1. Write a C++ program to produce a multiplication table for x times y where x goes from 1 to lastX and y goes from 1 to lastY. Input lastX and lastY from the user. For example, your program output might look like this:

Enter the last value of x... 3
Enter the last value of y... 2
Multiplication table for x*y
1 * 1 = 1
1 * 2 = 2
2 * 1 = 2
2 * 2 = 4
3 * 1 = 3
3 * 2 = 6

2. Write a program to prompt the user to input a sequence of integers. Continue inputting integers until the user enters a zero. When the user enters a zero to indicate the end of the list your program should print the minimum and maximum integer and the average value of all of the integers entered. For example, your program output might look like this:

Enter an integer... 4
Enter an integer... 5
Enter an integer... 8
Enter an integer... 13
Enter an integer... 2
Enter an integer... 7
Enter an integer... 0
The maximum integer entered was 13.
The minimum integer entered was 2.
The average of all of the integers was 6.50.

3. Write a program to evaluate the equation \( y = 3x^3 + 2x^2 - 4x + 10 \) for values of \( x \) starting at 0 and incrementing in steps of 0.1 until the value of \( y \) exceeds 1000. Print only the first value of \( x \) and the corresponding value of \( y \) for which \( y \) exceeds 1000.

4. Write a program to find the integer square root of a number input from the user. The integer square root is the largest integer whose square is less than or equal to the number. Use a loop and do this program with an exhaustive search.