

## iOS Frequently Asked Questions

In preparation for interviews, we'd like you to complete this questionnaire which includes some of the most frequently asked questions that come up during interviews.

**If you are in training:** All questions should be **completed by graduation** (end of your training). If there are any questions you can't complete, please address this with your CDM and tech trainer – however, it is up to you to ensure you're actively doing the necessary to find the answers with use case.

**If you are in marketing:** All questions should be completed by specified time this assignment is given to you. This is being given to you as a resource to help you win interviews. The level of efforts you place in this are paramount.

Do not copy and paste from online.

### Great resources:

- [Stackoverflow.com](https://stackoverflow.com)
- [Developer.apple.com](https://developer.apple.com)
- To practice coding:
  - [Hackerrank.com](https://hackerrank.com)
  - [Codility.com](https://codility.com)

### Technical Concepts:

- What security measures/tools/solutions have you worked with, in what project, and how?
- How do you differentiate the account between a user using TouchID for one user and another one without? Also, what challenges can you face in this?  
**You use the LocalAuthentication library, with this you can check if the device can do touchId or faceId identification. The challenge here is consider how to handle the different outcomes, and that for security reasons you don't have access to the data, you only know if login was successful**
- Can you differentiate if the TouchID is of one user or the other?  
**No, because it's sensible data, developers can't have access to that info, the only info is success or failure of the authentication**
- Talk about your experience with key chain.  
**Key chain is a little complicated to implement but there are libraries that facilitate the use of key chain. It's important to save important data, because it has some security, and UserDefaults doesn't have any.**
- What are the best practices to encrypting a key?
- What is encryption?  
**It's the process of encoding information so that only an entity with a decryption key or authorization have access to the information**

- What is obfuscation?

The act of creating source or machine code that is difficult to understand in order to prevent tampering or reverse engineering

- What is SSL?

Secure Sockets Layer, a standard security protocol that encrypts information sent between a web server and the browser in an online communication

- What are tokens in relation to security?

It's a chain of characters that works as a key to encrypt or decrypt information

- What is certificate pinning in relation to security.

Small data files that identifies a website and contains a cryptographic key to start an encrypted link between the web server and the browser

- How do you install bluetooth in an app and talk about experience with this in a project.

- How do you install location, Core Location capabilities in an app and talk about experience with this in a project.

Core Location like LocalAuthentication is inside swift libraries, and also needs to verify device capabilities and permissions. If the device can give location and the app has the permission, you can get updates from where the device is, and the direction is facing, with that location you can compare to other locations and get distance or other information. You can complement this with GeoLocator, using the coordinates of the location, geoLocator can give the information of nearest placemarkers, cities, etc.

- How do you install in-app pay capability in an app, and talk about experience with this in a project.

- How do you install mapping and MapKit capability in a project, and talk about experience with this in a project.

- What is TDD?

Test Driven Development, is a development methodology that focus on first design and implement the tests of the system. This is done in order to translate requirements into test and understand the functionality of the system, see progress of the system in terms of % of tests passed, and finally everytime there is a change in the project you ensure that the other parts of the system are still working.

- What's the value of TDD?

First it helps to have an understanding of what is the goal of the system, second because the system is doing test often, everytime there are changes you ensure that the other parts of the system are still functioning.

- How does TDD work and what's the process?

TDD works by defining the end result capabilities of the system and constantly test to see if they are covered. For this you need to first design the test that cover the entire needs of the system, and then develop the system to pass this tests

- What is your experience with TDD on a project?

TDD done the right way can give you a % of how much work is done and gives you clear software requirements translated into the tests

- What is your experience with pull requests for code reviews?

- How do pull requests work?

- What do you look for in sound code?

