How to minimize problems when including text strings in vectors

CASE 1:

\[ A_0 := \text{"text"} \]  \hspace{1cm} \text{Place text in location 0}

\[ A_1 := 2 \]  \hspace{1cm} \text{Define location 1 as having the value 2}

\[ A = \begin{bmatrix} \text{"text"} \\ 2 \end{bmatrix} \]  \hspace{1cm} \text{Display the vector}

\[ A_3 := A_0 - 1 \]  \hspace{1cm} \text{Try to define location 3 by subtracting 1 from location 1; no go}

Since \( A(0) \) is a text string, this cannot be added to the contents of \( A(0) \)

CASE 2:

Minimizing the effect of a logic error

\[ B_1 := 2 \]  \hspace{1cm} B = \begin{bmatrix} 0 \\ 2 \end{bmatrix} \hspace{1cm} \text{Define location 1 as having the value 2 (location 0 is undefined or 0)}

\[ B_3 := B_0 - 1 \]  \hspace{1cm} B = \begin{bmatrix} 0 \\ 2 \\ 0 \end{bmatrix} \hspace{1cm} \text{Define B(3) as equaling B(0)-1}

\[ B_0 := \text{"text"} \]  \hspace{1cm} B = \begin{bmatrix} \text{"text"} \\ 2 \\ 0 \\ -1 \end{bmatrix} \hspace{1cm} \text{Redefine B(0) as "text"}

Note that by defining the text string last, the user has a chance to see and understand the logic error that was introduced due to incorrectly addressing locations.
Minimizing Problems due to incorrect units in arrays

CASE 1: What happens when things go bad due to incorrect units

\[ a := 2 \text{ in} \]
\[ B_i := 10 \]
\[ k := 2, 3, \ldots, 5 \]
\[ B_k := B_{k-1} + c \]

This is an attempt to define an array element that adds a unit less constant to a value that has units; it cannot be done.

CASE 2: Minimizing this condition

\[ c := 2 \]
\[ D_1 := 10 \]
\[ j := 2, 3, \ldots, 5 \]
\[ D_j := D_{j-1} + c \]

Write your equations without units

\[
D = \begin{bmatrix}
0 \\
10 \\
12 \\
14 \\
16 \\
18 \\
\end{bmatrix}
\]

\[ c := 2 \text{ in} \]
\[ D_1 := 10 \text{ in} \]

Now add in the units.

\[ j := 2, 3, \ldots, 5 \]
\[ D_j := D_{j-1} + c \]

\[
D = \begin{bmatrix}
0.000 \text{ in} \\
0.833 \text{ ft} \\
1.000 \text{ ft} \\
1.167 \text{ ft} \\
1.333 \text{ ft} \\
1.500 \text{ ft} \\
\end{bmatrix}
\]

You have a good chance in figuring out the issue as you should have sorted out any other logic issues by this point.