COMPUTER SCIENCE I

Exercise 9

1. 1. Create a file containing a vector **w** and its length in the first line. The file should look in the following way:
   N
   w1
   w2
   w3
   …
   wn
2. Write a program which contains a static array *w* of length *MAX_N* and three two-dimensional static arrays *A*, *B* and *C* of sizes [*MAX_N x MAX_M*], [*MAX_M x MAX_L*] and [*MAX_N x MAX_L*] correspondingly.
3. Read the length *N* of the vector **w** and and check if *MAX_N* ≥ *N*. If the condition is fulfilled, read the vector into the array.
4. Check if *MAX_M* ≥ *N* and if the condition is satisfied, create the array *B* which elements are defined by the formula:
   $$B_{ij}=\begin{cases}1-w_i w_j, i=j\\-2\,w_i w_j, i\neq j\end{cases}$$
5. Write a function which prints an array passed as its argument to the file “mac.txt”. Run the function with the array *B* as the argument.
6. Write two functions:
   a) the first one should compute a product of two matrices A and B:
      $C=A\cdot B$, or in another way $C_{ij}=\sum_{k=1}^{M} A_{ik}B_{kj}$
   b) the second one should compute a transposition of a given matrix.
7. Use both functions from the point 6 and calculate the matrix:
   $C=B\cdot B^T$