dear ptc community - for discussion - i have a program that works for me - it is a hall that has 16 8-ohm speakers, 4-sets of 4 speakers in series and then working them to match an 8-ohm ampifier output - can this progam be simplified? - thank you, joe

$$f(x) := \left\| \begin{array}{l} x \leftarrow 8 \\ M \leftarrow \begin{bmatrix} 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \end{bmatrix} \\ a \leftarrow \sum M^{\langle 0 \rangle} \\ b \leftarrow \sum M^{\langle 1 \rangle} \\ c \leftarrow \sum M^{\langle 2 \rangle} \\ d \leftarrow \sum M^{\langle 3 \rangle} \\ e \leftarrow \dfrac{a \cdot b}{a+b} \\ f \leftarrow \dfrac{c \cdot d}{c+d} \\ g \leftarrow \dfrac{e \cdot f}{e+f} \\ \text{return } g \end{array} \right. = 8$$

$$f(1) = 8$$

$$M := \begin{bmatrix} 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 0 \end{bmatrix}$$

test section

$$\frac{\dfrac{\left(\sum M^{\langle 0 \rangle}\right) \cdot \left(\sum M^{\langle 1 \rangle}\right)}{\left(\sum M^{\langle 0 \rangle}\right) + \sum M^{\langle 1 \rangle}} \cdot \dfrac{\left(\sum M^{\langle 2 \rangle}\right) \cdot \left(\sum M^{\langle 3 \rangle}\right)}{\left(\sum M^{\langle 2 \rangle}\right) + \sum M^{\langle 3 \rangle}}}{\dfrac{\left(\sum M^{\langle 0 \rangle}\right) \cdot \left(\sum M^{\langle 1 \rangle}\right)}{\left(\sum M^{\langle 0 \rangle}\right) + \sum M^{\langle 1 \rangle}} + \dfrac{\left(\sum M^{\langle 2 \rangle}\right) \cdot \left(\sum M^{\langle 3 \rangle}\right)}{\left(\sum M^{\langle 2 \rangle}\right) + \sum M^{\langle 3 \rangle}}} = 7.385$$

$$R_{total}(M) := \frac{1}{\frac{1}{\sum M^{\langle 0 \rangle}} + \frac{1}{\sum M^{\langle 1 \rangle}} + \frac{1}{\sum M^{\langle 2 \rangle}} + \frac{1}{\sum M^{\langle 3 \rangle}}}$$

$$M1 := \begin{bmatrix} 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 0 \end{bmatrix} \Omega \qquad R_{total}(M1) = 7.385\ \Omega$$

$$M2 := \begin{bmatrix} 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \end{bmatrix} \qquad R_{total}(M2) = 8$$

$$R_{total}\left(\begin{bmatrix} 0 & 8 & 8 & 8 \\ 8 & 0 & 8 & 8 \\ 8 & 8 & 0 & 8 \\ 8 & 8 & 8 & 0 \end{bmatrix}\right) \Omega = 6\ \Omega$$

$$R_{total}\left(\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \\ 13 & 14 & 15 & 16 \end{bmatrix}\right) \Omega = 8.351\ \Omega$$

$$R_{tot}(M) := \left\| \begin{array}{l} r \leftarrow 0 \\ \text{for } i \in \text{ORIGIN} .. \text{ORIGIN} + \text{cols}(M) - 1 \\ \quad \left\| \; r \leftarrow r + \frac{1}{\sum M^{\langle i \rangle}} \right. \\ \text{return } \frac{1}{r} \end{array} \right.$$

$$R_{tot}(M1) = 7.385\ \Omega$$

$$R_{tot}\left(\begin{bmatrix} 6 & 7 & 8 & 8 & 9 & 0 \\ 8 & 0 & 0 & 8 & 8 & 8 \\ 8 & 8 & 8 & 0 & 0 & 8 \end{bmatrix} \Omega\right) = 2.79\ \Omega$$

$$R_t(M) := \frac{1}{\sum_{i=\text{ORIGIN}}^{\text{ORIGIN} + \text{cols}(M) - 1} \frac{1}{\sum M^{\langle i \rangle}}}$$

$$R_t(M1) = 7.385\ \Omega$$

$$R_t\left(\begin{bmatrix} 6 & 8 & 8 \\ 7 & 0 & 8 \\ 8 & 0 & 8 \\ 8 & 8 & 0 \\ 9 & 8 & 0 \\ 0 & 8 & 8 \end{bmatrix}\right) = 11.259$$