Sanjivani Rural Education Society's

Sanjivani College of Engineering, Kopargaon

Name of Course: Problem Solving using Python Lab (ESIT136)			
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Professional Report on Fitness Tracker Application

Introduction:

The Fitness Tracker Application is designed to assist users in managing their fitness goals by providing functionalities for registration, tracking progress, setting daily goals, and sharing progress. The application is built using Python and utilizes various libraries such as tkinter for the GUI, openpyxl for Excel file handling, matplotlib for data visualization, and csv for handling CSV files.

Key Features:

1. **User Registration:**
   - Users can register themselves by providing details such as name, age, weight, height, gender, food category, and any physical issues they may have.
   - Upon registration, the application calculates the user's BMI (Body Mass Index) and assigns a BMI category based on predefined ranges.
2. **BMI Category Identification:**
   - Users can input their name to retrieve their BMI and BMI category. If the user is not registered, they have the option to calculate their BMI by providing height and weight inputs.

3. **Setting Day Goals:**
    - Users can set goals for a specific day by entering their name and the desired day number.
    - The application retrieves the user's details and suggests goals based on their food category and BMI category, utilizing CSV files for data retrieval.
4. **Tracking Progress:**
    - Users can track their progress by inputting their name and the day number.
    - The application calculates targets and progress for water intake, calorie intake, and exercise hours, and visualizes the progress using a bar chart.
5. **Sharing Progress:**
    - Users can share their progress by providing their name, day number, water intake, diet attendance percentage, and exercise hours.
    - The application saves the progress data in a CSV file for future reference.

Code Overview:

- The code is structured into functions, each catering to a specific feature of the application such as registration, BMI calculation, goal setting, progress tracking, and progress sharing.
- Exception handling is implemented to handle errors gracefully and provide informative error messages to the user.
- The GUI is created using tkinter, offering a user-friendly interface for interacting with the application.
- Data handling is performed using Excel and CSV files, allowing for easy storage and retrieval of user information and progress data.

Future Improvements:

1. **Enhanced User Interface:**
    - Improve the visual design and layout of the GUI to enhance user experience.
    - Incorporate icons, themes, and styling to make the application more visually appealing.
2. **Data Analysis and Insights:**
    - Implement advanced analytics features to provide users with insights into their fitness progress over time.
    - Utilize machine learning algorithms to predict future progress and recommend personalized goals.
3. **Integration with Wearable Devices:**
    - Integrate the application with wearable fitness devices to automatically track user activity, sleep patterns, and other health metrics.
    - Sync data from wearable devices to provide real-time updates and analysis within the application.
4. **Community and Social Features:**
    - Incorporate social features to allow users to connect with each other, share tips, and support one another in their fitness journey.

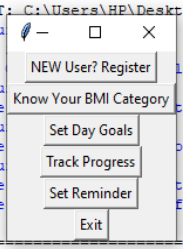
- Implement challenges, leaderboards, and group activities to promote engagement and motivation among users.

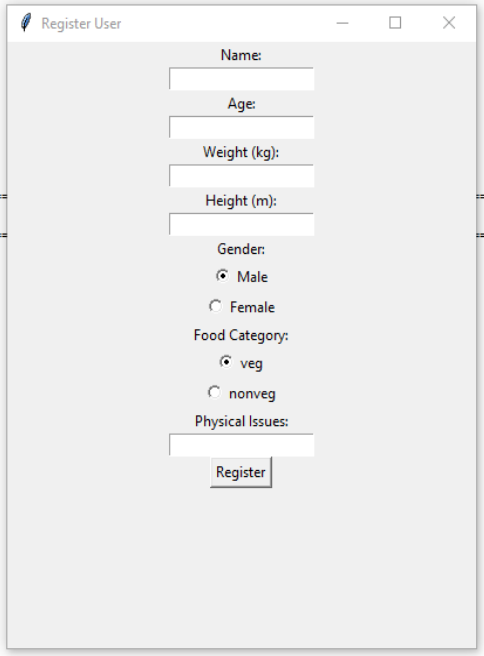
Details about modules:

Module	Description	Usage in the Application
tkinter	Tkinter is the standard GUI (Graphical User Interface) toolkit for Python. It provides a set of tools for building GUI applications, including various widgets and layout managers.	Tkinter is used to create the user interface for the Fitness Tracker Application, allowing users to interact with the application through windows, buttons, entry fields, and other graphical elements.
openpyxl	Openpyxl is a Python library for reading and writing Excel (xlsx) files. It provides functionalities to create, modify, and extract data from Excel spreadsheets.	Openpyxl is utilized to handle user registration data stored in an Excel file. It enables the application to append new registration details, calculate BMI, and update BMI categories based on user input.
matplotlib	Matplotlib is a plotting library for Python, allowing users to create various types of plots and charts, such as line plots, bar charts, histograms, and scatter plots.	Matplotlib is used to visualize the progress tracking data in the Fitness Tracker Application. It generates a bar chart to represent the user's progress in meeting their daily goals for water intake, calorie intake, and exercise.
csv	The csv module provides functionalities for reading and writing CSV (Comma-Separated Values) files, enabling users to handle tabular data efficiently.	The csv module is utilized to store and retrieve progress data in CSV format. It enables the application to save user progress records and read CSV files containing goal suggestions for specific days based on user characteristics.
os	The os module provides a portable way of interacting with the operating system, facilitating various system-related tasks such as file and directory operations, environment variables, and process management.	The os module is used to handle file paths and directories in the Fitness Tracker Application, allowing access and manipulation of files stored in the user's system, such as Excel spreadsheets and CSV files.
NumPy	NumPy is a fundamental package for scientific computing with Python, providing support for multi-dimensional arrays, mathematical functions, linear algebra operations, and random number generation.	NumPy is used in conjunction with Matplotlib for numerical computations and data manipulation in the progress tracking feature of the Fitness Tracker Application. It facilitates calculations and data processing required for generating progress visualization.
pandas	Pandas is a powerful data manipulation and analysis library for Python, offering data structures and functions for working with structured data, such as data frames and series.	Although not explicitly seen in the provided code, pandas could be leveraged for more advanced data manipulation tasks, such as reading/writing Excel files, filtering, and aggregating data, if further functionality is added to the application.

```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:\Users\HP\Desktop\fitness_tracker.py
Enter you
Your BMI
Your BMI
Enter you
Enter the                tting goals (1-10): 4
Enter you
Enter the                ogress tracking (1-10): 4
Enter you                 the day (in cups): 8
Enter the                t attended (0-100): 90
Enter the                f exercise: 3
```



