Traceability Matrix – Fitness App Project

This traceability matrix links user stories with their corresponding requirements, design elements, implementation artifacts, and test cases. It is tailored for an Agile-based Fitness App developed using HTML, CSS, Python, SQL, and React.

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| --- | --- | --- | --- | --- | --- | --- |
| ID | User Story | Requirement | Design Element | Implementation | Test Case(s) | Status |
| US01 | As a user, I want to sign up and log in securely. | User authentication system | Login/Signup forms (HTML/CSS), Backend API (Python), SQL Users table | `login.html`, `signup.html` | TC01: Valid login TC02: Invalid login | Completed |
| US02 | As a user, I want to track my workouts daily. | Workout data entry and tracking | Workout form UI, React component for input, SQL workouts table | `trackWorkout.js`, `workout.css`, `add\_workout.py` | TC03: Add new workout,diet list,sleep analysis TC04: Empty fields validation | Completed |
| US03 | As a user, I want to view my progress on a dashboard. | Progress dashboard with historical data | Dashboard layout (HTML/CSS), React for dynamic data fetch | `dashboard.html`, `progress.js`, `progress.sql` | TC05: Fetch correct data TC06: Data format check | Done |
| US04 | As a user, I want to get basic fitness suggestions. | Static suggestions based on goals | HTML page with tips, Python function for condition-based suggestions | `suggestions.html`, `fitness\_tips.py` | TC07: Correct tips shown TC08: Goal matching logic | Done |
| US05 | As a user, I want to ask health and fitness questions and get intelligent responses. | Integration of a Large Language Model for health-related Q&A | LLM google/gemma-2b-it integration | ‘chat\_api.py’ | TC09: Query returns relevant answer  TC10: Handles unexpected questions gracefully | Done |