
📘 Habit Tracker – Demo Project Documentation

🔖 Project Overview

The **Habit Tracker** is a demo iOS application built using **SwiftUI** and **Core Data**. It enables users to create, track, and manage their daily habits with features such as progress visualization, local notifications, streak tracking, and analytics.

🔧 Tools & Technologies Used

Tool / Tech	Purpose
Xcode 16	Main development IDE
Swift 5	Programming language
SwiftUI	Declarative UI framework
Core Data	Local persistence for habit and log storage
UserNotifications	Scheduling habit reminders
MVVM Pattern	Clean architecture & separation of concerns

📚 Core Concepts Used

✅ SwiftUI

- `@State`, `@Binding`, `@ObservedObject`, `@EnvironmentObject`, `@StateObject`
- `NavigationStack`, `NavigationLink`, `.sheet(item:)`, `.toolbar`
- `GeometryReader` for responsive progress bars
- Reusable views via `ViewBuilder`
- Local state propagation and UI state management

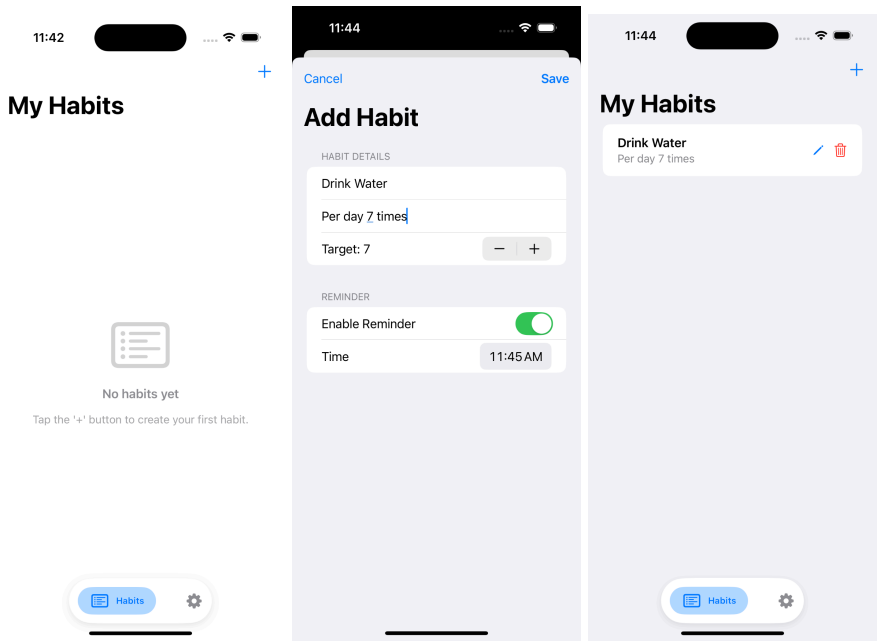
✅ Core Data

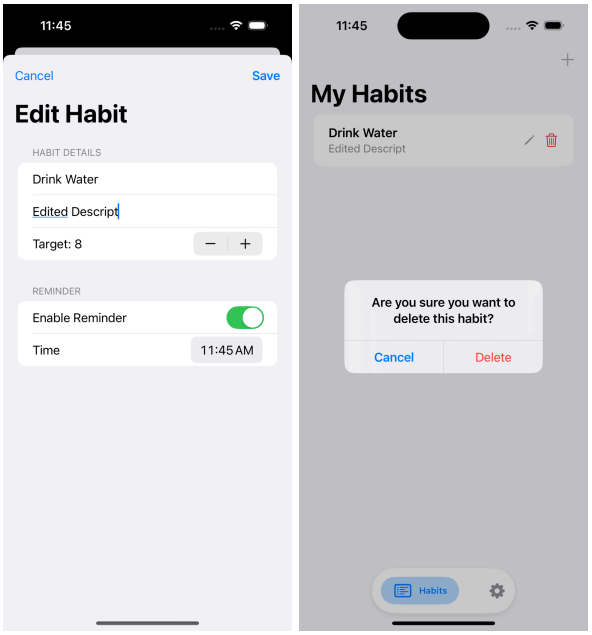
- `@FetchRequest` for live-updating lists
- Managed object context injection (`@Environment(\.managedObjectContext)`)
- Entity relationships (Habit ↔ HabitLog)
- Persistent storage using `NSPersistentContainer`

