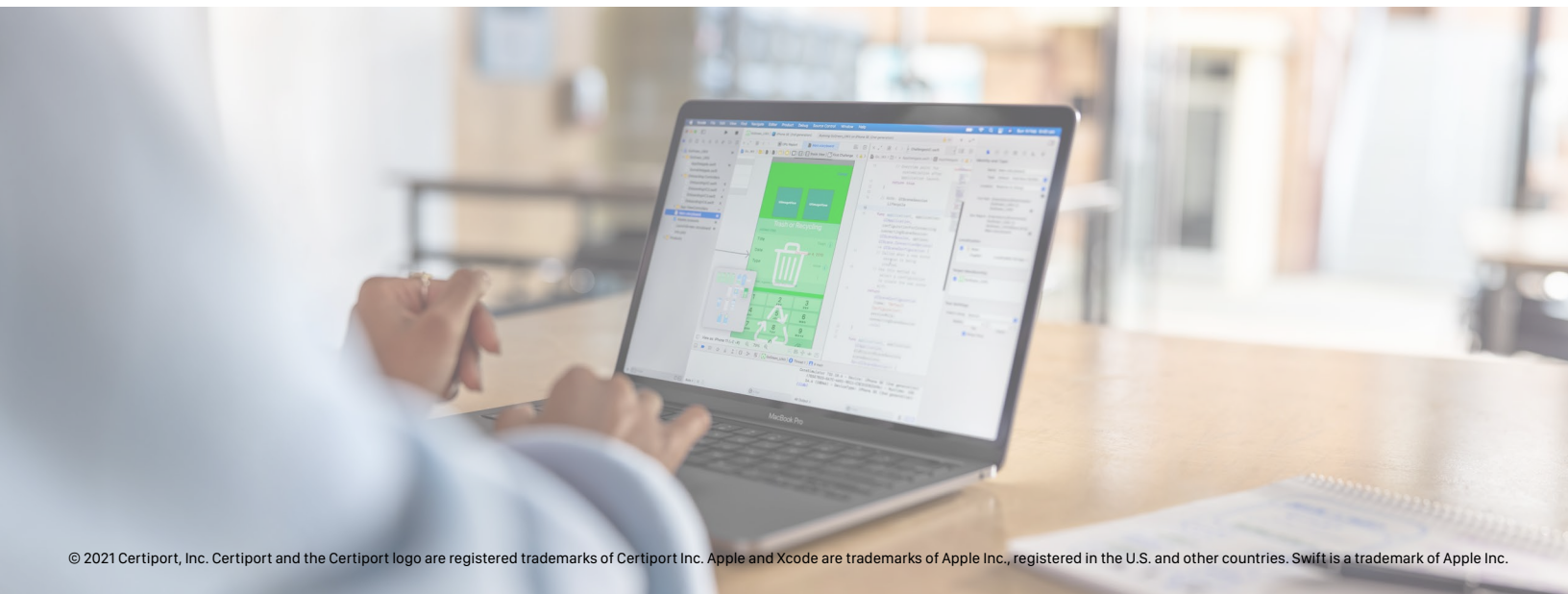
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- 2.4.2 Create and call a function
- 2.4.3 Demonstrate how to use a function's return value
- 2.4.4 Customize internal, external, and anonymous naming of parameters in functions
- 2.4.5 Implement default parameter values
- 2.5 Demonstrate proper use of structs, classes and enums
  - 2.5.1 Define and use properties and methods
  - 2.5.2 Differentiate between structures and classes
  - 2.5.3 Differentiate between various initializers
  - 2.5.4 Define and use property observers
- 2.6 Demonstrate the use of Optional types
  - 2.6.1 Demonstrate how to unwrap Optionals safely
  - 2.6.2 Apply Optional binding and Optional chaining (including but not limited to if let, guard let)
- 2.7 Evaluate variable scope and shadowing

## iOS UIKit

- 3.1 Create view controllers to implement app logic
- 3.2 Describe the view controller lifecycle
- 3.3 Use segues to link view controllers to prepare for, pass data, and unwind segues
  - 3.3.1 Differentiate between types of segues
- 3.4 Create a multi-view app with navigation hierarchy
  - 3.4.1 Create and use Navigation controller
  - 3.4.2 Create and use Tab Bar controller
- 3.5 Create and manipulate UIKit objects
  - 3.5.1 Use common view objects such as labels and image views
  - 3.5.2 Use common controls such as buttons and text views
  - 3.5.3 Demonstrate the use of IBOutlet and IBAction to connect storyboard elements to code



## Exam Objectives for ESB V.2

### Objective Domains

#### 1. Entrepreneurial and Small Business Concepts

##### 1.1 Identify the foundational concepts of entrepreneurship and small business ownership

- 1.1.1 Define entrepreneurship and small business
- 1.1.2 Classify types of businesses
- 1.1.3 Identify various legal structures of a business
- 1.1.4 Identify roles and responsibilities within a business
- 1.1.5 Define business compensation structures
- 1.1.6 Define business life cycle stages
- 1.1.7 Identify elements of the design thinking process

##### 1.2 Identify knowledge and skills of a successful entrepreneur

- 1.2.1 Identify characteristics of an entrepreneurial mindset
- 1.2.2 Identify the risks, benefits, opportunities, and drawbacks of being an entrepreneur

