eltype() — Element type and organizational type of object

Syntax

```
string scalar    eltype(X)
string scalar    orgtype(X)
```

Description

eltype() returns the current *eltype* of the argument.

orgtype() returns the current *orgtype* of the argument.

See [M-6] Glossary for a definition of *eltype* and *orgtype*.

Remarks and examples

If *X* is a matrix (syntax 1), returned is

<table>
<thead>
<tr>
<th>eltype(X)</th>
<th>orgtype(X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>real</td>
<td>scalar</td>
</tr>
<tr>
<td>complex</td>
<td>rowvector</td>
</tr>
<tr>
<td>string</td>
<td>colvector</td>
</tr>
<tr>
<td>pointer</td>
<td>matrix</td>
</tr>
<tr>
<td>struct</td>
<td></td>
</tr>
<tr>
<td>class</td>
<td></td>
</tr>
</tbody>
</table>

The returned value reflects the current contents of *X*. That is, *X* might be declared a transmorphic matrix, but at any instant, it contains something, and if that something were 5, returned would be "real" and "scalar".

For orgtype(), returned is "scalar" if the object is currently $1 \times 1$; "rowvector" if it is $1 \times k$, $k \neq 1$; "colvector" if it is $k \times 1$, $k \neq 1$; and "matrix" otherwise (it is $r \times c$, $r \neq 1$, $c \neq 1$).
X can be a function (syntax 2). Returned is

\[
\begin{array}{ll}
\text{eltype}(\ast(&\text{func}())) & \text{orgtype}(\ast(&\text{func}())) \\
\text{transmorphic} & \text{matrix} \\
\text{numeric} & \text{vector} \\
\text{real} & \text{rowvector} \\
\text{complex} & \text{colvector} \\
\text{string} & \text{scalar} \\
\text{pointer} & \text{void} \\
\text{struct} & \\
\text{structdef} & \\
\text{class} & \\
\text{classdef} & \\
\end{array}
\]

These types are obtained from the declaration of the function.

Aside: \text{struct} and \text{structdef} have to do with structures; see [M-2] \text{struct}. \text{structdef} indicates that the function not only returns a structure but is the routine that defines the structure as well. \text{class} and \text{classdef} have to do with Mata classes; see [M-2] \text{class}. \text{classdef} indicates the function not only returns a class but is the routine that defines the class as well.

\section*{Conformability}

\text{eltype}(X), \text{orgtype}(X):

\begin{align*}
X: & \quad r \times c \\
result: & \quad 1 \times 1
\end{align*}

\section*{Diagnostics}

None.

\section*{Also see}

[M-5] \text{isreal}() — Storage type of matrix

[M-5] \text{isview}() — Whether matrix is view

[M-4] \text{utility} — Matrix utility functions