Python
BMI (Body Mass Index) Calculator

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Introduction

- This Project is to create **Calculate the BMI** (Body Mass Index) using Formula 1, input taken from JSON data.

  Formula 1 - BMI

  BMI(kg/m^2) = mass(kg) / height$(m)^2$

  The BMI (Body Mass Index) in (kg/m^2) is equal to the weight in kilograms (kg) divided by your height in meters squared $(m)^2$.

  For example, if you are 175cm (1.75m) in height and 75kg in weight, you can calculate your BMI as follows: 75kg / ($1.75m^2$) = $24.49kg/m^2$

- The **BMI**, **BMI Category** and **Health risk** from Table 1 of the person and add them as 3 new columns in existing input json file.

- **Count the total number of overweight** people using ranges in the column BMI Category of Table 1.

  Table 1 - BMI Category and the Health Risk.

BMI Category	BMI Range (kg/m^2)	Health risk
Underweight	18.4 and below	Malnutrition risk
Normal weight	18.5 - 24.9	Low risk
Overweight	25 - 29.9	Enhanced risk
Moderately obese	30 - 34.9	Medium risk
Severely obese	35 - 39.9	High risk
Very severely obese	40 and above	Very high risk

- **Create the Tests** to make sure the code is working as expected.

Input File

Input file is in JSON format with name as "**Input.json**". It contains person details as their **sex**, **height(cm)** and **weight(kg).**


```
[
    {"Gender": "Male", "HeightCm": 171, "WeightKg": 96 },
    { "Gender": "Male", "HeightCm": 161, "WeightKg": 85 },
    { "Gender": "Male", "HeightCm": 180, "WeightKg": 77 },
    { "Gender": "Female", "HeightCm": 166, "WeightKg": 62},
    {"Gender": "Female", "HeightCm": 150, "WeightKg": 70},
    {"Gender": "Female", "HeightCm": 167, "WeightKg": 82}
]
```


This **Input.json** is used by main code for getting the heights and weights.

Table

This is the python file with naming as "**Table1.py**" which contains **BMI Category, Health risk** for corresponding **BMI Range (kg/m^2).**

Table.py uses **Pandas'** DataFrame(df) concept to create the table.

df =

BMI Category	**BMI Range (kg/m^2)**	**Health risk**
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Main Code File

This is the python main code file naming as "**assessment.py**" which contains functions. It takes the input from "**Input.json**" file and table from "**Table1.py**" and after calculating the BMI using the function add the **BMI** and their corresponding **BMI Category** and **Health risk** to the "**input.json**" file using record.**update()** function of pandas. Using that calculated **BMI**, count the **total no. of overweight person** from the records of input file.

Functions:

- **calc_bmi(height, weight):**

  It takes the height and weight as input parameter and convert the height from cm to m. After conversion, uses the formula 1 to calculate the bmi.

- **New_col(index):**

  It takes the index from the list containing bmi's upper range as an input parameter and returns the corresponding BMI Category and Health Risk.

Test File

This also the python file naming as "**test_bmi.py**". It uses the python's **unittest** concept to create and check the test cases form **BMI Calculator**. Created two test cases for checking all the **cases** for **all the ranges** and for checking the **count of overweight person**, giving it input as list of **random height and weight**.

Random list:

l = [[171, 52], [180, 77], [167, 82], [170, 85], [171, 96], [155, 90], [155, 96]]

This list will check cases all the ranges and count of overweight person is 2.