##### 1.3 Recognize potential business opportunities

- 1.3.1 Identify characteristics of a business opportunity
- 1.3.2 Determine the viability of a business opportunity

##### 1.4 Identify the elements of a business plan

- 1.4.1 Identify the purposes and value of a business plan, pitch deck, and lean canvas
- 1.4.2 Define the key components of a business plan and pitch deck

##### 1.5 Identify intellectual property concepts

- 1.5.1 Differentiate between trademarks, trade secrets, copyrights, and patents
- 1.5.2 Identify the value, risks, and guidelines associated with using licensed materials

#### 2. Marketing and Sales

##### 2.1 Interpret market research

- 2.1.1 Define target market, value proposition, and pricing
- 2.1.2 Distinguish between primary and secondary data
- 2.1.3 Evaluate competition
- 2.1.4 Complete a SWOT analysis

##### 2.2 Analyze aspects of marketing processes

- 2.2.1 Identify marketing platforms
- 2.2.2 Apply marketing methods
- 2.2.3 Analyze market reactions and sales data
- 2.2.4 Analyze customer acquisition costs and retention costs
- 2.2.5 Identify elements of a marketing plan

## 2.3 Identify sales channel strategies

- 2.3.1 Identify elements of a sales process
- 2.3.2 Identify key characteristics of digital and physical sales channels
- 2.3.3 Define various types of sales channels
- 2.3.4 Identify the role of customer service and support in sales strategies

## 3. Production and Distribution

### 3.1 Identify the value of a Minimum Viable Product

- 3.1.1 Define elements of product/market fit hypothesis
- 3.1.2 Define performance/quality criteria

### 3.2 Identify supply chain and production processes

- 3.2.1 Identify the knowledge and materials needed to create a product or service
- 3.2.2 Identify production options for digital and physical products and services
- 3.2.3 Identify quality control testing processes for digital and physical products and services, including adherence to government regulatory and safety requirements

### 3.3 Identify distribution channels

- 3.3.1 Identify types and factors in the selection of distribution channels
- 3.3.2 Identify differences between direct distribution and fulfillment services

## 4. Business Financials

### 4.1 Analyze business financials

- 4.1.1 Determine the selling price of a product or service
- 4.1.2 Interpret basic financial statements such as income sheets and balance sheets
- 4.1.3 Differentiate between fixed and variable costs
- 4.1.4 Analyze a company's cash flow
- 4.1.5 Calculate the ROI of a product or service

### 4.2 Analyze funding options

- 4.2.1 Determine operating budget and start-up costs
- 4.2.2 Identify various funding options
- 4.2.3 Identify requirements for obtaining funding

## HTML5 Application Development

### 1. Application Lifecycle Management

#### 1.1 Describe the application lifecycle management stages

- Plan, design, develop, test, deploy, and maintain

#### 1.2 Debug and test web apps

- Input validation errors, runtime errors, breakpoints

### 2. Graphics and Animation

#### 2.1 Use the canvas element to create graphics and animations

- shape, color, line, translate/move, rotate, scale, interactivity

#### 2.2 Use the svg element to create and display graphics

- Advantages, inline vs. referenced XML, shapes, color, SVG filter effects

#### 2.3 Transform, style, and enhance text and graphics

- Graphics effects (rounded corners, shadows, transparency, background gradients, typography, and Web Open Font Format), 2-D and 3-D transformations (translate, scale, rotate, skew, and 3-D perspective transitions and animations), keyframes

#### 2.4 Apply CSS filters to images

- grayscale, blur, sepia, opacity, drop-shadow, saturate

### 3. Forms

#### 3.1 Construct and analyze markup that uses form elements

- datalist, fieldset, meter, legend, output

#### 3.2 Configure input validation

- Validation attributes, pattern attribute for regular expressions, correct data type, length, required value

### 4. Layouts

#### 4.1 Manage content layout, positioning, and flow by using CSS

- Content flow (inline vs. block flow), positioning of individual elements (float vs. absolute positioning), content overflow (scrolling, visible, and hidden), basic CSS styling

#### 4.2 Construct layouts by using responsive design

- grid view, background-size, images, picture, viewport, responsive width, media queries

#### 4.3 Construct flexible responsive layouts by using CSS flexbox

- flex container (flex-direction, flex-flow, flex-wrap), flex items (flex-basis, flex-grow, flex-shrink, order, flex)

#### 4.4 Construct grid-based layouts by using CSS grid

- container, items, templates, gap

# IT SPECIALIST EXAM OBJECTIVES

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## 5. JavaScript Coding

### 5.1 Create and use custom classes

- Instantiation, properties, methods, inheritance

### 5.2 Perform data access by using JavaScript

- Send and receive data, transmit and parse complex objects, load and save files, XML, JSON

### 5.3 Construct code that responds to events by using event listeners and handlers

- Gesture events, handling multiple events, Event object, bubbling vs. cascading

### 5.4 Construct code that uses JavaScript APIs

- Google Charts, jQuery, Geolocation

### 5.5 Manage the state of an application

- Session state vs. app state, where to store state (local vs. session storage)



INFORMATION  
**TECHNOLOGY**  
SPECIALIST