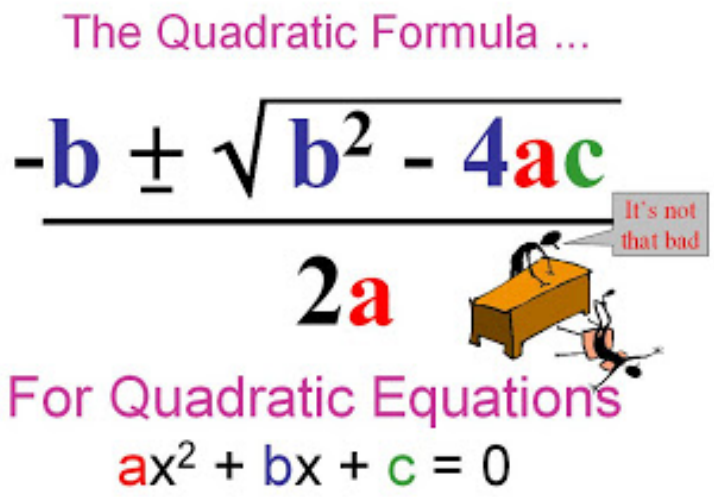
CS 153 Program 1— Simple Programs

1. Write a program that calculates the Body Mass Index (BMI) of the user. Prompt the user for their weight in pounds and height in inches. Convert the number of inches to feet (use a `double` to hold the result.) Then calculate:

```
BMI = (weight * 4.88)/(height*height)
where weight is in pounds and height is in feet
```

Write out the BMI, and then write out

- “underweight” if BMI is less than 20.0,
- “normal” if BMI is equal or greater than 20.0 but less than 25.0,
- “slightly overweight” if BMI is equal or greater than 25.0 but less than 30.0,
- “overweight” if BMI is equal or greater than 30.0 but less than 40.0, and
- “extremely overweight” if BMI is equal or greater than 40.0 .



2. Write a program that uses the quadratic formula to write out the real roots of an equation, $\mathbf{ax^2 + bx + c = 0}$.

If the coefficient **a** is zero, the equation is linear and has one root at **–c / b**. Otherwise, the equation is quadratic.

Not all quadratic equations have two roots. The discriminant is the part $\mathbf{b^2-4ac}$. If the discriminant is less than zero, there are no real roots. If the discriminant is zero, there is one root. Otherwise there are two real roots.

Of course, **a**, **b**, and **c** are double precision values (not just integers.) Your program should repeatedly ask the user for **a**, **b**, and **c**, then determine which of the cases apply and write out a message appropriate for the case and write out the roots (if any). End the program when the user enters zero for each of **a**, **b**, and **c**.

Compile and test your programs using MS-VC++ but be sure that you are using ANSI C. Your programs must compile and run using MS-VC++ “Ultimate” available on university computers. This should be close to the “Community” edition available for download on your own computer, but check to make sure.

Turn in a single **source file** with the individual programs called “main01 and main02”. Do not submit a zip file. Do not turn in more than one file. Use the "Add Attachments" button to do this. Don’t turn in a project.

You will need to create a project under MS-VC++. To compile and run one of your programs, temporarily change its name from mainxx to main.

Use this assignment to become familiar with the VC++ environment. Clean logic and neatness count when these programs are graded.