

Was Fitness Tracker

Chanel Williams

013818454

Dr. Hong-Chuan Lin

Computer Engineering

May 6, 2024

3 hours

I did not attend or watch the lesson from Mr. Paul Hottinger

The primary objective of the WAS Fitness Tracker is to offer a user-friendly solution for goal tracking, workout planning, and dietary monitoring via a smartphone application. Developed using Java programming, specifically within the Java Eclipse environment, this software is meticulously crafted to offer users a streamlined and intuitive experience without being constrained by budgetary limitations.

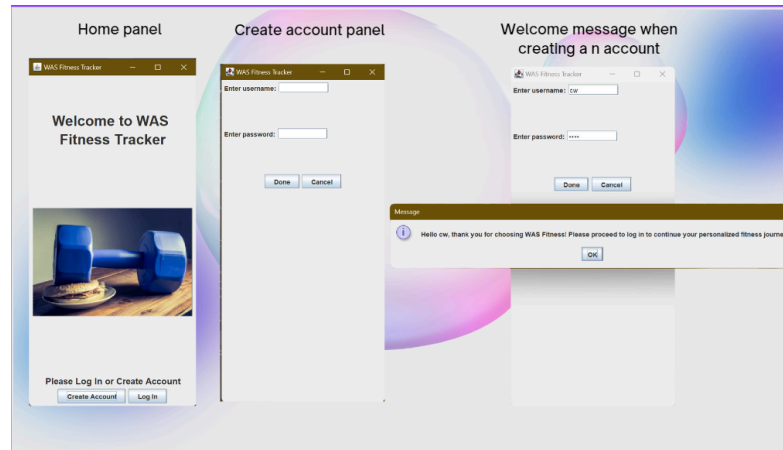


Figure 1- Account Page

Figure 1 Represents the welcome page and create an account page of the application.

Upon initiating the WAS Fitness Tracker, users are greeted with a straightforward yet essential process: account creation and login. The login page acts as the gateway to accessing the app's functionalities. Users are prompted to create an account, providing a username and password for subsequent access. Behind the scenes, Java facilitates the storage and retrieval of these credentials, ensuring data security through encrypted storage and robust authentication protocols. The login process itself employs conditional statements to validate user input. If the entered credentials match those stored in the system, users are granted access to the application's features. Conversely, incorrect entries result in denial of access, safeguarding user privacy and maintaining the integrity of the software. This initial phase sets the foundation for a personalized and secure user experience.

Moving into the second phase, users are prompted to input crucial health-related data, laying the groundwork for personalized fitness recommendations. Height, weight, age, and optionally, gender, are collected to compute the user's Body Mass Index (BMI), a key metric in assessing overall health status. Behind the scenes, Java facilitates data validation and processing, ensuring accuracy and reliability in BMI calculations. The computed BMI is then presented to the user through an intuitive interface, providing insights into their current health status and guiding subsequent fitness decisions. Equations such as weight conversion to kilograms, height conversion to meters, and BMI calculation are seamlessly integrated into the software, reflecting a meticulous approach to user-centric design and functionality. The following equations are employed to compute BMI:

$$\text{Convert weight to kilograms: } \text{weightInLbs} = \text{weight} * 0.453592$$

$$\text{Convert height to meters: } \text{heightInMeters} = ((\text{feet} * 12) + \text{inches}) * 0.0254$$

$$\text{Calculate BMI: } \text{bmi} = \text{weightInLbs} / \text{Math.pow}(\text{heightInMeters}, 2.0)$$

The culmination of the WAS Fitness Tracker experience lies in Phase 3, where users receive personalized workout and diet plans tailored to their individual needs. Leveraging the user's BMI, calorie intake requirements, and desired fitness goals, the software generates comprehensive plans aimed at promoting overall health and well-being. The Harris-Benedict Equation serves as the cornerstone for estimating the user's Basal Metabolic Rate (BMR) and Total Daily Energy Expenditure (TDEE), laying the groundwork for informed dietary and exercise recommendations. By factoring in variables such as height, gender, age, weight, and desired weight loss goals, the software delivers actionable insights into calorie intake and expenditure, empowering users to make informed lifestyle choices[2]. The following equations are applied:

$$\text{Calculate BMR: } bmr = 66 + (6.23 * \text{weight}) + (12.7 * \text{heightInInches}) - (6.8 * \text{age})$$

$$\text{Calculate TDEE: } tdee = 1.375 * bmr$$

$$\text{Determine daily calorie intake: } \text{calories} = (\text{intake})(tdee - 1000)$$

