Write a program (using PVM / MPI) to evaluate
\[ a = \sum_{i=1}^{n} |a_i/b_i|^2 \]
where \( a \) and \( b \) are vectors of size \( n \).
\[
\tilde{a} = \begin{bmatrix} a_1 \\ \vdots \\ a_n \end{bmatrix}, \quad \tilde{b} = \begin{bmatrix} b_1 \\ \vdots \\ b_n \end{bmatrix}
\]
You are required to use fan-in algorithm where it is needed.

If
\[
p: \text{the number of processors} \\
n: \text{the size of vectors}
\]
determine and plot the variations of \( S_p \) and \( E_p \) with respect to the problem size on the same graph for:

a) \( p = 2 \)
   
   \( n = 10, 20, 128, 150, 200 \)

b) \( p = 8 \)
   
   \( n = 10, 20, 128, 150, 200 \)

c) \( p = 16 \)
   
   \( n = 10, 20, 128, 150, 200 \)

Describe your algorithm stepwise clearly. Give your comments and compare your results with your theoretical calculations.