quantizer

Construct `quantizer` object

Syntax

```
q = quantizer
q = quantizer('PropertyName1',PropertyValue1,...)
q = quantizer(PropertyValue1,PropertyValue2,...)
q = quantizer(struct)
q = quantizer(pn,pv)
```

Description

`q = quantizer` creates a `quantizer` object with properties set to their default values.

`q = quantizer('PropertyName1',PropertyValue1,...)` uses property name/ property value pairs.

`q = quantizer(PropertyValue1,PropertyValue2,...)` creates a `quantizer` object with the listed property values. When two values conflict, `quantizer` sets the last property value in the list. Property values are unique; you can set the property names by specifying just the property values in the command.

`q = quantizer(struct)`, where `struct` is a structure whose field names are property names, sets the properties named in each field name with the values contained in the structure.

`q = quantizer(pn,pv)` sets the named properties specified in the cell array of strings `pn` to the corresponding values in the cell array `pv`.

The `quantizer` object property values are listed below. These properties are described in detail in quantizer Object Properties.

Property Name	Property Value	Description
mode	'double'	Double-precision mode. Override all other parameters.
	'float'	Custom-precision floating-point mode.
	'fixed'	Signed fixed-point mode.
	'single'	Single-precision mode. Override all other parameters.
	'ufixed'	Unsigned fixed-point mode.
roundmode	'ceil'	Round toward positive infinity.
	'convergent'	Round to nearest integer with ties rounding to nearest even integer.
	'fix'	Round toward zero.
	'floor'	Round toward negative infinity.
	'nearest'	Round to nearest integer with ties rounding toward positive infinity.
	'round'	Round to nearest integer with ties rounding to nearest integer with greater absolute value.

Property Name	Property Value	Description
overflowmode (fixed-point only)	'saturate'	Saturate on overflow.
	'wrap'	Wrap on overflow.
format	[wordlength fractionlength]	Format for `fixed` or `ufixed` mode.
	[wordlength exponentlength]	Format for float mode.

The default property values for a `quantizer` object are

```
mode = 'fixed';
roundmode = 'floor';
overflowmode = 'saturate';
format = [16 15];
```

Along with the preceding properties, `quantizer` objects have read-only states: `max`, `min`, `noverflows`, `nunderflows`, and `noperations`. They can be accessed through `quantizer/get` or `q.maxlog`, `q.minlog`, `q.noverflows`, `q.nunderflows`, and `q.noperations`, but they cannot be set. They are updated during the `quantizer/quantize` method, and are reset by the `resetlog` function.

The following table lists the read-only `quantizer` object states:

Property Name	Description
max	Maximum value before quantizing
min	Minimum value before quantizing
noverflows	Number of overflows
nunderflows	Number of underflows
noperations	Number of data points quantized

Examples

The following example operations are equivalent.

Setting `quantizer` object properties by listing property values only in the command,

```
q = quantizer('fixed', 'ceil', 'saturate', [5 4])
```

Using a structure `struct` to set `quantizer` object properties,

```
struct.mode = 'fixed';
struct.roundmode = 'ceil';
struct.overflowmode = 'saturate';
struct.format = [5 4];
q = quantizer(struct);
```

Using property name and property value cell arrays `pn` and `pv` to set `quantizer` object properties,

```
pn = {'mode',  'roundmode', 'overflowmode', 'format'};
pv = {'fixed', 'ceil', 'saturate', [5 4]};
q = quantizer(pn, pv)
```

Using property name/property value pairs to configure a `quantizer` object,

```
q = quantizer( 'mode', 'fixed','roundmode','ceil',...
'overflowmode', 'saturate', 'format', [5 4]);
```

See Also

assignmentquantizer, fi, fimath, fipref, numerictype, quantize, set, unitquantize, unitquantizer