Inky: Design Documentation

Author: Ojaswee Chaudhary
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I.   Problem Statement

Many people fear alone time with their thoughts. Instead of developing mental clarity, they spam their notes app with thought spirals or make impulsive decisions under stress. The resulting mental fog compounds across life domains, accumulating up to $200K monthly losses in productivity and satisfaction.

II.   User Personas

These have been curated from real user interviews and empathy mapping.

Persona 1: Professional, Thoughtful Leader

Demographics: 25-60, Employee with some degree of management responsibilities, has a family at home to support, $100K-400K salary
Pain Points:

- Lack of knowledge on optimal leadership strategies causes poor decision making
- Lack of time to self-reflect because family and colleagues need their time more
- Wants to model goal-setting for children but lacks tools

Current Behavior:

- Allows pressure to guide decision making
- Journals most before important meetings but abandons due to time constraints
- Struggles to track progress on personal development goals

Costs: $200K monthly in productivity losses from decision ripple effects and stress-induced poor judgment across professional and personal domains

Persona 2: Young, Organized Dreamer

Demographics: 12-25, Student or Early Employee
Pain Points:

- Ruminates on major career/life decisions but has trouble taking action
- Compares themselves to peers and feels imposter syndrome
- Tired of losing past revelations in notes, journals, papers

Current Behavior:

- Makes important decisions during high-stress moments
- Seeks validation through social media rather than self-reflection
- Uses Notes app sporadically for journaling (to-do lists, thought spirals, goals)

Costs: $100K+ annually in foregone promotions and career opportunities due to unclear self-advocacy and decision paralysis

Persona 3: Intuitive, Free Spirit

Demographics: 18-50, Freelancer or individual contributor
Pain Points:

- Journaling feels rigid and distant, while friends feel more comforting.
- Difficulty connecting daily experiences to larger life patterns
- Seeks authentic growth rather than superficial habit tracking

Current Behavior:

- Relies on friendship and life experiences to calm anxious spirals
- Follows productivity influencers but struggles with implementation
- Values privacy highly, skeptical of data collection

Costs: $50K+ annually in career stagnation due to lack of self-awareness and strategic personal development

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III. Solution

Inky is a secure, private journaling companion that helps users capture thoughts, set goals, and reflect consistently. By keeping all data on-device and protected, it builds trust while removing the fear of exposure. Guided reflections and personalized insights turn scattered thoughts into clarity and measurable progress, improving decision-making, reducing stress, and supporting long-term growth.

Core Value Proposition: *Your digital growth journal where your thoughts incubate to become your strengths*

User-Facing Features
- **Daily Reflections as a Conversation:** Under 5 min structured daily reflection makes it easy and quick for people to process, reflect, and look forward. Currently available with text and chat. Voice interaction is a future enhancement.
- **AI-Powered Insights**: Charts are generated using data from journal entries to capture patterns. Currently users can see a weekly chart to depict overall moods per day.
- **Digital Journal:** Allows for 4 different entry types and automatically organizes them.
  - Raw Journaling: Free-form text entry for daily thoughts and experiences
  - To-do's Management: Task completion tracking that reveals productivity patterns
  - Goal Setting: Structured goal definition with progress monitoring

○ Daily Reflections: Guided 5-minute conversations with Inky

Non-user-facing Features

- **Security & Privacy**
  - Local Data Processing: Apple Natural Language framework runs entirely on-device. No external API calls are made, so no model learns from user data.
  - Encrypted Database: SQLite database has built-in encryption for sensitive data.
  - No Network Dependencies: Core functionality works completely offline.
- **Performance & Reliability**
  - Optimized Database Design: Entries and AI responses have low latency.
  - Graceful Degradation: Fallback mechanisms when AI responses or analysis is unavailable.

