

Programming Concepts for Mechanical Engineers

So you want my phone number and my BMI? How shallow can you get?

Title: Finding the body mass index of a person, classifying their health and recommending a target weight.

Background: In 1998, the federal government developed the body mass index (BMI) to determine ideal weights. Body mass index is calculated as 703 times the weight in pounds divided by the square of the height in inches, the obtained number is then **rounded** to the nearest whole number (Hint: 23.5 will be rounded to 24; 23.1 will be rounded to 23; 23.52 will be rounded to 24).

Specifications:

Exercise 1: Assign a value to weight in *lbs*, and height in *inches* and then calculate BMI as a rounded integer.

Exercise 2: Assign a value to weight in *lbs*, and height in *inches* and then calculate BMI as a rounded integer. If the BMI is not between 19 and 25 (both not included), print out a message saying that “Your BMI does not correspond to a healthy weight!”. If the BMI is between 19 and 25 (both inclusive), then print out a message box saying, “Your BMI corresponds to a healthy weight!”

Exercise 3: Assign a value to weight in *lbs*, and height in *inches* and then calculate BMI as a rounded integer. Output a variable called *healthy* as

- 0 if the person's BMI <19 (underweight)
- 1 if the person's BMI is $19 \leq \text{BMI} \leq 25$ (healthy)
- 2 if the person's BMI is $25 < \text{BMI} \leq 30$ (overweight)
- 3 if the person's BMI is >30 (obese)

Use *fprintf* command with explanation for the inputs and outputs

Exercise 4: Assign a value to weight in *lbs*, and height in *inches* and then calculate BMI as a rounded integer. Output a variable called *healthy* as

- 0 if the person's BMI <19 (underweight)
- 1 if the person's BMI is $19 \leq \text{BMI} \leq 25$ (healthy)
- 2 if the person's BMI is $25 < \text{BMI} \leq 30$ (overweight)
- 3 if the person's BMI is >30 (obese)

Output also a variable *hw* for healthy weight in rounded integer *lbs* for all the conditions.

Use *fprintf* command with explanation for the inputs and outputs