- What is your experience with code coverage percent and what is it and why is it valuable?  
It's the percent of code that is checked through different tests, UnitTest, Test cases, user stories
- What is your experience with paired programming what is it and why is it valuable?  
Pair programming is useful to avoid simple bugs, have someone to discuss design, and boost new developers to understand quicker the project.
- What is your experience with unit testing and what tools have you use other than XCTest?
- What is your experience with UI-Automated testing and what tools have you used?
- Talk about Appium, its use, and why it's a useful tool.
- Talk about Calabash, its use, and why it's a useful tool.
- What are retain cycles and how to avoid retain cycles?  
Retain cycles happen when two or more classes reference each other, and when the ARM tries to liberate the memory, it never does it because it can destroy the reference
- How do you manage memory in iOS – and what tools are available to do such?  
iOS uses the ARM, Automatic reference counting
- How do you proactively avoid issues in the first place with the app (bugs, memory, battery)?  
Doing a good design before coding
- Describe a time you faced a challenge in memory management, what you found, and how you handled it.
- How do you make sure your app is optimized, overall?
- What steps do you take to debug a crash?
- What is actually shown to you in crash logs – what information?
- What is the different between Crashlytics crash logs and iTunes Connect crash logs?
- How do you install Crashlytics?
- Talk about your experience in making network calls? What tools did you use?
- What do you have to consider with security in making network calls?
- What are the Apple Human Interface Guidelines and what's your experience with them? What are they important? How have they informed what native iOS users have grown to expect in their UI/UX experience?
- Talk about AR (augmented reality) in relation to your experience. If no experience in it, how would it at least be implemented and what are some uses you can think of for it in an app and for the end user?  
You can use the ARKit, augmented reality kit for iOS applications, you can have an app to do treasure hunting in x place, you can have users searching using their phone and while they search they may encounter with discrete advertising and clues to find the treasure
- Talk about WatchKit in relation to your experience. If no experience in it, how would it at least be implemented and what are some uses you can think of for it in an app and for the end user?
- Talk about media streaming solutions experience.
- How you populate a pickerview with an API call?
- How you send a message to an API?

- Describe the process to publishing one app into the app store.
- What is Test Flight and other tools that do the same function (to create beta builds) and how can you relate it to your resume/project?  
On one end Test Flight helps you send beta invitations to check an app build you have uploaded to apple before send that version to aprovation. On the other end it let you download those beta builds so you can test and send information of crashes or other records.
- Do you have any experience deploying applications with an Enterprise account?
- Describe Apple Push Notifications work flow and how do you relate this to your profile?
- In Apple Push Notifications - what is the payload size?
- What is a silent push notification and when would it be good for an app to employ this.
- Talk about what iBeacons are, how they work, how to implement, and the value of using them.
- Talk about geofencing, how it works, how to implement, and a use case of why a dev would want to implement it in an app.  
Geofencing is done to have functions, advertisement or information for specific real life locations, like say, put x advertisement but only for people of x state
- Talk about your experience with storyboards.  
Storyboards in general give an idea of the flow of the application. in Swift/xcode it's the interfaces and flow of the application.
- Talk about your experience with different size classes and autolayout.
- If you change the frame of the view at runtime and you're using AutoLayout what happens at runtime if you modify it programmatically?  
The element resets to its original position
- How do you go about building out the UI, generally?  
For best practice, it's better to do all UI related with the editor and not doing trough code.
- How do you manage view hierarchy on the UI?  
UIView ->UIfirstResponder ->
- What is a custom view?  
An extension of the UIView to add stuff you need
- What is an IBDesignable?  
IB(Interface Builder) it's an UI Custom element that is design in code
- What is an IBOutlet?  
It's a binded UElement to the code
- What is an IBInspectable?  
This is use to use and show custom attributes in the inspector
- Difference between Storyboard and XIB  
XIB doesn't have a flow, it's only a view, usually for views that most used and accessed in different ways in the app
- When you should use Storyboards?  
When you have a to change views and have a clear path / flow between them
- When you should use XIBs?

When you have a view that is accessed by different parts of an app and you want to reuse it

- How you can achieve multiple inheritance in Swift?  
Swift doesn't have multiple inheritance, but it can have multiple protocols, and those protocols can have extensions, that way depending on what you need, you can use this to represent multiple inheritance
- Talk about the use of bridging headers in Swift.  
Bridging headers help to connect obj-c and swift modules in a project
- Talk about the use of existing swift code on a Obj-C project.
- Which would you choose to code in – Swift or Obj-C and why?  
Swift, you don't need to manage pointers and you have structures instead of only objects
- What does Swift offer over Obj-C?  
It has more support, obj-c is not getting new language features
- What does Obj-C offer over Swift?  
Swift is not ABI stable, Application Binary Stable  
Slower compile time
- How do you perform a migration from Obj-C to Swift?  
By making a slow change, file by file, because they are compatible using bridge headers, you make new features in swift, while changing the legacy code.
- Talk about the difference between overloading vs overriding?
- 
- What is abstraction?  
It's the process of identify common behavior on classes to separate it and reuse it instead of put it in every class
- What is inheritance?  
It's when you have a class that gets its core structure from another
- What is encapsulation?  
It's a concept in object oriented programing, the concept is the use of access modifiers to protect the class and only expose needed functions or information.
- Describe polymorphism.  
A concept in object oriented programming where an object can take many forms, this is done by creating an interface or protocol in swift, that is used for different objects
- Open and Closed principles in swift – describe this, and also give an example of how you can use these principles in your last project.
- Have you worked with the Decorator pattern and also give an example of actually \*when.\*
- What is your most familiar design patterns across these categories: creational, structural, behavioral – gives examples of all three and when you used.
- If you created an app from scratch, which architecture would you use (MVC, MVVM, MVP, Viper) and why?
- What is KVO?
- What is delegation?  
It's a concept where an object or class leaves the work to another object / class
- What is the difference between KVO and Delegation and NSNotification?

