

Course code: **IOS/SWIFT**

Course title: **Programming in Swift language on the iOS platform**

Days: 5

## Description:

### Course intended for:

The training is intended for programmers, who want to learn the basics of Swift language. Due to the diversified level of difficulty of individual tasks, the training is well suited for trainees, who have never worked with iOS SDK and for those, who are familiar with the basics, such as knowledge of the UIKit framework or CoreData.

The curriculum includes the issues of development of mobile applications for the iOS platform in Swift language. It will encompass not only the basic topics, but also those, which are used in many applications and are difficult to learn on one's own.

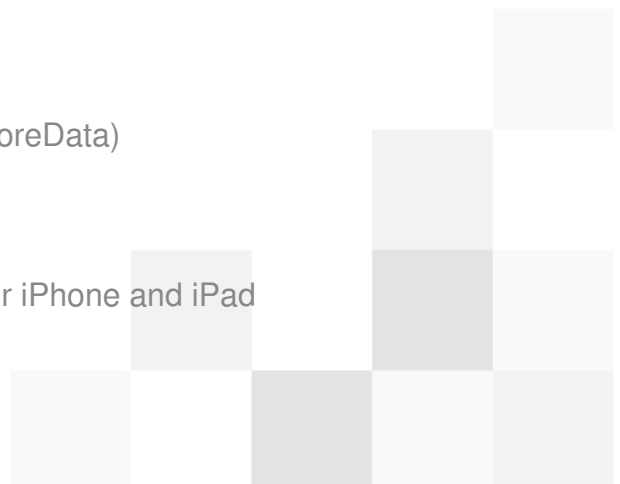
### Course objective:

The training objective is to get the users familiar with the iOS platform and the requirements of Apple company, associated with development of iPhone, iPod Touch and iPad applications. The training curriculum assumes development of several practical applications, which will be available in the AppStore.

During a 5-day course, the participants will learn the basics of Swift language and the Apple developer environment (Xcode IDE), the popular patterns used in the iOS platform, and they will get a broad review of several frameworks available.

### Course strengths:

- The most recent version of iOS SDK
- Application development based on TDD approach
- Working with the REST API server
- Using of the local database in ORM style (CoreData)
- Building of multi-thread applications
- Development of multi-language interfaces for iPhone and iPad



## Requirements:

The training participants are required to have the basic skills in object-oriented programming, including understanding of such concepts as a variable, loops, indicators, classes and objects.

## Course parameters:

5\*8 hours (5\*7 net hours) of lectures and workshops (the latter constituting 80% of the training).

During the training, applications are developed from the start, which use the most frequently encountered frameworks of the popular iOS applications.

## Course curriculum:

1. Swift language programming
  - I. Introduction
  - II. Basic Operators
  - III. Strings
  - IV. Collections
  - V. conditional instructions
  - VI. functions
  - VII. Closures
  - VIII. Enumerations
  - IX. classes and structures
  - X. Properties
  - XI. Methods
  - XII. Subscripts
  - XIII. Inheritance



XIV. initialization of objects

XV. deinitialization

XVI. Automatic Reference Counting

XVII. Optional Chaining

XVIII. Type conversion

XIX. Nested Types

XX. Extensions

XXI. Protocols

XXII. Generics

## 2. Swift Standard Library Reference

### I. Data types

String

Array

Dictionary

Numeric Types

### II. Protocols

Equatable

Comparable

Printable

### III. Functions

Printing

Algorithms

## 3. Using of Swift, Cocoa and Objective-C



- I. Interoperability
  - II. Mix and Match
  - III. Migration
4. Basics of functional programming in Swift language
  5. iOS application testing
    - I. Introduction to XCTest
    - II. Available assertions
    - III. asynchronous tests
    - IV. capacity tests
    - V. object simulation (Mocking)
    - VI. Patterns and best practices
    - VII. Basics of UIAutomation
  6. View and navigation between views in iOS

\* Building and application structure\* Discussing of NSBundle\* .swift, .h, .m, .xib, .nib, .plist files\* Development of objects in Interface Builder\* The Model-View-Controller paradigm in iOS SDK\* Presentation of IBAction and IBOutlet\* Working with Storyboards\* Interface building using AutoLayout\* Interface building for iPhone 4/4s and iPhone 5/5c/5s\* Interface building for iPhone 6 and iPhone 6 Plus\* Interface building for iPad and iPad mini\* Development of universal applications\* preparation of multi-language applications\* translation of texts and graphics\* translation using Base Internationalization

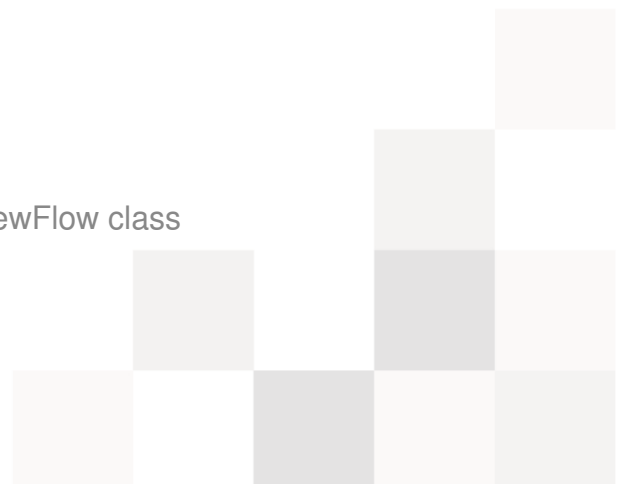
## I. UICollectionView

Introduction

Data display on the grid

Discussing of UICollectionViewFlowLayout class

Development of own styles



CollectionViewAnimations

CustomCollectionViewTransition

Discussing of UIViewControllerContextTransitioning protocol

## II. Concurrent programming

Thread development and handling in iOS

Blocks – introduction to anonymous functions

Methods of asynchronous code performance

Development of blocks and memory allocation

Memory management and ways to avoid a Strong Retain Cycle

Introduction to Grand Central Dispatch (GCD)

Synchronous queues

Asynchronous queues

Defining of operations for performance of tasks

analogies to manual thread management

Discussing of NSOperationQueue and NSOperation classes

Proper use of the NSBlockOperation class

NSOperation subclasses with the possibility of interruption

concurrent operation performance

## III. Data downloading

Discussing of NSURL, NSURLRequest and NSURLConnection classes

Discussing of NSURLConnectionDelegate protocol

Presentation of the NSURLSession class

Collection of data using NSURLConnection and completionBlock

Sending of POST/PUT/DELETE requests

working with Alamofire library

debugging of Internet connections

#### IV. Storing of information in the database

Introduction to CoreData

CRUD methods

development of subclasses for objects

creation of links between objects

object expansion using categories

importing and exporting of large quantities of data

generating of exemplary data

#### V. Searching for data

Introduction of the NSPredicate class

combining and sorting of queries

Presentation of the NSFetchedResultsController protocol

Optimization for very large sets of data

Introduction to changes in database structure (Schema edition)

Conducting of automatic migrations

development of many contexts using the Parent-Child paradigm

Discussing of popular CoreDataStack solutions

Problem solving

