all() — Element comparisons

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
<th>Remarks and examples</th>
<th>Conformability</th>
</tr>
</thead>
<tbody>
<tr>
<td>all()</td>
<td>real scalar all(real matrix L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>any()</td>
<td>real scalar any(real matrix L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>allof()</td>
<td>real scalar allof(transmorphic matrix P, transmorphic scalar s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>anyof()</td>
<td>real scalar anyof(transmorphic matrix P, transmorphic scalar s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description**

`all(L)` is equivalent to `sum(!L)==0` but is significantly faster.

`any(L)` is equivalent to `sum(L)!=0` but is slightly faster.

`allof(P, s)` returns 1 if every element of `P` equals `s` and returns 0 otherwise. `allof(P, s)` is faster and consumes less memory than the equivalent construction `all(P==s)`.

`anyof(P, s)` returns 1 if any element of `P` equals `s` and returns 0 otherwise. `anyof(P, s)` is faster and consumes less memory than the equivalent `any(P==s)`.

**Syntax**

```plaintext
real scalar all(real matrix L)
real scalar any(real matrix L)
real scalar allof(transmorphic matrix P, transmorphic scalar s)
real scalar anyof(transmorphic matrix P, transmorphic scalar s)
```

**Remarks and examples**

These functions are fast, so their use is encouraged over alternative constructions.

`all()` and `any()` are typically used with logical expressions to detect special cases, such as

```plaintext
if (any(x < 0)) {
    ...
}
```

or

```plaintext
if (all(x >= 0)) {
    ...
}
```

`allof()` and `anyof()` are used to look for special values:

```plaintext
if (allof(x, 0)) {
    ...
}
```
or

if (anyof(x, 0)) {
  ...
}

Do not use allof() and anyof() to check for missing values—for example, anyof(x, .)—because to really check, you would have to check not only .a, .b,..., .z. Instead use missing(); see [M-5] missing().

Conformability

all(L), any(L):

  L:    r × c
  result:  1 × 1

allof(P, s), anyof(P, s):

  P:    r × c
  s:    1 × 1
  result:  1 × 1

Diagnostics

all(L) and any(L) treat missing values in L as true.

all(L) and any(L) return 0 (false) if L is r × 0, 0 × c, or 0 × 0.

allof(P, s) and anyof(P, s) return 0 (false) if P is r × 0, 0 × c, or 0 × 0.

Also see

[M-4] Utility — Matrix utility functions