Delegation is a 1:1 relations where KVO and NSNotification is a 1:N relation, and between KVO and NSNotification, KVO has multiple objects observing when there is a change, while in NSNotification, the object shouts that there is a change, and other objects responds

- Explain Notifications in terms of a design pattern.
- Give an example of when you'd use the design pattern Notifications in your project.
- Talk about Foundation objects.
- What's the difference in NSSet and NSString?
- How to determine equality between NSObjects, and is native to NSObject class?
- Have you use MRR?

No, it's the old way to allocate and release memory in objective-c where you declare the variable (var), make it persistent (retain) and release it (release)

- What are the states of the app?

Active, Inactive, Background,Suspended, Closed

- If a user is actually using the app and receives a call, what state does the app go into?

Inactive

- What are the latest updates in the latest version of Xcode and when was it released and do you experience any issues with it?
- What are the latest updates in the latest version of Swift and when was it released and do you experience any issues with it?
- What are the latest updates in the latest version of iOS and when was it released and do you experience any issues with it?
- What interests you from the last WWDC (World Wide Dev Conference)?
- What resources do you use to stay up to date in iOS and Apple, generally, and how so?
- What is lightweight migration in CoreData?
- Give an example of lightweight migration you have actually done (in CoreData), and how does it actually work?
- Describe the creation of an app that makes a request to an API which populates a TableView with models created with a JSON, using MVVM.
- Which mechanism would you to safely save a password in the end user's device and why do you chose this mechanism.
  - Sub-Question: Give an example of doing this in a previous project.
- Value Types vs Reference Types – describe the difference, and how are these related to Swift?
- When to use a struct over a class on Swift.

When is an small object or when it doesn't change
- When to use a class over a struct on Swift.

When the object you are using will change often
- What is a mutating function and when you should use it?

It's a function that makes changes in an structure data
- Any vs AnyObject – describe the difference.

Any is used to indicate a variable can be any structure, and AnyObject like it's name its when a variable can be any object
- Can you use AnyObject with enums and arrays?

yes, but you have to cast it as AnyObject

- What is a Swift protocol?

It's the equivalent of java interfaces

- Differences between Obj C protocols and Swift protocols – describe.
- What is an optional?

It's a variable that can be nil at some point in its life cycle

- What is optional chaining?

When you have a chain of instructions on an optional variable, that creates a chain of nils,

- What is optional binding?

When you assign the value to another var to unwrap the optional

- What is a tuple?

Ordered list of n elements that can be returned in a method

- Are tuples limited to only two or three?

It can be n elements

- Difference between Guard and Let?

- ?

- What is Generics?

- Explain GCD and NSOperations, and the differences.

- Describe why it's valuable to employ GCD and NSOperations.

- Explain when you'd use one over the other – GCD versus NSOperations.

- It is possible to add a dependency in GCD?

- What are the three URL Configurations?

- What are the differences between URL Configurations you've listed above?

- What's the rate limit of silent notifications?

- What is difference between atomic and non-atomic?

- How does iOS achieve thread safety?

- What is difference between strong and weak?

It's a indication for relations between objects so the automatic reference counting can ignore weak relations and release the memory of the object

- What are categories in Obj-C.

- What are extensions in Obj-C?

- Why do you have to set IBOutlet set to weak?

- ?

- What are stacks? Which control in iOS uses Stacks?

Stacks are containers that can make all elements follow an autolayout instruction?

- What is MVVM and MVC? (not just the words or definition, but the advantages over other architectural designs – the aim here is to do a senior-level comparison and what one may address over the other)

- What is a REST API?

An API that follow REST conventions, that is, use the http methods get, post, put, delete

- What is SOAP?

Simple object access protocol

- What is the difference between SOAP and Restful webservices?



SOAP uses xml for sending objects and describe the web service, while RESTful uses JSON annotation

- What is the difference between stateless and stateful webservices?
- In Obj-C, what problems do you have in blocks?
- In Obj-C, how can you avoid retain cycle in blocks?
- What is an Extension in Swift?
- In Obj-C, can you add properties in Categories?
- What is toll-bridging and describe its purpose?
- Define class cluster and describe the purpose?
- What is difference between KVC and KVO?
- What is method swizzling and the purpose?
- What is a linked list?