🚀 Features Implemented

1. Habit Management

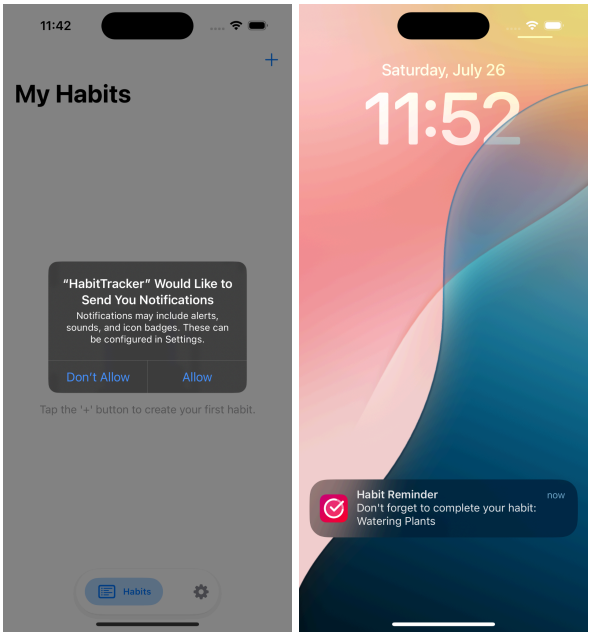
- Create/Edit/Delete habits
- Track daily completion using progress counters
- Target count and streak logic
- Optional daily reminders at custom times





2. Local Notifications

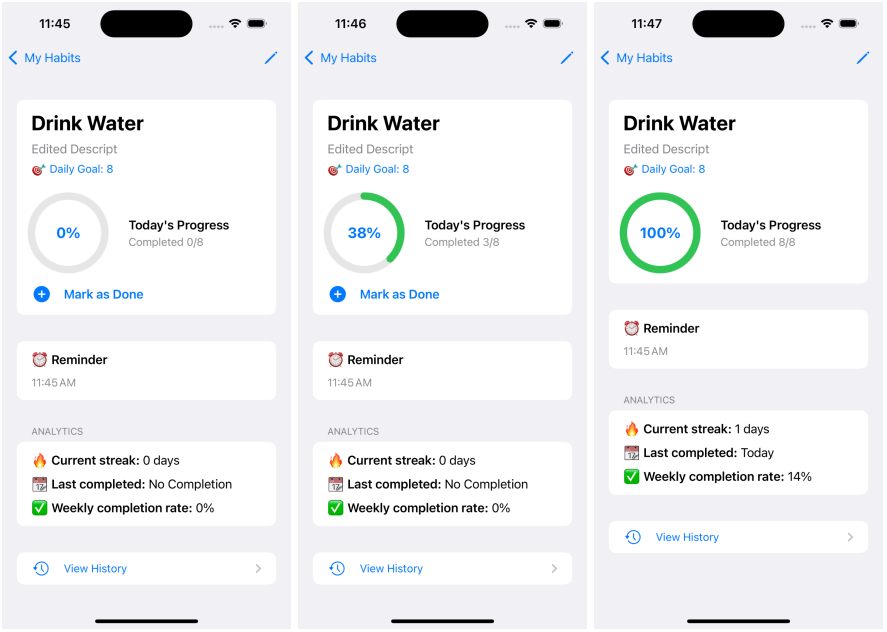
- Custom reminder time per habit
- Auto-reminders at 8:00 PM if streak is at risk (i.e., user hasn't completed that day)



3. Habit Detail & Analytics

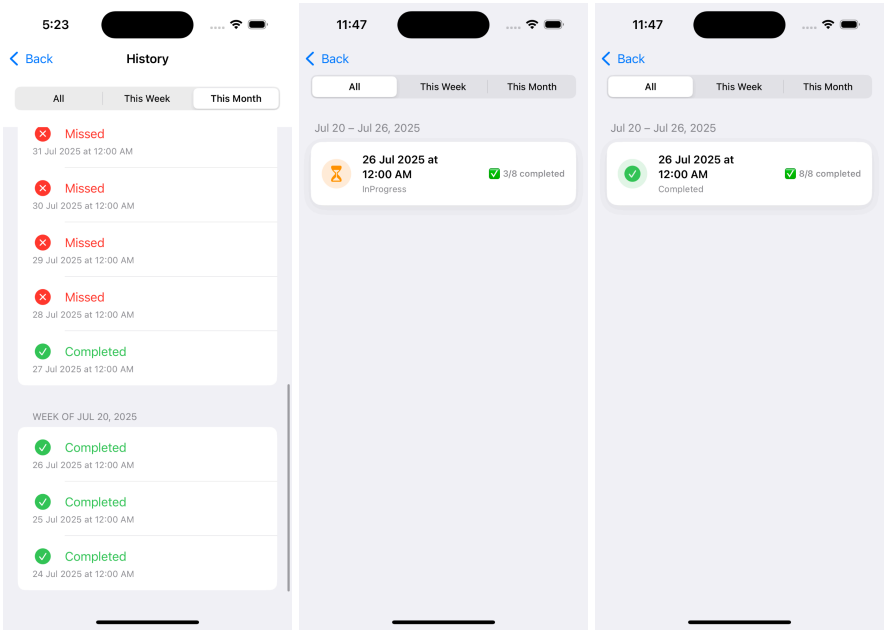
- Progress visualization using `GeometryReader`
- Current streak tracking

