1. Write a program that will prompt the user for four `int` values (use `cout` to print the prompt, `"Enter four integers:  "` to the console) and then use `cin` to allow the use to enter these into variables named `x1,y1,x2,y2` (you will need to write appropriate variable declarations first). Then confirm the entries were successful by reporting to the use what they entered, that is, on a new line, print `"You entered x1 = <the value>, y1 = <the value>, x2 = <the value>, y2 = <the value>.`

2. Extend problem 1 by computing the slope of the line through (x_1, y_1) and (x_2, y_2) and store this in a variable of type `double` named `slope`. Use the `(double)` cast to compute this slope as a decimal and print this to the console. Check that the slope is defined, and if it's not, write `"A vertical line has no slope."`, or words to that effect, and bail out of the program with `return 0;`

3. If the line has a well-defined slope, then use the coordinates to compute the coordinates of the midpoint. Store these in two variables of type `double` named `midpoint_x, midpoint_y`, and report what these coordinates are.

4. Allow the user to enter a value for x and store this in a variable of type `double` named, `x`; Then report to the user (via the console) what the corresponding y-value for this x is on the line through the points (x_1, y_1) and (x_2, y_2).

5. Finally, put all the above together in a single program that will run to produce results like these shown here:

```
Enter coordintates for (x1,y1) and (x2,y2), in that order: 0 1 2 2

The slope of the line through (0,1) and (2,2) is 0.5
The coordinates of the midpoint connecting (0,1) and (2,2) are (1,1.5)

Enter another x value to find the corresponding y-value on the line:3

The y-value corresponding to x = 3 is 2.5
```

Include as a comment at the end of your code the results of a trial run or two like that shown above. Send your `.cpp` file to my email address with the format `<your initials>_linear.cpp` by Tuesday, February 16 at 2:00pm.

Here's a code shell to get you started:

```
/// G. Hagopian -- First assignment for CS7A -- linear relationships
#include <iostream>
using namespace std;

int main() {
    /// declare integer variables x1, y1, x2, y2
  /// prompt the user for input with cout and get the input with cin
  /// check whether the slope is defined or not, if not bail
  /// compute the slope and store it in the variable of type double named slope.
  /// Report what the slope is.
  /// Compute the coordinates of the midpoint of the line segment and report
  /// prompt the user for an x-value and store this in a variable of type double
  /// compute the corresponding y-value on the line through (x1,y1) and (x2,y2)
  /// and report that
}
/*  Here is the output of a sample run for this code:
Enter coordintates for (x1,y1) and (x2,y2), in that order: 0 1 2 2

The slope of the line through (0,1) and (2,2) is 0.5
The coordinates of the midpoint connecting 0,1) and (2,2) are (1,1.5)

Enter another x value to find the corresponding y-value on the line:3

The y-value corresponding to x = 3 is 2.5 */
```