It's a common structure where you use nodes to represent an object or data and each node can be linked to the next node

- Difference between array and linked list?
- How does an array work in terms of memory and in comparison to a linked list – which is faster?
- What is a queue in relation to GCD?
- What are the different queues in GCD?
- How do we assign priority to queues in GCD?
- What is the value of assigning priorities to queues in GCD and give an example of doing this?
- What object in iOS uses a stack?

### Structures

- What is Singleton?

It's a pattern used to make sure you only have one instance of an object, avoiding creating unnecessary instances and using more memory

- How do you create a singleton in Obj-C?
- How do you create a singleton in Swift?
- Give an example of when actually using and choosing Singleton make sense to use?
- Give me the exact syntax of a singleton.
- Give me an example of when you've used this on project.
- What is a closure in Swift?
- Difference between Retain and Copy?
- Difference between shallow versus deep copy?

In a shallow copy you create a reference to the data of an object, while in deep copy, you make a full copy of an object, creating not only the reference but also the data in the stack

- Give of an example of when using a copy property makes sense.
- What Databases have you used?

### MySQL, Informix

- What are the different components making up Core Data?
- In Core Data, can you have multiple managed contexts?
- What is Core Data Faulting?
- How do you ensure thread safety in Core Data?
- What are the different contexts you can use in Core Data?



- How do you fetch data from Core Data? Explain steps.
- What is mapping model in data bases and how is this related to lightweight migration in Core Data?
- Different types of URLSession's data task?
- What are the different session types?
- Difference between Sync vs Async?

Sync is when the instructions are done in order and the next instructions doesn't execute until the other is done, while async, the instructions can complete at different times?

- What is Apple Notification Center Service?
- How would you set constraints to center 3 buttons on the UI?
- How would you synchronize contact in offline apps and locally?
- In obj c and swift- what do they mean by type safe language?
- What are the benefits of having a type safe language?
- What is NS error object and how do you use it?
- What are the three parts to NS error object?
- Why better to throw an error vs default state?
- Which one may be better, and validate why you think such (in relation to throwing an error versus default state)
- Have you written code in your job where you threw errors? Can you at least describe that code?
- For singleton design pattern, if you have a log in function is it a good idea to use singleton and explain why.
- What is a binary tree and give an example of using one (and when) – both in Obj-C and Swift (two uses cases).
- I want to be able to make multiple API requests at the same time, however, I also want to ensure they return in a certain (or sequential) order – what is the process I do to ensure this?
- Give an example of when you've had to ensure something similar to the above in a previous project?
- Have you used XCTest, on what project, and in what way?
- Have you used JENKINS, on what project, in what way, and what does Jenkins enable and why is it valuable?

Jenkins is a tool to make continuous integration, this is everytime new code is added to a repository, Jenkins create a virtual environment from scratch, depending of the configuration, it installs dependencies, runs tests, and helps to check that the project is working with the new changes

- Have you actually set up the Jenkins sever and environment?
- Have you written code using Fastlane and if not Fastlane, what tool similar have you used and how so?
- What is ARC and how does it work?

Automatic reference counting, it counts the number of references of an object so when it reaches 0 its removed from memory

- Obj-C – properties that are dynamic vs synthesize – discuss this.
- How are dispatch groups implemented?
- Have you used dispatch groups in your projects?

- How do child contexts work?
- How do you ensure all the conditions are met for Unit Tests?
- Can you capture the unit test results?
- Singleton – do you still need to overload the init
- Discuss a specific scenario working with locks.
- What is the difference between dispatch sync and dispatch async?
- NSFetchResultsController – describe how to use it and its purpose.
- What's the advantage of using NSFetchResultsController vs other options?
- Difference between nil and none?
- How is the implementation of structure different in Obj-C and Swift?
- Can you have service responses with SOAP?
- Is there an iOS framework for XML?
- What are the different parsers in XML?
- Difference between mode-based parsing and event-based parsing?
- Talk about your experience with RxSwift and how to implement it, too.
- Talk about your experience with RxCocoa and how to implement it, too.
- Have you used HTTP and how does it work?
- Have you worked with RFP's?
- Have you worked with hybrid apps?
- Talk about your experience with localized applications.
- How do you localize an App.
- Talk about how to manage localized resources with Interface builder files.
- Talk about how to manage localized resources using code.
- Describe the ViewController lifecycle
- What happens on each step of the ViewController lifecycle.

#### **Coding:**

- Create a unit test function for an addition function for a calculator.
- Given an array of words, create a function that returns an array with only those words that are palindromes (a word that is the same backwards and forwards)
  - Example: mom, ana
  - Non-example: plant
- Give an example of using Generics in Swift – write an actual function.

