UNIVERSITY OF ENERGY AND NATURAL RESOURCES

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATICS

COMP 264 – COMPUTER SCIENCE LAB

BSc. COMPUTER SCIENCE LEVEL 200

FITNESS TRACKER APP DOCUMENTATION

GROUP 15

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ABSTRACT

This Fitness Tracker App aims to enhance users' overall health by tracking activities, sleep, and meal plans. It promotes cardiovascular health, endurance, and strength while reducing disease risks by encouraging discipline in nutrition and physical activity.

This documentation outlines the features, functionality, and usage guidelines for FitHub, a comprehensive fitness tracking application designed to monitor and optimize physical activity, health, and wellness. The app enables users to track their daily activity levels, sleep patterns, nutrition, and workout routines, providing personalized insights and recommendations for improvement.

Key features include:

- Step tracking and distance measurement
- Calorie burn and nutrition monitoring
- Sleep quality analysis
- Customizable workout plans and tracking
- Goal setting and progress monitoring
- Integration with wearable devices and health platforms

This documentation provides a detailed overview of the app's architecture, user interface, and technical requirements, as well as troubleshooting guides and FAQs for optimal user experience. Intended for developers, testers, and end-users, this documentation serves as a comprehensive resource for understanding and utilizing the full capabilities of FitHub.

INTRODUCTION

Purpose

The aim of FitHub is to provide an easy-to-use platform for users to track their fitness journey and maintain a healthier lifestyle.

The purpose of this documentation is to provide a comprehensive guide to the FitHub fitness tracking application, outlining its features, functionality, and usage guidelines. This documentation aims to equip developers, testers, and end-users with the necessary knowledge to effectively utilize, test, and maintain the app, ensuring a seamless and optimal user experience.

Scope

This documentation covers all aspects of the FitHub app, including:

- User interface and navigation
- Its significance
- The technological stack used for development
- Troubleshooting and FAQs

- Best practices for development, testing, and maintenance

Audience

This documentation is intended for the following audiences:

- Developers: Responsible for building, maintaining, and updating the app
- Testers: Responsible for ensuring the app's quality and functionality
- End-users: Individuals utilizing the app to track their fitness and wellness
- Technical support staff: Providing assistance and troubleshooting guidance to end-users
- Potential users and stakeholders interested in fitness applications.

LITERATURE REVIEW

Overview

The use of fitness tracker apps has become increasingly popular in recent years, with numerous studies examining their effectiveness in promoting physical activity, weight loss, and overall well-being. Existing research highlights the benefits of wearable devices and mobile apps in tracking fitness metrics, providing personalized feedback, and encouraging behaviour change. However, there is a need for further investigation into the long-term effects, user engagement, and data accuracy of these apps.

Existing fitness applications provide a wide range of tracking capabilities but often lack customization for the specific needs of users in Ghana.

Key Studies

- A study published in the Journal of Medical Internet Research (2019) found that wearable devices and mobile apps significantly increased physical activity levels in adults.
- Research conducted by the University of California, Los Angeles (2020) discovered that fitness tracker apps with social sharing features enhanced user motivation and engagement.
- A systematic review published in the International Journal of Behavioural Nutrition and Physical Activity (2022) highlighted the importance of data accuracy and reliability in fitness tracker apps.

Gaps in Literature

- There is a need for fitness apps that cater specifically to users in developing countries, focusing on localized health challenges.
- Limited research exists on the long-term effects (beyond 6 months) of using fitness tracker apps on physical activity and health outcomes.

- Few studies have examined the impact of fitness tracker apps on diverse populations, such as older adults or individuals with chronic diseases.
- There is a need for further investigation into the optimal design and features of fitness tracker apps to enhance user engagement and behavior change.
- The accuracy and reliability of fitness tracker app data, particularly in regards to energy expenditure and sleep tracking, require further examination.

METHODOLOGY

Approach

The app was developed using an iterative approach, focusing on frontend design, backend development, and data management.

This documentation employs a mixed-methods approach, combining technical documentation, user testing, and expert review to provide a comprehensive guide to the fitness tracker app.

The approach involves:

- Technical documentation: Detailed descriptions of the app's architecture, features, and functionality.
- User testing: Feedback from end-users and testers to identify usability issues and areas for improvement.
- Expert review: Input from developers, designers, and industry experts to ensure accuracy and best practices.

Data Collection

Data was gathered through:

- User data, such as activities and sleep patterns, is collected through manual input and wearable device integration.
- User testing: Surveys, interviews, and usability testing sessions with a diverse group of participants.
- Expert review: Consultation with industry experts, developers, and designers through interviews and focus groups.

Tools and Methods

- Frontend: HTML, CSS, JavaScript
  Justification: HTML structures the app, CSS ensures a visually appealing interface, and JavaScript adds interactivity.
- Backend: Python (Flask)
  Justification: Python was chosen for its versatility, readability, and strong data analysis capabilities.

- Database: MySQL
  Justification: MySQL efficiently manages relational data, scales with user growth, and provides robust security features.
- Source Control: GitHub
  Justification: GitHub allows for collaborative development and efficient management of code changes.

Analysis

Data analysis involved:

- Technical documentation: Review and organization of technical information to create a clear and concise guide.
- User testing: Thematic analysis of user feedback to identify patterns and areas for improvement.
- Expert review: Synthesis of expert input to validate technical information and identify best practices.

Limitations

- The app's performance may vary based on device compatibility, and data accuracy depends on user input and device precision.
- Expert review was limited to a specific group of industry experts, and additional perspectives may provide further insights.
- The rapidly evolving nature of mobile apps and wearable devices may render certain aspects of this documentation outdated over time.
- This documentation focuses primarily on the fitness tracker app's functionality and user experience, with limited examination of the app's impact on physical activity or health outcomes.

CONCLUSION

In conclusion, this documentation provides a comprehensive guide to the fitness tracker app, covering its features, functionality, and usage guidelines. Through a mixed-methods approach, combining technical documentation, user testing, and expert review, we have created a valuable resource for developers, testers, and end-users.

The Fitness Tracker App combines technology with health management to empower users in tracking and improving their fitness. By offering personalized training plans, real-time feedback, and community engagement, the app supports users in achieving their health goals.

While this documentation provides a thorough overview of the app, further research is needed to explore its long-term effects, user engagement, and data accuracy. By addressing these gaps and

continually updating this documentation, we can ensure the app remains effective, user-friendly, and aligned with industry best practices.

REFERENCES

1. World Health Organization: WHO. (2024, June 26). Physical activity. https://www.who.int/news-room/fact-sheets/detail/physical-activity

2. Lu, L., Zhang, J., Xie, Y., Gao, F., Xu, S., Wu, X., & Ye, Z. (2020). Wearable Health Devices in Health Care: Narrative Systematic Review. JMIR Mhealth and Uhealth, 8(11), e18907. https://doi.org/10.2196/18907

3. Tong, H. L., Maher, C., Parker, K., Pham, T. D., Neves, A. L., Riordan, B., Chow, C. K., Laranjo, L., & Quiroz, J. C. (2022). The use of mobile apps and fitness trackers to promote healthy behaviors during COVID-19: A cross-sectional survey. PLOS Digital Health, 1(8), e0000087. https://doi.org/10.1371/journal.pdig.0000087

4. Designing for iOS | Apple Developer Documentation. (n.d.). Apple Developer Documentation. https://developer.apple.com/design/human-interface-guidelines/designing-for-ios

5. E, J. (2022, September 19). Design Patterns and Architecture: The Android Developer Roadmap – Part 4. https://getstream.io/blog/design-patterns-and-architecture-the-android-developer-roadmap-part-4/