Solve the following problems using C++, and make sure you document your code with comments:

1. Write a C++ program that takes a character from the user. The program should output:

   1. "Small letter" when input is a small letter (a-z)
   2. "Capital letter" when the input is a capital letter (A-Z)
   3. If the user entered any other character, the program should print "Not defined!"

In all cases, the program should print "GoodBye!" on the screen before terminating. (10 points)

2. Write a C++ program that uses a while or for loop that prompts the user to enter a high and a low integer and will calculate and display the sum of the integers between (and including) these two values. Be careful, the high number must be greater than the low! (10 points)

3. Write a C++ program that uses a while loop to ask the user for an unknown number of integer numbers. Once the user types in -1, stop the loop and display the average of the numbers. (10 points)

4. The Fibonacci Series in mathematics is defined as a sequence of numbers in which each number is the sum of the two preceding ones, starting from 0 and 1. Your Math-major friend needs your help to develop a C++ program that can generate N numbers in the Fibonacci series. For an example, if when N=7, a sequence of (0, 1, 1, 2, 3, 5, 8) is displayed on the screen. Your program should work for any arbitrary N. It should also handle any user input validation you see fit. Write your program using 2 different types of loops. multiplication, division and you must put the answer in "result". (20 points)

5. Write a C++ program that uses a while or for loop that prompts the user to enter a high and a low integer and will calculate and display the sum of the odd integers between (and including) these two values. Be careful, the high number must be greater than the low! (10 points)