

# SwiftUI + Firebase: The Complete Step-by-Step Guide to Building Mobile Apps

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*SwiftUI provides an elegant way to build modern, reactive UIs for Apple platforms, while Firebase is a powerful backend platform for developing mobile and web applications. Combining these tools enables developers to create apps with authentication, real-time databases, cloud functions, and more. This article walks you through integrating Firebase into a SwiftUI project.*



## Why Use Firebase with SwiftUI?

Firebase simplifies backend management with features like:

- **Authentication:** Supports multiple providers (Google, Apple, Email/Password).
- **Firestore:** A scalable, real-time database.
- **Cloud Storage:** Store and retrieve user files like images.
- **Analytics:** Monitor app usage and performance.
- **Crashlytics:** Track and fix issues in production.

## Setting Up Your Firebase Project

Before diving into SwiftUI, configure Firebase:

### Step 1: Create a Firebase Project

1. Go to the Firebase Console (<https://console.firebaseio.google.com/>).
2. Click Add Project and follow the setup wizard.
3. Register your app:
  - Select iOS as the platform.
  - Enter your app's **Bundle Identifier** (found in Xcode under General > Identity).

### Step 2: Download GoogleService-Info.plist

1. After registering your app, download the configuration file **GoogleService-Info.plist**.
2. Drag and drop this file into your Xcode project, ensuring it's added to all targets.

## Adding Firebase to Your SwiftUI Project

Firebase can be integrated using Swift Package Manager:

### Step 1: Add Firebase via SPM

1. In Xcode, go to File > Add Packages.
2. Paste the Firebase SPM URL:  
<https://github.com/firebase/firebase-ios-sdk>
3. Select the Firebase modules you need:
  - For authentication: **FirebaseAuth**.
  - For database: **FirebaseFirestore**.

## Initialize Firebase in Your App

Modify your **App** file to initialize Firebase:

```
import SwiftUI
import SwiftData
import Firebase
```

```
@main
struct YourAppName: App {

    init() {
        FirebaseApp.configure()

        #if DEBUG
        let providerFactory = AppCheckDebugProviderFactory()
        AppCheck.setAppCheckProviderFactory(providerFactory)
        #endif
    }

    var body: some Scene {
        WindowGroup {
            ContentView()
        }
    }
}
```

## Adding Firebase Authentication

Let's implement Firebase Authentication with Email and Password:

### Step 1: Create a ViewModel for Authentication

```
import SwiftUI
import FirebaseAuth

class AuthViewModel: ObservableObject {
    @Published var user: User? = nil
    @Published var isSignedIn: Bool = false

    init() {
        self.user = Auth.auth().currentUser
        self.isSignedIn = user != nil
    }

    func signUp(email: String, password: String) {
        Auth.auth().createUser(withEmail: email, password: password) { result,
            if let error = error {
                print("Sign Up Error: \(error.localizedDescription)")
                return
            }
            self.user = result?.user
            self.isSignedIn = true
        }
    }
}
```

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```
        return
    }
    self.user = result?.user
    self.isLoggedIn = true
}
}

func signOut() {
    do {
        try Auth.auth().signOut()
        self.user = nil
        self.isLoggedIn = false
    } catch {
        print("Sign Out Error: \(error.localizedDescription)")
    }
}
}
```

## Step 2: Use ViewModel in SwiftUI Views

Create a simple UI for sign-in and sign-up:

```
import SwiftUI

struct AuthView: View {
    @StateObject private var viewModel = AuthViewModel()

    @State private var email = ""
    @State private var password = ""

    var body: some View {
        VStack {
            if viewModel.isLoggedIn {
                FContentView()
            } else {
                TextField("Email", text: $email)
                    .textFieldStyle(RoundedBorderTextFieldStyle())
                    .padding()
                SecureField("Password", text: $password)
                    .textFieldStyle(RoundedBorderTextFieldStyle())
                    .padding()
                HStack {
                    Button("Sign In") {
                        viewModel.signIn(email: email, password: password)
                    }
                }
            }
        }
    }
}
```

```

        Button("Sign Up") {
            viewModel.signUp(email: email, password: password)
        }
    }
}

.padding()
}
}

```

## Integrating Firestore for Real-Time Data

Let's add Firestore to store and display user data.

### Step 1: Firestore Model

Create a Model for Firestore data model :

```

import FirebaseFirestore

struct Note: Identifiable, Codable {
    @DocumentID var id: String?
    var title: String
    var content: String
}

```

### Step 2: Firestore ViewModel

Create a ViewModel for Firestore interactions:

