Why you need to understand how to use subscripted variables in vectors and arrays

Assume you have a vector defined as "a", and you wish to multiply all the elements in this vector by the same corresponding elements and place this in vector "b".

In other words, vector "b's" elements should be what is in vector "a" squared.

\[
  a = \begin{bmatrix}
    2 \\
    4 \\
    6
  \end{bmatrix}
\]

If you try to short cut the system (no range variable and no subscripted addresses), you get the following:

\[
  b := a \cdot a \quad b = 56
\]

You have unknowingly calculated the dot product of the arrays

\[
  2 \cdot 2 + 4 \cdot 4 + 6 \cdot 6 = 56
\]

This is what you should have done:

\[
  j := 0, 1, 2
\]

\[
  b_j := a_j \cdot a_j \quad b = \begin{bmatrix}
    4 \\
    16 \\
    36
  \end{bmatrix}
\]