\textbf{swap()} — Interchange contents of variables

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\section*{Syntax}

\begin{verbatim}
void swap(transmorphic matrix A, transmorphic matrix B)
\end{verbatim}

\section*{Description}

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

\section*{Remarks and examples}

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

\begin{verbatim}
A = B  \\
B = \ldots(matrix expression)\ldots
\end{verbatim}

Faster is

\begin{verbatim}
\texttt{swap(A, B)}
\end{verbatim}

\begin{verbatim}
B = \ldots(matrix expression)\ldots
\end{verbatim}

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

\section*{Conformability}

\texttt{swap(A, B)}:

\texttt{input}:

\begin{verbatim}
A: r_1 \times c_1  \\
B: r_2 \times c_2
\end{verbatim}

\texttt{output}:

\begin{verbatim}
A: r_2 \times c_2  \\
B: r_1 \times c_1
\end{verbatim}

\section*{Diagnostics}

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

\section*{Also see}

[M-4] \textbf{programming} — Programming functions