Subject: Re: significant figures function?
Posted by Ben Tupper on Mon, 26 Feb 2001 23:44:11 GMT
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You try the following.

```
;------start
;+
; NAME:
; ROUNDPV
;
; PURPOSE:
; This function returns a rounded value to a specified place value for
Integer, Long, Float, And
;  Double precision values.
;
; CATEGORY:
; Miscellaneous, Math
;
; CALLING SEQUENCE:
;  Result = RoundPV(Value, PlaceValue)
;
;
; INPUTS:
;  Value  A scalar or vector of type integer, long integer, float or double
precisions.
; PlaceValue  An integer specifying the plave value to round toward.
Positive and negative values
;  are permitted.
;
; OPTIONAL INPUTS:
; None
;
; KEYWORD PARAMETERS:
; None
;
; OUTPUTS:
; This function returns the rounded value to the spcified place value.
;
; OPTIONAL OUTPUTS:
; None
;
; COMMON BLOCKS:
; None.
;
; SIDE EFFECTS:
; None known.
;
```

```
; RESTRICTIONS:
; None known.
;
; EXAMPLE:
; X = 321.489
; For i = -2, 2 Do Print, RoundPV(X, i)
;      321.480
;      321.400
;      321.000
;      320.000
;      300.000
;
; Specifying a negative place value for an integer or long type data value
has no effect.  For example
; X = 321L
; For i = -2, 2 Do Print, RoundPV(X, i)
;         321
;         321
;         321
;         320
;         300
;
; MODIFICATION HISTORY:
;  Written by: Ben Tupper  30 SEP 1999
; email pemaquidriver@tidewater.net
; tel:  (207) 563 - 1048
;   248 Lower Round Pond Road
; POB 106
; Bristol, ME 04539-0106
;
;  6 FEB 2000  Dropped call to home grown TYPE function in favor of SIZE
function
;    with STRUCTURE keyword set.
;
;-


FUNCTION RoundPV, X, PV

If N_elements(PV) EQ 0 Then PV = 0
Sz = Size(X, /Str)

Case Sz.Type of

2: X2 =  Fix(Float(Long(Float(X)*10.^(-PV)))*10.^PV)
3: X2 =  Long(Float(Long(FLoat(X)*10.^(-PV)))*10.^PV)
4: X2 = Float(Long(X*10.^(-PV)))*10.^PV
5: X2 = Double(Long(X*10.d^(-PV)))*10.d^PV
```

Else:

EndCase

Return, X2

END

;------finish

Med Bennett wrote:

> Has anyone written a function that returns the input value or array with
> a specified number of significant digits? I have lloked at the various
> IDL libraries on the web but did not come up with what I'm after.
> Thanks in advance for any pointers -

--
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Subject: Re: significant figures function?
Posted by Martin Downing on Tue, 27 Feb 2001 00:07:54 GMT
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"Med Bennett" <mbennett@indra.com> wrote in message
news:3A9ACD30.E0F3F5D9@indra.com...
> Has anyone written a function that returns the input value or array with
> a specified number of significant digits? I have lloked at the various
> IDL libraries on the web but did not come up with what I'm after.
> Thanks in advance for any pointers -
>

this should do it

```
function fix_digits, num, digits
 expon = 1.0
 while num/expon gt 1 do expon = expon * 10
 fix_val = num/expon
 fstring = string(digits+2, digits, format = '("(f",i0.0,".",i0.0,")")')
```

```
 reads, string(fix_val, format = fstring), fix_val
 return, fix_val * expon
end

>  print, fix_digits(!pi, 3)
      3.14000
```

Martin

Mr. Martin Downing,
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m.downing@abdn.ac.uk

Martin

Subject: Re: significant figures function?
Posted by Martin Downing on Tue, 27 Feb 2001 01:36:29 GMT
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"Ben Tupper" <pemaquidriver@tidewater.net> wrote in message
news:3A9AEA4B.E6169330@tidewater.net...
> You try the following.
>
> ;------start
> ;+
> ; NAME:
> ; ROUNDPV
> ;

hm, I got funny results with this (as i did with my other attempt!)

```
IDL> print, roundPV( [  0.0002323,34.3434,1234000], 2)
     0.000000     0.000000 1.23400e+006
```

so I had another think:

```
function fix_digits, num, digits
 p10 = floor(alog10(abs(num)))
 expo = 10.0d^(digits -1 - p10)
 fix_val = long(num*expo)/expo
 return, fix_val
```

end

this seems to be fine for all thise who dont care about casting to double
- some one else can reset the type!

IDL> print, fix_digits([0.0002323,34.3434,1234000], 2)
   0.00023000000   34.000000   1200000.0

Martin

Subject: Re: significant figures function?
Posted by Med Bennett on Tue, 27 Feb 2001 02:33:22 GMT
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Thanks Ben and Martin! I had already kluged together another solution using a routine I found using the search engine I found using http://www.astro.washington.edu/deutsch/idl/htmlhelp/index.h tml (very handy tool!) by searching for 'significant' called strnsignif.pro (http://www.astro.washington.edu/deutsch-bin/getpro/library03 .html?STRNSIGNIF). Wrapping this with a loop and converting back to float did the trick. Less than perfect, but in the consulting biz, whatever can be found quickly beats an elegant solution!

Med

Martin Downing wrote:

> "Med Bennett" <mbennett@indra.com> wrote in message
> news:3A9ACD30.E0F3F5D9@indra.com...
>> Has anyone written a function that returns the input value or array with
>> a specified number of significant digits? I have lloked at the various
>> IDL libraries on the web but did not come up with what I'm after.
>> Thanks in advance for any pointers -
>>
>
> this should do it
>
> function fix_digits, num, digits
> expon = 1.0
> while num/expon gt 1 do expon = expon * 10
> fix_val = num/expon
> fstring = string(digits+2, digits, format = '("(f",i0.0,".",i0.0,")")')
> reads, string(fix_val, format = fstring), fix_val
> return, fix_val * expon
> end
>

>> print, fix_digits(!pi, 3)
> 3.14000
>
> Martin
>
> ----------
> Mr. Martin Downing,
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> Orthopaedic RSA Research Centre,
> Woodend Hospital,
> Aberdeen, AB15 6LS.
> m.downing@abdn.ac.uk
>
> Martin
