LAB # 2

(PROGRAMMING SYSTEMS IN COMPUTATIONAL MATHEMATICS: MAPLE)

1. Construct the following polynomials (do not use the command *sum* of Maple):

    1.1. $p(x) = \sum_{i=0}^{100} i\, x^i$

    1.2. $p(x,y) = \sum_{i=0}^{i=20} (i+j)x^i y^j$

2. Create a procedure to compute combinatorial numbers (do not use the commands ! neither *binomial* of Maple).

3. Create a procedure to order lists of reals numbers (do not use the command *sort*).

4. Design a procedure to compute the maximum and minimum of a list of real numbers (do not use the commands *max, min*).

5. A squared matrix $A = (a_{i,j})$ is called upper triangular if it verifies that $a_{i,j} = 0$ for $i > j$ and it is called lower triangular if it verifies that $a_{i,j} = 0$ for $i < j$.

    5.1. Design a procedure to generate upper triangular matrices.

    5.2. Design a procedure to generate lower triangular matrices.

    5.3. Design a procedure to compute the inverse of a triangular matrix (do not use the Inverse command in Maple).

6. Design a procedure to count the number in a given list of numbers.