
Subject: Re: significant figures function?

Posted by [Ben Tupper](#) on Mon, 26 Feb 2001 23:44:11 GMT

[View Forum Message](#) <> [Reply to Message](#)

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 place 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 specified 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 -

--

Ben Tupper
248 Lower Round Pond Road
POB 106
Bristol, ME 04539

Tel: (207) 563-1048
Email: PemaquidRiver@tidewater.net

Subject: Re: significant figures function?

Posted by [Martin Downing](#) on Tue, 27 Feb 2001 00:07:54 GMT

[View Forum Message](#) <> [Reply to Message](#)

"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,
Clinical Research Physicist,
Orthopaedic RSA Research Centre,
Woodend Hospital,
Aberdeen, AB15 6LS.
m.downing@abdn.ac.uk

Martin

Subject: Re: significant figures function?
Posted by [Martin Downing](#) on Tue, 27 Feb 2001 01:36:29 GMT
[View Forum Message](#) <> [Reply to Message](#)

"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 those who don't care about casting to double
- someone 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

[View Forum Message](#) <> [Reply to Message](#)

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.html> (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 looked 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,
> Clinical Research Physicist,
> Orthopaedic RSA Research Centre,
> Woodend Hospital,
> Aberdeen, AB15 6LS.
> m.downing@abdn.ac.uk
>
> Martin
```