```

import FirebaseFirestore

class FirestoreManager: ObservableObject {
    private var db = Firestore.firestore()
    @Published var notes = [Note]()

    // Create Note
    func addNote(title: String, content: String) {
        let newNote = Note(title: title, content: content)

        do {
            _ = try db.collection("notes").addDocument(from: newNote)
        } catch {
            print("Error adding document: \(error)")
        }
    }
}

```

```
// Read Notes
func getNotes() {
    db.collection("notes").order(by: "title").addSnapshotListener { snapshot, error in
        if let error = error {
            print("Error getting notes: \(error)")
            return
        }

        self.notes = snapshot?.documents.compactMap { document in
            try? document.data(as: Note.self)
        } ?? []
    }
}

// Update Note
func updateNote(note: Note) {
    guard let noteID = note.id else { return }

    do {
        try db.collection("notes").document(noteID).setData(from: note)
    } catch {
        print("Error updating note: \(error)")
    }
}

// Delete Note
func deleteNote(note: Note) {
    guard let noteID = note.id else { return }

    db.collection("notes").document(noteID).delete { error in
        if let error = error {
            print("Error deleting note: \(error)")
        }
    }
}
}
```

### Step 3: Firestore View

Create a view to send and display messages:

```
import SwiftUI

struct FContentView: View {
    @StateObject private var firestoreManager = FirestoreManager()
    @State private var showingAddNote = false
    @EnvironmentObject var authViewModel: AuthViewModel
```

```
var body: some View {

    VStack{

        NavigationView {
            List {
                ForEach(firestoreManager.notes) { note in
                    HStack {
                        VStack(alignment: .leading) {
                            Text(note.title).font(.headline)
                            Text(note.content).font(.subheadline)
                        }
                        Spacer()
                        Button("Delete") {
                            firestoreManager.deleteNote(note: note)
                        }
                    }
                    .swipeActions {
                        Button("Edit") {
                            // handle editing note here
                            showingAddNote = true
                        }
                        .tint(.blue)
                    }
                }
            }
            .navigationTitle("Notes")
            .navigationBarItems(trailing: Button(action: {
                showingAddNote = true
            }) {
                Image(systemName: "plus")
            })
            .onAppear {
                firestoreManager.getNotes()
            }
            .sheet(isPresented: $showingAddNote) {
                AddNoteView(firestoreManager: firestoreManager)
            }
        }

        Button(action: {
            authViewModel.signOut()
        }) {
            Text("Sign Out")
                .foregroundColor(.white)
                .frame(maxWidth: .infinity)
                .padding()
                .background(Color.red)
                .cornerRadius(10)
        }
    }
}
```

```
    }
}
```

## Step 4: Firestore Add Data

Create a view to add data messages:

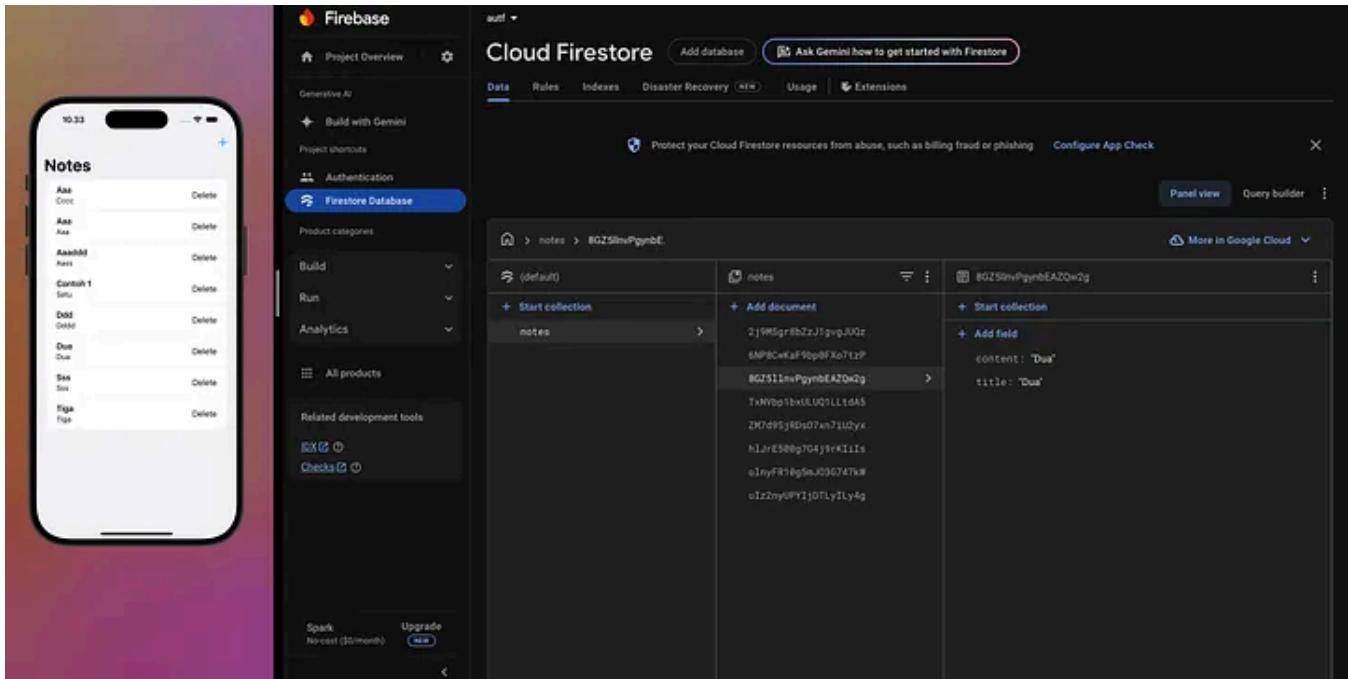
```
import SwiftUI