IV. Architecture

Tech Stack

- **Platform and UI:** iOS (SwiftUI + Swift) using MVVM pattern
  - WHY: Chosen for convenience of to-go nature of iPhones, modern UI design
- **Database:** SQLite with SQLite.swift wrapper
  - WHY: Lightweight, reliable, and optimized for offline storage
- **AI/ML:** Apple Natural Language framework
  - WHY: Provides fast, on-device sentiment and keyword analysis with built-in privacy guarantees.
- **Authentication:** Local Keychain Services
  - WHY: Ensures secure, system-level storage of sensitive credentials

Database Schema

Parent: Entries Table

```
CREATE TABLE entries (
  id TEXT PRIMARY KEY,
  user_id TEXT NOT NULL,
  type TEXT CHECK (type IN ('raw','todos','goals','reflection')),
  title TEXT,
  text TEXT NOT NULL,
  tags TEXT, -- JSON array
  created_at TEXT NOT NULL,
  updated_at TEXT NOT NULL,
  deleted_at TEXT
);
```

Child: To-do Items

```
CREATE TABLE todo_items (
    id INTEGER PRIMARY KEY AUTOINCREMENT,
    entry_id TEXT NOT NULL,
    position INTEGER NOT NULL,
    text TEXT NOT NULL,
    is_done INTEGER DEFAULT 0
);
```

Child: Goal Items
```
CREATE TABLE goal_items (
    id INTEGER PRIMARY KEY AUTOINCREMENT,
    entry_id TEXT NOT NULL,
    position INTEGER NOT NULL,
    bullet TEXT NOT NULL
);
```

Child: Reflection Items
```
CREATE TABLE reflection_qas (
    id INTEGER PRIMARY KEY AUTOINCREMENT,
    entry_id TEXT NOT NULL,
    position INTEGER NOT NULL,
    question TEXT NOT NULL,
    answer TEXT NOT NULL
);
```


AI & Sentiment Analysis

- **Apple Natural Language Framework** ([Documentation](#))
    - Sentiment Analysis: `NLTagger` with `.sentimentScore` scheme for emotional pattern tracking
    - Keyword Extraction: `NLTagger` with `.lexicalClass` for identifying meaningful terms
    - Linguistic Processing: On-device neural networks trained on diverse text corpora
    - Privacy Preservation: Zero data leaves device during AI processing
- **Conversation**
    - Greeting: Contextual welcomes based on recent reflections set a supportive tone.
    - Emotional Assessment: The AI interprets sentiment and keyword trends to shape empathetic follow-up questions.
    - Forward-Looking Prompts: Each conversation concludes with a concrete next step or goal to encourage accountability.
- **Insights:** The system transforms raw sentiment data into interactive charts and summaries that highlight emotional trends, correlations, and progress over time. These visualizations help users connect daily reflections to long-term growth patterns, creating measurable clarity instead of scattered notes.

V.   Development Workflow

The AI development process leveraged multiple AI tools in a complementary workflow:

1. **Strategic Planning with Claude:** Claude helps to discuss AI approach, privacy considerations, user experience goals.
2. **Prompt Generation:** Claude writes detailed, specific prompts for technical implementation.
3. **Cursor Code Helper:** Cursor helps execute technical requirements using generated prompts.
4. **Review and Refinement:** Claude gives advice in the debugging process.

VI. Future Enhancements

1. **Voice**
   Introducing voice capturing capabilities in the Daily Reflection feature would be optimal for the on-the-go users. Apple's built-in Speech framework is a great option.

2. **Opt-In Cloud Integration**
   Upgrading from Apple NL to GPT or Claude variations would allow for more of a conversational, empathetic feel during AI interactions and a wider knowledge base. Although invoking proprietary or open-source models introduces security risks of data leakage across servers, proper encryption, guardrails, and anonymity can prevent this.

3. **Personalization and Advanced Intelligence**
   More specific personalization based on user archetype would keep users hooked to the app enough for noticeable change in demeanor. By introducing datasets to train Inky, it could provide even better domain knowledge and feedback for each user's issue. Additionally Inky can provide support that varies for each entry.

   Some possible data sources or frameworks are
      a. Myers-Briggs Personality Framework
      b. Udemy Leadership Courses

4. **Business Model**
   Freemium core with premium insights, professional team tiers, and enterprise-level organizational tracking.

5. **Accessibility**
   VoiceOver and Dynamic Type support, optimized for iOS 15+ across device generations.