School of Software Engineering

Object-Oriented Programming OOP (2016)
Exercise 2

Please submit the source files, program results after running the .exe file and related documents. The submitted package/files should be named by "yourname_studentid_exerciseno". Submit the package/files to your own folder on server (\\10.60.41.1). It should be the C++ folder.

Due day: 12:00 noon, Wednesday, Mar. 30, 2016

Problem 1

The **pentagonal** number is given by the formula *P(n) = n(3n-1)/2*, for *n* >=1. The first few pentagonal numbers are: 1, 5, 12, 22, 35 and so on. Please define a function to generate the pentagonal numbers. The numbers are returned back to users by a vector, and the size of the numbers is decided by the user. Note it is necessary to check the validity of the size set by the user. Then, please define another function to print each element in the vector. The second parameter for the function should be a string, which represents the sequence type (i.e., "Pentagonal" here). Please test the functions.

Problem 2

Please separate the function for generating the pentagonal numbers into two functions. One of the functions is an **inline** function, which checks if the size set by the user is valid or not. If the size is valid and there is no number obtained, the second function is executed to get the numbers.

Problem 3

1. Implement an overloading function max(), take following parameter lists:
    - A vector of integer
    - A vector of float
    - A vector of string
    - An array of integer, and an integer telling its size
    - An array of float, and an integer telling its size
    - An array of string, and an integer telling its size
2. Using template to re-implement above max()

Please test the functions.