- Last completed day (Today, Yesterday, Weekday, or Date)
- Weekly completion percentage



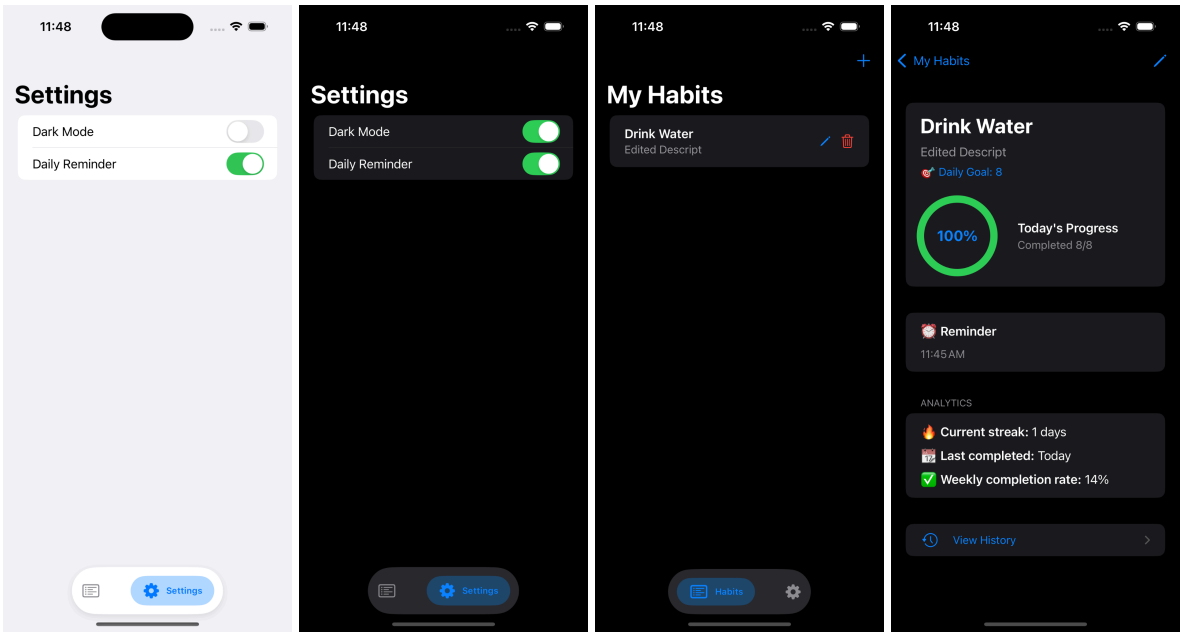
4. Habit History

- View the history of habit completions grouped by date
- Filters available for: All / This Week / This Month
- Scrollable sections with grouped logs
- Empty state UI when no logs found



5. Settings

- Toggle for enabling/disabling Dark Mode
- Toggle to enable/disable Daily Reminders
- Stored user preferences used to control notification scheduling
- Built with SwiftUI's `Toggle`, `@AppStorage`, and `ColorScheme` support



6. Dynamic UI

- Scrollable habit list
- Reusable `HabitRowView`, `ProgressBarView`, and section cards
- Tab bar with icon & title + future bubble-style customization

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📈 Future Scope & Enhancements

This project is designed with scalability in mind. Some potential future expansions include:

🔮 Features

- **iCloud sync** for cross-device tracking
- **Widgets** (using WidgetKit) for a quick view of streaks

- **Charts** for progress graphs using `Swift Charts`
- **Apple Watch companion app** to log from the wrist
- **Streak freeze tokens** to gamify the experience
- **Push notifications** for remote engagement (via Firebase or APNs)
- **Themes**

🧩 Technical Improvements

- Modularize features using Swift Packages
- Extract services like `NotificationManager` and `AnalyticsEngine`

🎯 Purpose & Importance

This project is more than a simple tracker — it's a foundational example of:

- **Building real-world apps with SwiftUI and Core Data**
- **Implementing MVVM design pattern cleanly**
- **Managing time-sensitive tasks like reminders & streaks**
- **Writing testable, scalable, and maintainable code**

> 📌 Ideal for developers learning SwiftUI architecture, local persistence, and notification logic.

✅ Final Words

This demo can be expanded into a full productivity or wellness app with minimal overhead. It serves both as a personal productivity tool and a **portfolio-grade app** to demonstrate advanced iOS concepts.