

Assignment #2

Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI is a reliable indicator of body fatness for people. BMI does not measure body fat directly, but research has shown that BMI correlates to direct measures of body fat, such as underwater weighing and dual energy x-ray absorptiometry (DXA). BMI can be considered an alternative for direct measures of body fat. Additionally, BMI is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems.<sup>1</sup>

BMI is calculated the same way for both adults and children.

$$BMI = \frac{weight(lb)}{height(in)^2} \times 703$$

For adults 20 years old and older, BMI is interpreted using standard weight status categories that are the same for all ages and for both men and women. For children and teens, on the other hand, the interpretation of BMI is both age- and sex-specific<sup>2</sup>.

The standard weight status categories associated with BMI ranges for adults are shown in the following table.

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

Write an interactive program that calculates the Weight Status of an adult using the BMI.

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<sup>1</sup> [http://www.cdc.gov/nccdphp/dnpa/bmi/adult\\_BMI/about\\_adult\\_BMI.htm](http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm)

<sup>2</sup> [http://www.cdc.gov/nccdphp/dnpa/bmi/childrens\\_BMI/about\\_childrens\\_BMI.htm](http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm)

A typical dialogue might be:

BMI Calculator

Enter the patient's height (in ft and inches – Enter 0 0 to stop): **5 7**

Enter the patient's weight (in pounds): **165**

Height: 5 feet, 7 inches

Weight: 165 pounds

Your BMI is **25.8**, indicating your weight is in the **overweight** category for adults of your height.

### Strategy

1. Write a function, *ConvertToInches*, that receives an individual's height in feet and inches and returns the height in inches.
2. Write a function, *BMI Calculator*, that receives the individual's height in inches and weight in pounds, and returns the BMI.
3. Write a function, *WeightStatus*, that receives an adult BMI and returns the patient's status (i.e., underweight, normal, overweight, or obese).
4. The main function is present the user interface dialogue, calls the appropriate functions and prints the results. Bad data is to be rejected.

All output is to be both to the console as well as to a file. Submit your program and results. Be sure to comment your program, use meaningful variables and to use the structured techniques we have learned in class.

### Data

Height (ft and inches)	Weight (lbs)
5 7	165
6 0	165
5 2	98
5 4	110
6 2	-99
6 2	210
<i>Make up for additional sets of data</i>	