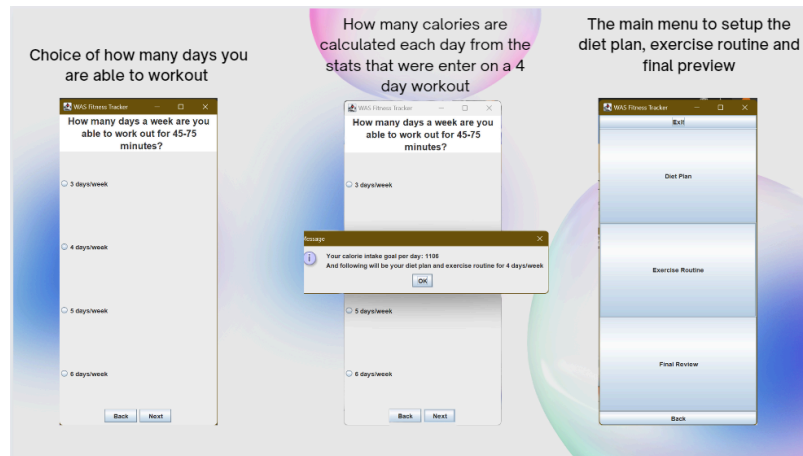


Figure 2- Workout Setup

Figure 2 Represents the workout setup and final review page of the application.

In the main menu, three buttons offer distinct functionalities in Figure 2. The "Diet Plan" button presents users with their required calorie intake, along with the option to explore meal plans on an external nutrition website. The "Exercise Routine" button provides personalized workout regimens based on the user's calorie intake and BMI, categorized over a three-month period. Options include "Strength Gain," "Maintenance," and "Muscle Gain" routines. Finally, the "Final Review" button allows users to adjust their plans, including modifying their BMI in "Personal Info" to generate updated calorie and workout recommendations.

Looking ahead, the WAS Fitness Tracker is poised for further refinement and expansion. Collaboration with dietitians will enrich the app's dietary features, providing users with expert-backed nutritional guidance. Additionally, enhancements to data storage capabilities will ensure the seamless preservation of user information, enhancing convenience and usability. Notification functionalities will play a pivotal role in keeping

users engaged and motivated, providing timely reminders for workouts and meal preparations. Furthermore, a visual overhaul will modernize the app's interface, enhancing its appeal and accessibility to a broader audience.

In essence, the WAS Fitness Tracker is more than just a fitness application; it's a testament to innovation, usability, and user empowerment. With ongoing development and a commitment to excellence, it is poised to become a cornerstone of the digital fitness landscape, empowering users to embark on their wellness journey with confidence and clarity.

References

- [1] E. Pavlidou, S. K. Papadopoulou, K. Seroglou, and C. Giaginis, "Revised Harris–Benedict Equation: New Human Resting Metabolic Rate Equation," *Metabolites*, vol. 13,

no. 2, p. 189, Feb. 2023, doi: <https://doi.org/10.3390/metabo13020189>.

[2] Eat This Much, Inc, “Eat This Much, your personal diet assistant,” Eat This Much, 2019.

<https://www.eatthismuch.com/>

[3] S. Fernandez and S. L. Seah, "How Mobile Health Technologies Can Transform Social Relationships in a Population-Level Fitness Promotion Campaign," *2022 IEEE International Symposium on Technology and Society (ISTAS)*, Hong Kong, Hong Kong, 2022, pp. 1-6, doi: 10.1109/ISTAS55053.2022.10227088.

[4] P. Ducrot et al., “Meal planning is associated with food variety, diet quality and body weight status in a large sample of French adults,” *International Journal of Behavioral Nutrition and Physical Activity*, vol. 14, no. 1, Feb. 2017, doi: 10.1186/s12966-017-0461-7.