UST Global - Sept 2024

iOS and Swift Background

1. Can you talk about your iOS background, including your experience with Swift and SwiftUI, as well as the projects you've worked on?

Memory Management and Generics

2. How does iOS handle memory management?

3. What is a retain cycle in iOS?

4. What are generics, and where do you use them in your code?

5. What is `Codable`?

6. What is the relationship between generics and `Codable`?

7. What is an enum with associated values?

8. What are optionals?

9. Can I use optionals for all my variables?

10. When should I use forced unwrapping?

11. If I am using a non-optional variable in a class and do not assign a value in the initializer, what will happen?

12. If forced unwrapping is unsafe, why does Swift have a forced unwrap feature?

13. How is forced unwrapping critical for developer testing?

Protocols and Dependency Injection

14. Can you provide an example of dependency injection?

15. If I use forced unwrapping for dependency injection, what do I gain?

16. Tell me more about protocols. Why should we use protocols when we can use inheritance?

17. If we have class A and class B, and a class C that inherits from both A and B, can you describe

this?

18. Can I create variables inside a protocol?

19. How can I use generics in a protocol?

20. What is the benefit of associated types?

21. Can you use associated types in your project?

Architectural Patterns

22. What is the difference between MVC and MVVM?

23. Create a screen having three sections:

   - First Section: Market

   - Second Section: Accounts

   - Third Section: Stocks

How will you structure it to be readable, testable, and use async/await? When loading these views, they will call three different services. We will only show the views when all three services return results. Any service can fail, but the views should only be shown when the results are ready.

Concurrency and Thread Safety

24. Can you explain DispatchGroup and how it works?

25. How are operation queues more optimized than DispatchGroup?

26. If one thread is writing a property of a class while another thread is reading from it, how can I ensure that the writing thread blocks the reading thread? Give examples of the various ways available to achieve this in Swift.

27. In Swift 5.5, how do actors help with this issue?

28. Can we have a base actor and a derived actor?

29. Explain Concurrency.

Persistence and User Defaults

30. What are the different persistence storage options in iOS?

31. Compare Realm and Core Data.

32. Compare Core Data and SQLite.

33. What should I store in UserDefaults?

34. When working with UserDefaults, how can I ensure that each user has unique settings, especially if my wife logs in and shares the same settings?

SwiftUI and State Management

35. What is the difference between `@ObservedObject` and `@State`, and how do you manage the view model?

36. Can I make an `@ObservedObject` a struct?

37. Will I encounter any errors if I make a struct an `@ObservedObject`?

Singleton Design Pattern

38. What is your take on using the singleton pattern?

39. In which situations do you think a singleton is beneficial, and in which situations is it not?

40. What are the issues in unit testing with singletons? Why is it difficult to unit test them?

Performance and Code Quality

41. How do you check the performance of the app?

42. How do you check code quality?