Fitness Tracker

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## Abstract:

Our Running Tracker App is designed to assist users in monitoring their fitness activities, specifically running. The app calculates Body Mass Index (BMI), estimates calories burned during a run, and provides feedback on goal attainment. This report outlines the project's objectives, methodologies, outcomes, and the implementation of key features.

**Introduction:**

In a world where health and fitness are increasingly prioritized, our Running Tracker App aims to provide users with a tool to monitor their running activities. The app addresses the need for a personalized fitness tracker that considers individual factors such as weight, height, age, gender, and user-defined calorie goals. Our app is similar to others on the market like for instance the Nike Run Club app.

**Methodology:**

We used python to develop our application and used many features within the programming language such as defining functions and if statements to name a few. When developing the app we had to take into account many factors such as defining a person's BMI and BMR relative to their Gender. We knew that in order to do this we had to have a series of formulas defined under specific functions within the code to ensure our users got the most accurate results.

class FitnessTracker:

def \_\_init\_\_(self, weight\_pounds, height\_feet, age, gender):

self.weight\_pounds = weight\_pounds

self.height\_feet = height\_feet

self.age = age

self.gender = gender.lower()

def calculate\_bmi(self):

height\_inches = self.height\_feet \* 12

bmi = (self.weight\_pounds / (height\_inches \*\* 2)) \* 703

return bmi

def calculate\_calories\_burned(self, distance\_miles, duration\_minutes):

bmr = 0

if self.gender == 'male':

bmr = 66 + (6.23 \* self.weight\_pounds) + (12.7 \* (self.height\_feet \* 12)) - (6.8 \* self.age)

elif self.gender == 'female':

bmr = 655 + (4.35 \* self.weight\_pounds) + (4.7 \* (self.height\_feet \* 12)) - (4.7 \* self.age)

calories\_burned = bmr / 24 \* duration\_minutes / 60 \* 5

return calories\_burned

def calculate\_average\_pace(self, distance\_miles, duration\_minutes):

average\_pace = duration\_minutes / distance\_miles

return average\_pace

**Results & Findings**

In the code above you can see that we used 4 different functions. The first one was our \_\_init\_\_ function in order to classify the user inputs of their gender, weight, height and age. Then with the help of external research, we found and developed a formula for BMI. We then did a similar process to define both our average pace and calories burned functions. With the help of these functions and the information that the user inputs, we created an algorithm to determine the overall calories burned, whether the user hit their caloric goal, and to display their average pace during their run. You will also notice in the code below that we used if statements in order to make sense of our defined functions and to display the output of the results that the user inputted.

if \_\_name\_\_ == "\_\_main\_\_":

weight = float(input("Enter your weight in pounds: "))

height = float(input("Enter your height in feet: "))

age = int(input("Enter your age: "))

gender = input("Enter your gender (Male/Female): ")

distance = float(input("Enter the distance of your run in miles: "))

duration = float(input("Enter the duration of your run in minutes: "))

calorie\_goal = float(input("Enter your calorie goal: "))

tracker = FitnessTracker(weight, height, age, gender)

bmi = tracker.calculate\_bmi()

calories\_burned = tracker.calculate\_calories\_burned(distance, duration)

average\_pace = tracker.calculate\_average\_pace(distance, duration)

print(f"Your BMI: {bmi:.2f}")

print(f"Calories Burned: {calories\_burned:.2f} calories")

if calories\_burned >= calorie\_goal:

print("Congratulations! You've reached your calorie goal.")

else:

print("Keep going! You haven't reached your calorie goal yet.")

print(f"Average Pace: {average\_pace:.2f} minutes per mile")

**Design and Implementation**

We created a constructor for the fitness tracker class. We created functions within the class that calculate BMI, calories burned, and average pace per mile. Then implemented the class for user inputs to a variable called tracker. Then we printed out the values based on user input. Finally, we used if statements to print out whether the user reached the burned calorie goal or not.

**Challenges and Solutions**

Challenges we ran into were calculating formulas to figure out calories burned, simple spelling, and indentation errors. We responded by looking up formulas for BMI and BMR and used those to figure out if a user reached their calories burned goal. For spelling and indentation errors we looked at the error messages given and used those to figure out the errors and fix them accordingly.

**Discussion**

The significance of this project is everyday users could use this code to accurately track their calories burned. This is important because it could help people improve their health, lose weight, and motivate them to work harder in their workouts. Things we could improve on are track previous runs to compare progress, make an option to convert to Kg and Cm, make a predicted result for future runs, and add a way to track other workout types such as yoga, weightlifting, boxing, etc.

**Conclusion**

We successfully built a tracker the allows users to input information to calculate whether they reached their burned calorie goal or not. The code generates messages to the user to either congratulate the user or to motivate the user to work harder to achieve the calorie goal. We did this by using python to create functions that receive and calculate user input and then disperse results. We ran into the problems of figuring out BMI and BMR formulas as well as simple spelling and indentation errors. We then fixed this by searching up the formulas online and by fixing the code based off the error messages. Overall, we created a functional fitness tracker the calculates how many calories burned in a workout and whether or not the user achieves their goal.

**References**

* + [CDC - Calculating BMI using the English System - BMI for Age Training Course – DNPAO](https://www.cdc.gov/nccdphp/dnpao/growthcharts/training/bmiage/page5_2.html)
  + [BMR Calculator - Basal Metabolic Rate - Inch Calculator](https://www.inchcalculator.com/bmr-calculator/)