# Lab 03: A BMI Calculator

## Objective

This lab is to make you familiar with data types, variable declarations, constants, assignment operator, arithmetic operations, static casting, and integer division.

- When coding, should never have a line of code exceeds the 80th column!

## Assignment: BMI calculator (background)

The Body Mass Index (BMI) is a measurement tool that compares your height to your weight and gives you an indication of whether you are overweight, underweight or at a healthy weight for your height. The formula to calculate the BMI value is:

The *CONVERSION FACTOR* is 703.

The formula to compute the naïve BMI is: $mass/height$

$$\text{Body Mass Index} = \frac{\text{mass (}\textit{in pounds}\text{)} * \text{CONVERSION\_FACTOR}}{\text{Height}^2 \text{ (}\textit{in inches}\text{)}}$$

## Your Goal:

Write a program (lab3.cpp) to calculate the BMI value (double) given weight and height as inputs. The *mass* and the *height* are integer values entered by the user (do you still remember how to get user inputs? It's not 'cout', but also starts with a 'c'). After the computation, you should first output the naïve BMI, then output BMI as a double value, and then you need to output it again as an int value using *static casting.*

The logical outline of your program should be similar as the following:

```
/* Proper file header
*/
#include <iostream>
using namespace std;

int main()
{

  1. declare the
     variables and
     constants
  2. Have a program
     greeting
  3. get user inputs
  4. compute a proper
     BMI value
  5. output the result
  6. Have a goodbye
     greeting
}
```

### Sample output

```
Welcome to the BMI Calculator Program

Please enter your weight (lbs): 120
Please enter your height (inches): 70

-----Results-----
The naive BMI is: 1.71429
The official BMI index is: 17.2163
The official BMI index after round-up is: 17
Goodbye!
```

### Hints:

1. The conversion factor should be an int, but an additional handling should be done for it.
2. The syntax for stating casting is *static_cast <desired_type> (variable)*
3. For the last output, you **have** to use static casting and not any other method to obtain the integer value.

## Things that You must accomplish to earn full credit

Your program will be graded on:

- Use of constants where appropriate.
- Use of meaningful variable and constant names.
- Proper use of spacing for indentations. Two space indentation.
- The program header (Your name, your ID, section, instructor name are required.).
- Adequate commenting.
- Use of proper messages to prompt for input and labels to describe output.
- Handling integer division where necessary.
- Use static casting where appropriate; **show that information lost was intentional.**
- Readability of the program
- Correctness of the program

## Steps:

1. **Remotely connect to a Unix/Linux machine using Putty**

2. **Make a new directory named Lab03 under cs1580 folder and go into that directory**

3. **Open a new C++ file named lab3.cpp (jpico lab3.cpp) and write the code**

4. **Compile the program** (fg++ lab3.cpp -o lab3)

6. **Run the program** (lab03)

test case:

| | Case 1 |
|---|---|
| Height (in) | 70 |
| Mass (lbs) | 120 |
| Naïve BMI | 1.71429 |
| BMI | 17.2163 |
| BMI(truncate decimals) | 17 |

7. **Submit your work**

Once you are sure you have the program running correctly, to submit a copy of your work, do the following command and use test case #1 for inputs:

cssubmit<space>1580<space><section><space><assignment-number>

example:

If you are from section "a" and the assignment number is 3

Then you should type

cssubmit 1580 a 3