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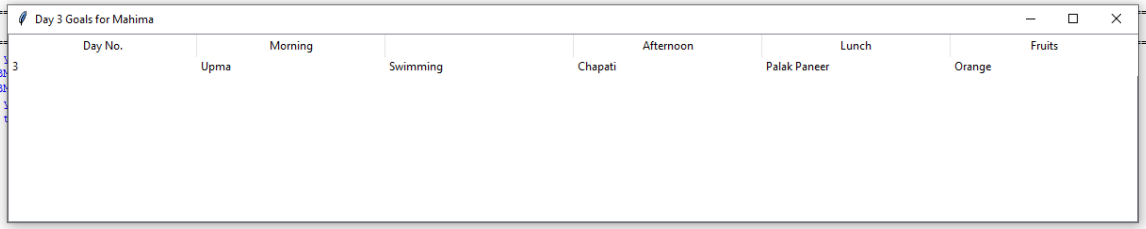
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:\Users\HP\Desktop\fitness_tracker.py
Enter your name: Mahima
Your BMI is: 20.3125
Your BMI Category is: normal
Enter your name: Mahima
Enter the day number for setting goals (1-10): 4
Enter your name: Mahima
Enter the day number for progress tracking (1-10): 4
Enter your water intake for the day (in cups): 8
Enter the percentage of diet attended (0-100): 90
Enter the number of hours of exercise: 3
```



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Enter the number of hours of exercise: 3

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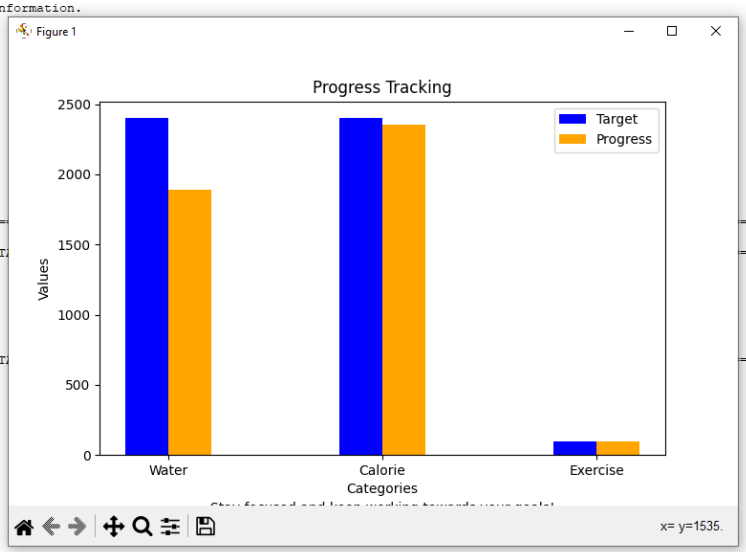
Your BMI Category is: normal
Enter your name: Mahima
Enter the day number for setting goals (1-10): 3
Enter your name:
========== RESTART: C:\Users\HP\Desktop\fitness_tracker.py ==========
Enter your name: mahima
Enter the day number for progress tracking (1-10): 4
Enter your water intake for the day (in cups): 8
Enter the percentage of diet attended (0-100): 98
Enter the number of hours of exercise: 3
```

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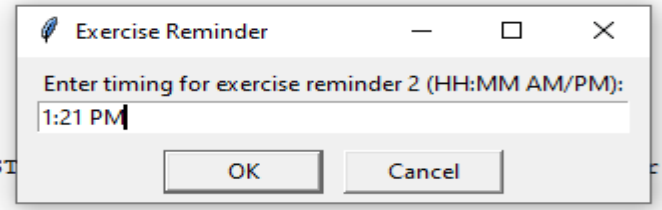
(1-10): 4

cing (1-10): 4
ı cups): 8
(0-100): 90
 3

==================================== RESTART: Shell ========================

=================== RESTART: C:\Users\HP\Desktop\fitness_tracker.py ========
```




```
 (1-10): 3

=================== REST                                    t.py ========

cing (1-10): 4
ı cups): 8
(0-100): 98
 3
```