Structured Project Overview - Google Data Analytics Capstone

General Information:

- **Project Title:** How can a wellness technology company play it smart?
- **Tools Used:** R, dplyr, ggplot2, tidyr, lubridate
- **Data Source:** Fitabase (physical activity, sleep, and weight data)
- **Project Goal:** To analyze user behavior data and provide strategic insights for a wellness tech company to make smarter, data-driven decisions.

Project Phases:

##
✔

1. Library Loading:

- tidyverse
- lubridate
- ggplot2
- dplyr
- tidyr

##
✔

2. Data Import:

- Loaded CSV files from the Fitabase directory.

- Data includes: daily activity, heart rate, sleep, weight, and steps.

##

✔

3. Data Structure Inspection:

- Used str() and colnames() to understand the structure.

- Checked for duplicates and consistency across datasets.

##

✔

4. Data Cleaning & Preparation:

- Renamed columns for consistency.

- Removed duplicate records.

- Handled missing values using mean imputation.

##

✔

5. Data Merging:

- Combined: dailyActivity + dailyCalories + dailyIntensities + dailySteps

- Merged hourly datasets: calories, intensities, and steps

- Combined minute-level datasets: calories, intensities, METs, steps

##

✔

6. Date and Time Processing:

- Converted date fields to Date/POSIXct formats.

- Extracted: month, day, year, weekday, and hour.

##

✔

7. Sleep and Weight Analysis:

- Calculated difference between time in bed and time asleep.

- Merged weight and sleep data for relationship analysis.

##

✔

8. Exploratory Data Analysis:

- Analyzed calorie trends by step count and activity level.

- Examined heart rate distribution throughout the day.

- Investigated hourly intensity and calorie patterns.

- Explored variations in sleep efficiency over time.

##

✔

9. Visualizations:

- Scatter plot: Weight vs. Average Sleep Duration

- Bar chart: Average Calories by Step Range

- Faceted plots: Comparing calories, steps, and active minutes

---

Recommendations:

- Focus on peak activity hours (6PM–9PM) for targeted engagement.

- Address users with short sleep durations and high weights.

- Promote customized notifications for low-activity individuals.

Conclusion:

This project demonstrates how wellness technology companies can leverage user behavior data to personalize services, improve lifestyle habits, and make strategic, health-oriented decisions.