**swap() — Interchange contents of variables**

### Description

`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

```c
void swap(transmorphic matrix A, transmorphic matrix B)
```

### Remarks and examples

There is no faster way than `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

```plaintext
A = B
B = ...(matrix expression)...  
```

Faster is

```plaintext
swap(A, B)
B = ...(matrix expression)...  
```

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

### Conformability

`swap(A, B):

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>A</code></td>
<td><code>r_1 \times c_1</code></td>
</tr>
<tr>
<td><code>B</code></td>
<td><code>r_2 \times c_2</code></td>
</tr>
<tr>
<td><code>A</code></td>
<td><code>r_2 \times c_2</code></td>
</tr>
<tr>
<td><code>B</code></td>
<td><code>r_1 \times c_1</code></td>
</tr>
</tbody>
</table>

### Diagnostics

`swap(A, B)` works only with variables. Do not code, for instance, `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