op_conditional — Conditional operator

Syntax

\[ a ? b : c \]

where \(a\) must evaluate to a real scalar, and \(b\) and \(c\) may be of any type whatsoever.

Description

The conditional operator returns \(b\) if \(a\) is true (\(a\) is not equal to 0) and \(c\) otherwise.

Remarks and examples

Conditional operators

\[
\text{dof} = (k==0 ? n-1 : n-k)
\]

are more compact than the if–else alternative

\[
\begin{align*}
\text{if } (k==0) & \quad \text{dof} = n-1 \\
\text{else} & \quad \text{dof} = n-k
\end{align*}
\]

and they can be used as parts of expressions:

\[
\text{mse} = \frac{\text{ess}}{(k==0 ? n-1 : n-k)}
\]

Conformability

\[ a ? b : c: \]

\[
\begin{align*}
a: & \quad 1 \times 1 \\
b: & \quad r_1 \times c_1 \\
c: & \quad r_2 \times c_2 \\
result: & \quad r_1 \times c_1 \text{ or } r_2 \times c_2
\end{align*}
\]

Diagnostics

In \(a ? b : c\), only the necessary parts are evaluated: \(a\) and \(b\) if \(a\) is true, or \(a\) and \(c\) if \(a\) is false. However, the ++ and -- operators are always evaluated:

\[
(k==0 ? i++ : j++)
\]

increments both \(i\) and \(j\), regardless of the value of \(k\).
Also see

[M-2] exp — Expressions

[M-2] intro — Language definition