Habit Tracker App: Project Abstract

Abstract

This project is part of the **Applied Artificial Intelligence** program at **IU International University of Applied Sciences**. The Habit Tracker App is a Python-based application designed to help users manage, monitor, and analyze their habits effectively. By combining habit management features, streak tracking, and data persistence in JSON, the app offers a practical solution for personal productivity. The technical implementation demonstrates proficiency in Python programming, data handling, and testing frameworks. This document outlines the technical approach, highlights successes, and discusses lessons learned during the project's development.

Keywords: Habit Tracking, Python Programming, Streak Analysis, JSON Persistence, Software Testing, Applied Artificial Intelligence, Productivity Tools, Command-Line Interface (CLI)

Introduction

This document provides an overview of the Habit Tracker App project, a solution designed and implemented as part of the Applied Artificial Intelligence program at IU International University of Applied Sciences. The application aims to assist users in managing, tracking, and analyzing their habits through a structured, user-friendly interface. The project focuses on developing an efficient and reliable system while applying foundational software development principles.

Technical Approach

The application is built in Python, leveraging its standard libraries for JSON handling, datetime processing, and command-line interaction. The following key components constitute the solution:

- **Habit Management**: Users can add, edit, view, and remove habits, specifying periodicity and specifications.
- **Streak Tracking**: The app tracks current and longest streaks for habits based on completion data.
- **Persistent Storage**: Habits and their associated data are saved in a JSON file for reusability.
- **Testing**: A comprehensive suite of unit tests ensures the reliability of core functionalities.

Successes and Features

- **Efficient Habit Tracking**: The app effectively tracks and analyzes user habits with minimal resources.
- **User-Friendly Interface**: A clear, menu-driven command-line interface simplifies usage.
- **Testing Framework**: The unit tests catch potential bugs early, improving robustness.
- **Scalability**: The modular design allows easy addition of new features in the future.

Pitfalls and Lessons Learned

- **File Overwriting in Tests**: The JSON file was inadvertently overwritten during tests due to unintended calls to the save method. This was mitigated by mocking file operations.
- **Feature Creep**: Additional features like streak tracking were more complex than anticipated, requiring iterative refinements.
- **User Experience**: CLI interfaces, while functional, lack the visual appeal of GUIs, which could be an enhancement for future iterations.

Key Achievements and Value-Add

- **Streak Analysis**: Provides meaningful insights into user consistency and progress.
- **Comprehensive Testing**: Ensures reliability and minimizes errors in production.
- **Educational Impact**: The project provided practical experience with Python programming, file handling, and debugging in a real-world context.

GitHub Repository

The project is hosted on GitHub. You can access the code here: Habit_Tracker_App