🏃 Fitness Tracker Analyzer

A complete data analysis project built using **Pandas**, **NumPy**, and **Matplotlib**.

This project analyzes and visualizes fitness-related data such as steps, calories burned, heart rate, and sleep hours over a 30-day period for multiple users.

📌 Project Highlights

- Clean and explore structured health/fitness data
- Generate weekly summaries and user-specific trends
- Classify sleep quality using NumPy conditions
- Multiple Matplotlib visualizations (line, bar, pie, scatter)
- Export final results to CSV

📂 Files Included

File	Description
fitness_analysis.ipynb	Jupyter notebook with full data analysis
fitness_data.csv	Raw fitness tracker dataset (synthetic)
cleaned_fitness_data.csv	Exported clean dataset with derived columns
README.md	This file with project details and instructions

🔧 Tech Stack

- **Python**
- **Pandas**

- **NumPy**
- **Matplotlib**

📊 Dataset Overview

Column Name	Description
Date	Date of entry
User_ID	Unique user identifier
Steps	Number of steps taken
Calories_Burned	Estimated calories burned
Heart_Rate	Average heart rate per day
Sleep_Hours	Hours of sleep
Sleep_Quality	Derived column (Good/Average/Poor)
Week	Derived column (ISO week number)

📈 Visualizations

- **Line Plot** → Steps over 30 days per user
- **Bar Plot** → Average calories burned per user
- **Pie Chart** → Sleep quality distribution
- **Scatter Plot** → Sleep hours vs. calories burned

💾 Output

- Cleaned dataset: cleaned_fitness_data.csv
- Charts and graphs

- Aggregated insights (weekly & user-based)