Developing a Local Habit Tracker – Practical Lessons and Real-World Relevance

Topic & Problem Statement

This project addresses the challenge of building and sticking to good habits in everyday life, a problem many people face. Most digital solutions for habit tracking are either overloaded with features, only work with a permanent internet connection, or don't offer real motivation. The goal of my Habit Tracker was to create a tool that is simple, fully offline, private, and effective—so that users can focus on improving themselves instead of learning a difficult software.

Research Question & Hypotheses

The core question was: Can a modular, local habit tracker, with clear menu guidance, built-in templates, and privacy by design, really help users form new habits and overcome typical obstacles like demotivation or forgetfulness? I initially assumed that simplifying the process, removing all unnecessary technical barriers, and focusing on what users actually need would make it easier for people to start and continue their routines.

Methodology

To test this idea, I started with a detailed analysis of what really matters in digital habit tracking. Using UML diagrams to plan the architecture, I kept the software modular: every main logic (user, habit, analytics, storage, template) was placed in its own Python file. The database is local SQLite, meaning all user data stays on the user's own computer, not on the internet. The interface is a step-by-step command line menu. I paid special attention to robust development: functions like creating, editing, and deleting both habits and users are covered by tests, and feedback from unit tests and my tutor was implemented throughout.

Difficulties, Changes & Learning

Building this tracker was not without its hurdles. One major difficulty was making sure that deleting a user would also reliably remove all habits and related data, without accidentally losing or corrupting other information. Another challenge was to design the menus so clearly that users never feel lost. I had often to revise and simplify the guided steps after realizing they were confusing or too technical. Testing all possible user actions taught me a lot about handling unexpected inputs and edge cases.

A significant change during the project was my shift from a feature-driven to a user-driven approach. Originally, I thought about including more complex analytics and even motivational APIs, but in practice, I realized that users value reliable basics, clarity, and data privacy over fancy extras.

This led me to cut some planned features and instead double down on usability and robust logic. The final database and menu structure are much simpler and more logical than in my first sketches.

Results

The end result is a habit tracker that works offline, keeps all data private, and walks users through the whole process—from registration all the way to analytics. Templates help beginners get started, and the results of daily or weekly habits can be viewed at any time, including longest streaks or completed goals. The software proved reliable during manual and automated tests, and tutor feedback confirmed its solid structure.

Real-World Impact & Outlook

I learned throughout this project that even with a concrete idea at the beginning, reality always forces you to adapt your plans. Initially, I wanted my habit tracker to have lots of modern features, like detailed statistics and even some motivational extras. But when I actually started coding, I realized that keeping things simple, reliable, and clear for the user was much more important than adding as many functionalities as possible.

One of the biggest surprises was how many unexpected difficulties appeared, especially in managing the data structure and user deletions without causing errors elsewhere. These challenges taught me to keep my architecture flexible and to ask myself: “Does this feature really help the user, or just make things more complicated?”

In the end, I focused on what really matters: making the tracker easy to use, robust, and 100% private. I’m convinced now that software, especially tools aimed at helping people change their behavior, needs to put real user needs above the wish to impress with features.

So, even though the tracker became simpler than my first plan, this change means the program now does what is most helpful in practice—and is a solid basis for future ideas if users ever really need them.

GitHub Link: https://github.com/AbdelilahJaarani/habit_tracker