**Title**

**Description**

\(\text{swap}(A, B)\) interchanges the contents of \(A\) and \(B\). \(A\) and \(B\) are not required to be of the same type or dimension.

**Syntax**

\[
void \quad \text{swap}(\text{transmorphic matrix } A, \text{transmorphic matrix } B)
\]

**Remarks and examples**

There is no faster way than \(\text{swap}(A, B)\) to assign \(A=B\) when you do not care about the contents of \(B\) after the assignment. For instance, you have the code

\[
A = B  \\
B = \ldots (\text{matrix expression})\ldots
\]

Faster is

\[
\text{swap}(A, B)  \\
B = \ldots (\text{matrix expression})\ldots
\]

The execution time of \(\text{swap()}\) is independent of the size of \(A\) and \(B\), and \(\text{swap()}\) conserves memory to boot. Pretend that \(B\) is a 900 × 900 matrix. After \(A=B\) is executed, but before \(B\) is reassigned, two copies of the 900 × 900 matrix exist. That does not happen with \(\text{swap()}\).

**Conformability**

\(\text{swap}(A, B)\):

\[
\begin{align*}
\text{input:} & \quad A: \quad r_1 \times c_1  \\
 & \quad B: \quad r_2 \times c_2
\end{align*}
\]

\[
\begin{align*}
\text{output:} & \quad A: \quad r_2 \times c_2  \\
 & \quad B: \quad r_1 \times c_1
\end{align*}
\]

**Diagnostics**

\(\text{swap}(A, B)\) works only with variables. Do not code, for instance, \(\text{swap}(A[i,j], A[j,i])\). It is not an error, but it will have no effect.

**Also see**

[M-4] **Programming** — Programming functions