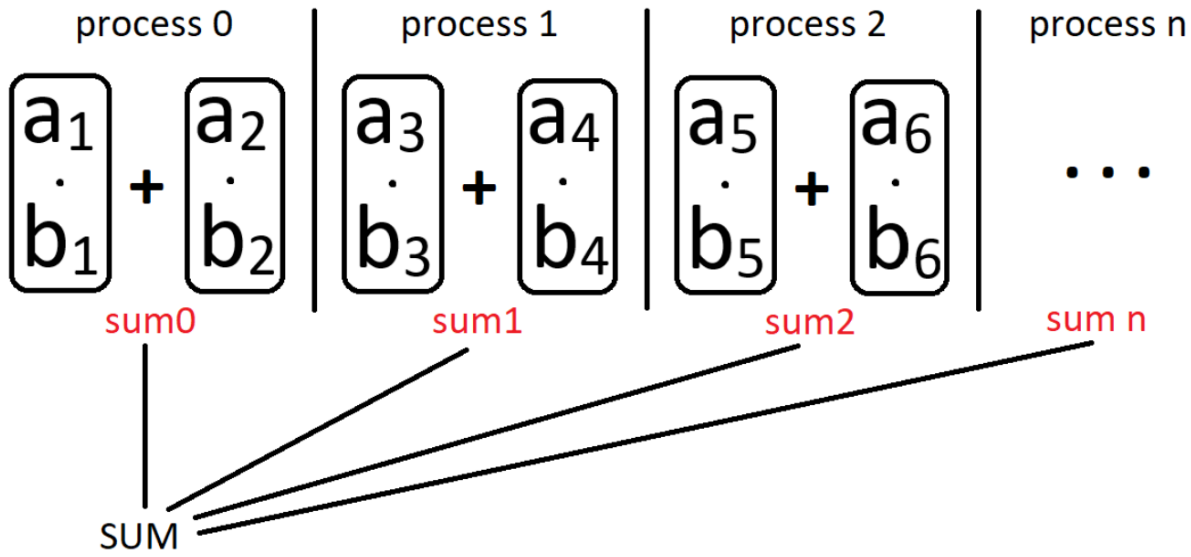
Assignment 7. MPI. Dot product of vectors.

Write an MPI program that implements the dot product of two vectors distributed between processes. Two vectors with a size of at least 1,000,000 elements are initialized at process zero and filled with “1”, then they are sent in equal parts to all processes. Parts of vectors are scalar multiplied on each process, the result is sent to the root process and summed up. The total is displayed.



Scalar product for two vectors a = [a1, a2, ..., an] and b = [b1, b2, ..., bn] in n-dimensional space defined as:

$$a \cdot b = \sum_{i=1}^{n} a_i b_i = a_1 b_1 + a_2 b_2 + \ldots + a_n b_n.$$