struct AddNoteView: View {
    @Environment(\.presentationMode) var presentationMode
    @ObservedObject var firestoreManager: FirestoreManager
    @State private var title = ""
    @State private var content = ""

    var body: some View {
        NavigationView {
            Form {
                Section(header: Text("Note Details")) {
                    TextField("Title", text: $title)
                    TextField("Content", text: $content)
                }

                Button("Save") {
                    firestoreManager.addNote(title: title, content: content)
                    presentationMode.wrappedValue.dismiss()
                }
            }
            .navigationTitle("Add")
            .navigationBarItems(trailing: Button("Cancel") {
                presentationMode.wrappedValue.dismiss()
            })
        }
    }
}
```

## Example of Result :



## Testing the Application

- Run the app on a physical device or simulator.
- Test user authentication and Firestore functionality.

## Deploying the App

When ready, deploy your app:

1. Set up **App Check** in Firebase for security.
2. Test thoroughly on physical devices.
3. Submit your app to the App Store.

## Conclusion

Integrating Firebase with SwiftUI unlocks powerful backend features with minimal effort. From authentication to real-time databases, Firebase streamlines app development and lets you focus on delivering great user experiences. This guide provides a foundation to explore more Firebase features like Cloud Functions and Analytics.

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Full code: <https://github.com/octavvia/authf>.

Happy coding! 🚀

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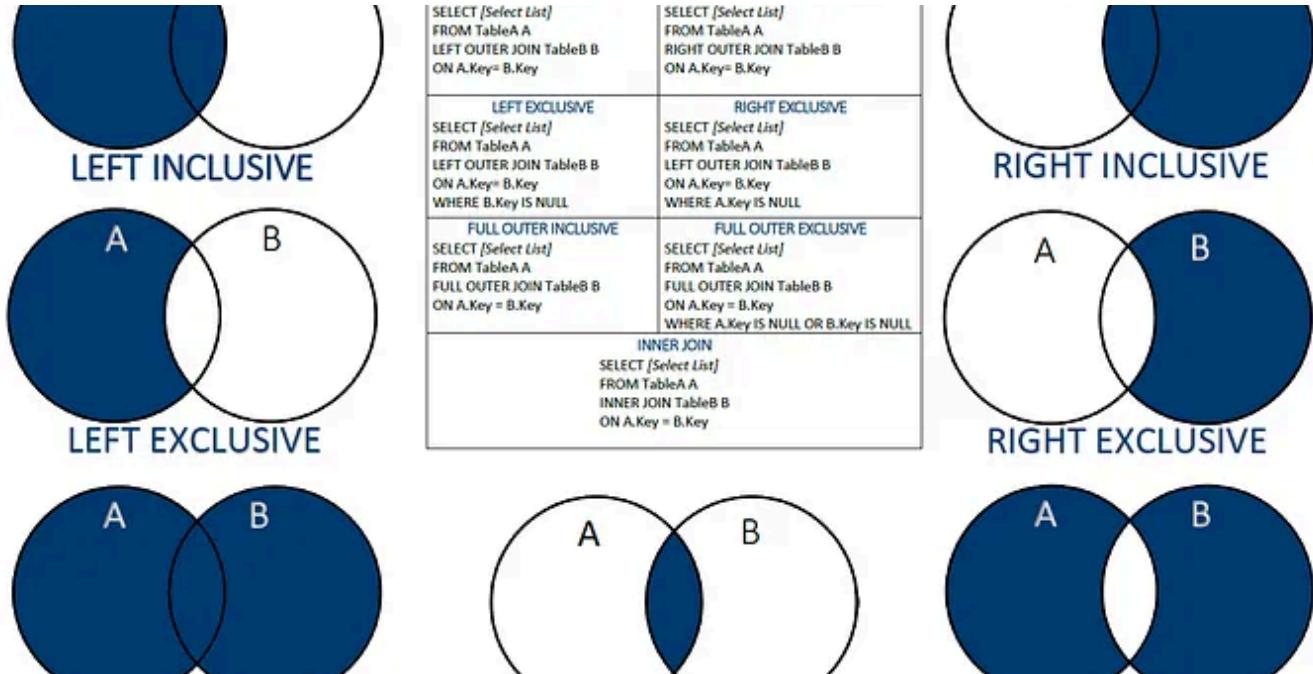
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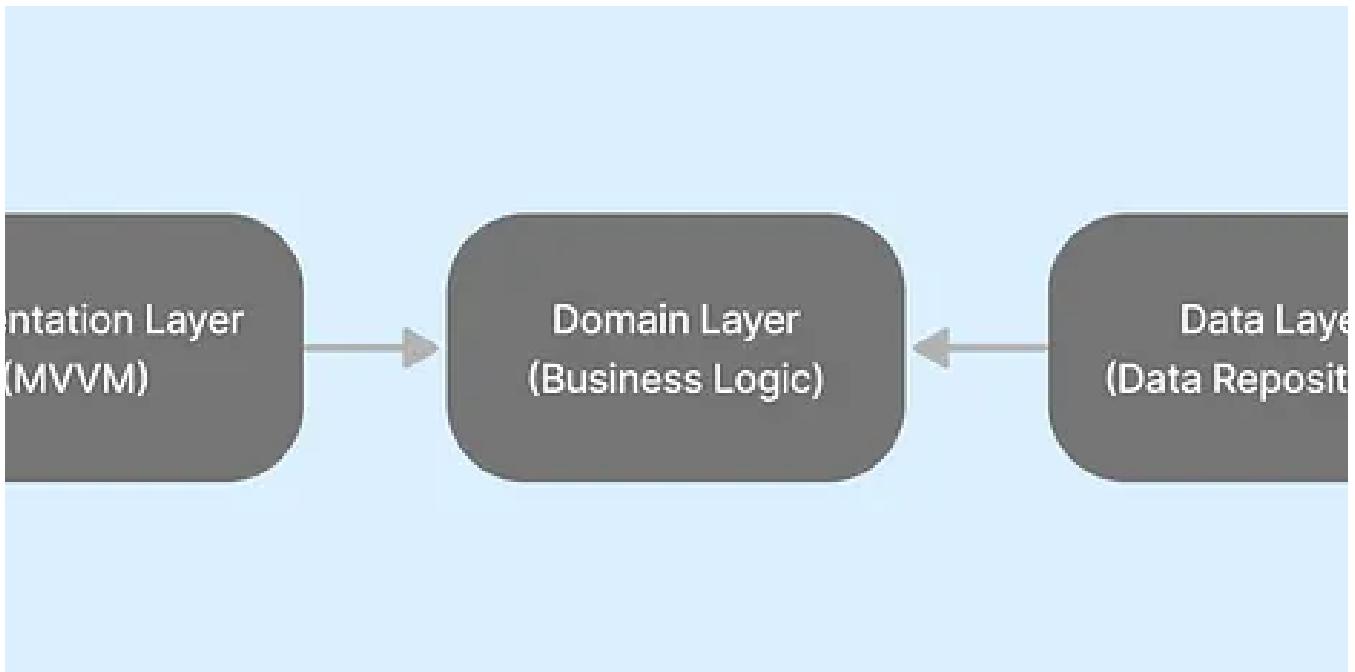


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## Seven Join Techniques in SQL

What is join? Join is a way to link data retrieved from tables through a column that links them. For example, the reader may want to link...

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## Step by Step SwiftUI with Clean Architecture

1.Understand Clean Architecture Clean Architecture is a software architecture pattern that separates code based on its responsibilities...