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Software Design Document

Momento App: Updated Software Design Description Document

1. Introduction

This document outlines the updated software design for *Momento*, a mobile journaling app developed in CMSI 4071 and continued in CMSI 4072. The purpose of this update is to document newly added features, components, and system changes made during the second semester.

2. System Overview

Momento simplifies visual journaling by allowing users to capture their daily mood, moments via photos, and optional notes. The app uses Firebase for backend storage, SwiftUI for interface design, and is structured to allow seamless journaling and review experiences.

3. Updated Class & Module Descriptions

New Classes Added (Spring 2025):

- QuoteManager: Handles the generation of daily motivational quotes.
    - func fetchDailyQuote() -> String
    - Stores quote history by date.
- MonthlyRecapBuilder: Aggregates entries into a monthly summary.
    - func buildRecap(forMonth:) -> Recap
    - Integrates photos, mood stats, and key moments.

4. Updated Interface Descriptions

New Interfaces (Spring 2025):

- Quote Generator UI: Displays a daily quote on the home screen.
    - Includes refresh and share options.
- Monthly Recap Screen:
    - Scrollable calendar-like layout.
    - Tap into each day to view mood/photo entry.
- Mood & Photo Entry View (Updated):
    - Now includes optional text input and delete/edit options for existing entries.

5. Updated Data Structure Descriptions

New Data Structures:

Quote Object:

```
struct Quote {
   var text: String
   var author: String
   var date: Date
```

- }

MonthlyRecap Object:

```
struct MonthlyRecap {
   var month: String
   var entries: [JournalEntry]
   var moodStats: [String: Int]
```

- }

6. Design Diagrams (Updated)

6.1 Component Architecture Diagram

(Newly added)

- Shows interactions between ViewModels, Firebase service, and UI views.

6.2 Sequence Diagram for Entry Flow

(Newly added)

- Depicts the flow from capturing a photo to saving a journal entry in Firebase.

6.3 Quote Generator Flow

(Newly added)

- Diagram outlining quote retrieval and display cycle.

7. Updated Database Design & Description

7.1 Updated ER Diagram

(Newly added)

User
 ├── uid (String)

```
├── email (String)
└── journalEntries → [JournalEntry]
```

JournalEntry
```
├── date (Timestamp)
├── photoURL (String)
├── mood (String)
├── optionalNote (String?)
└── quote (Quote)
```

Quote
```
├── text (String)
├── author (String)
└── date (Date)
```

7.2 Security & Integrity Notes:

- Firestore security rules prevent unauthorized access.
- Users can only read/write their own data.
- Input sanitization ensures integrity of stored data.

8. Summary of Spring 2025 Updates

- Added QuoteManager and MonthlyRecapBuilder classes.
- Designed new UI screens: Quote Generator and Monthly Recap.
- Introduced new data structures for quotes and recaps.
- Added 3 new diagrams (component, sequence, quote flow).
- Updated and redocumented database schema with ER diagram.

This version now aligns with CMSI 4072 requirements and clearly separates new content from the previous semester's design.