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BMI Calculator with Health Tips

Problem Statement

Body Mass Index (BMI) is one of the most widely used indicators for assessing an individual's weight category and potential health risks. However, despite substantial global awareness about the dangers of obesity, malnutrition, and lifestyle-related diseases, many people still lack access to simple tools that can help them interpret their health status. This project aims to bridge that gap by introducing a user-friendly, command-line-based BMI Calculator and Health Tips Generator. The tool not only computes BMI but also provides personalized, actionable recommendations that encourage users to adopt healthier habits. It is designed to be lightweight, easy to use, and supportive for individuals who may not have prior technical experience.

Objectives

• Design and implement a modular Python application capable of calculating BMI using standard formulas.

• Classify BMI accurately according to universally recognized categories established by global health organizations.

• Provide personalized, clear, and motivational health recommendations based on the user's BMI category.

• Ensure robust input validation to prevent errors or unexpected crashes during execution.

• Promote maintainability and extensibility so future enhancements—such as user profiles, progress tracking, or data storage—can be easily integrated.

• Offer users an effective self-assessment tool that contributes to general health awareness and encourages proactive lifestyle improvements.

Non-Functional Requirements

• Usability: The application should provide clear prompts, step-by-step instructions, and understandable outputs, making it accessible for users of all backgrounds.

• Reliability: Input validation mechanisms should handle unexpected, incorrect, or incomplete user inputs gracefully without interrupting the program's workflow.

• Maintainability: The code structure must remain clean, modular, and easy to navigate, ensuring that future developers can expand or update the application with minimal difficulty.

• Performance: The system should compute BMI instantly using standard arithmetic operations and no heavy external libraries.

• Error Handling: The program must be capable of catching invalid inputs such as non-numeric values, negative measurements, or missing data, and respond with meaningful error messages.

• (Optional) Logging: Developers may integrate a logging system to track unusual behavior, record execution steps, or assist with debugging and auditing.

Extended Workflow Diagram Description

1. Start Application

The program initializes by displaying a welcome message that introduces its purpose and functionality.

2. Prompt User for Weight & Height

Users are asked to enter their weight in kilograms and height in centimeters. The prompts are clear and instructive.

3. Validate User Input

The application checks whether the inputs are numeric, positive, and within a realistic range.

- If invalid, an error message appears and the user is returned to the input prompt.

4. Calculate BMI

The BMI is calculated using the standard formula: BMI = weight (kg) / height (m^2).

5. Determine Category & Generate Tips

Based on the calculated BMI, the system assigns the appropriate weight category and generates a detailed set of health tips tailored to the user's condition.

6. Display BMI, Category, Health Advice

Results are clearly displayed, allowing users to interpret their health status and understand recommended lifestyle changes.

7. Exit or Restart

The program concludes by either exiting or prompting the user to restart the process for another calculation.

The combination of simplicity, reliability, and educational value makes this BMI Calculator an essential tool for individuals seeking to better understand and improve their personal health.