#### **Project Related and Production-Environment Related:**

- Give a description of your last two projects:
  - Why were you brought there initially?
  - What the current state of app and production environment upon your arrival?
  - What was the app and what does it do?
  - Who was the end user of the app?
  - What did you specifically implement feature wise in the app and how?
  - What percent of time did you lead and what percent of time did you code?
  - What challenges did you face in the production environment and in development and how did you address them?
  - What was the size of the team and break down of roles?

- How did you manage the day-to-day production environment, task management and tracking, documentation standards? What tools were used to manage this?
- What was the testing environment like? Was it rigorous? What tools and practices were used to manage sound code?
- What weekly standing meetings were present, who was present, and what was discussed?
- How did you cycle through the Software Development Cycle through the 2-week sprints and what major milestone meetings happen during the sprints?
- What things will you keep in mind (as a lead) during SCRUM meetings?
- How do you divide tasks in production environment appropriately, strategically, and track the stories and back log of tasks?
- What types of questions do you ask when in the requirement gathering phase of a project?
- What do you do in the first week of entering a new production environment as a contractor?
- What are all aspects you consider when building an app from scratch and what are the steps to take in starting the process?
- What is your proudest technical accomplishment to date in a production environment, why, and how did you actually do to contribute to the accomplishment you're discussing?
- What was the greatest technical failure in a production environment, why, how did you rectify, and what is your key learning from this to take forward into your future development practice?
- What is your experience in working across a variety of stakeholders – PM, Product Owner, QA, junior devs, offshore teams, etc.?
- Do you track reviews of the product and how do you use the reviews to inform future production environment decisions?
- Talk about your work in collaborating closely with the design team.
- What app/project is closest to your heart and why?

#### **HR/Logistical/Eligibility:**

1. Q1. Where are you currently located?
2. Q2: You are located in the same location as our office. Can you do a F2F?
3. Q3: Have you always been a 1099 consultant or a W-2 employee?
4. Q4: I wanted to clarify your requirement on the rate.
5. Q5: What is your W-2 required rate, after the contract portion of the C2H is over?
6. Q6: So, you have a company you work through? (If they ask this on the interview, and SA has not revealed this yet to vendor, then fine, you have to acknowledge it)

7. Q7: You are the owner of the company, correct?  
**No**
8. Q8: Do you have any contracts with your company preventing you from going permanent after the contract period of C2H is done?  
**Yes**
9. Q9: Why do you work for your company on C2C – what do they offer you?
10. Q10: If we were willing to help you with all that (logistics, marketing), would you consider cutting out that third party and coming to us?”  
**No**
11. Q11: What is the name of your company?  
**Mobile Consulting Solutions**
12. Q12: Why are you looking to do C2C?
13. Q13: Are you looking to do C2H for 3 month or 6 months?
14. Q14: What was your salary at your other positions?

MVVM, basado en enlace de datos, model view, viewModel

Modelo = datos

View = XIB, viewController

ViewModel = Procesos relación entre view y modelo

DataBinding

View checa que cambia y se actualiza

No implementado por defecto

RXSwift

Viper, View interactor, presenter, entity, router (clean architecture, basado en capas)

View, Dumb, manda acciones y recibe presentacion

Interactor, hace los procesos, tiene chalan (worker)

Presenter, prepara los datos y los presenta

Router: direcciones

Entity: modelo de datos

Manejador de paquetes

Cocoapods (mas usado, casi por default, la mayoría de las librerías solo salen en cocoapods)

Carter ( paquetes encapsulados, menos usado, pero bueno)

gem install cocoapods

pod init en proyecto

En podfile para agregar poner pod 'librería' (opcional: -> “para la version x en adelante, version: para especificar una en especifico)

CocoaControls página de UIComponents

SDWebImage libreria para imagenes

ReachabilitySwift checa si hay internet (hace ping a una pagina y indica si falla)

alamofire hace requests mas faciles

moya simplifica comunicacion entre networkingmanager, alamofire y tu app

RxSwift reactive con swift

Save data on phone

UserDefaults (class) . standard (singleton, change if for some reason different instance)

set(value, key)

.value // for strings .bool, .int ...

Librerias Utiles

Persei <https://github.com/Yalantis/Persei/>

Swift-Viper-Module <https://github.com/Juanpe/Swift-VIPER-Module>

ExpandableTableView <https://github.com/rishi420/ExpandableTableView>

AlamoFire <https://github.com/Alamofire/Alamofire>

Moya <https://github.com/Moya/Moya>

SdWebImage <https://github.com/rs/SDWebImage>