
Subject: Re: Specify the degree of accuracy of a floating point number
Posted by [Brian Larsen](#) on Thu, 22 Feb 2007 17:58:22 GMT
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Just to add more to the mix here:

I use the solarsoft routine `round_off.pro` (I will put it inline as its short) to do this, seems to work well and its already written, which I always like.

Brian

```
;+
; Project   : SOHO - CDS
;
; Name      : ROUND_OFF()
;
; Purpose   : To round a number to a specified accuracy
;
; Explanation : Rounds the input number to the accuracy specified.
;
; Use       : IDL> out = round_off(x,acc)
;             IDL> out = round_off(12.278,0.01) ==> out = 12.28
;
; Inputs    : x   - the number to be operated on
;             acc - the numerical accuracy required
;
; Opt. Inputs : None
;
; Outputs    : The function value is the input rounded to the desired
accuracy
;
; Opt. Outputs: None
;
; Keywords   : None
;
; Calls      : NINT
;
; Restrictions: None
;
; Side effects: None
;
; Category   : Util, Numerical
;
; Prev. Hist. : None
;
; Written    : C D Pike, RAL, 17-May-1993
```

```

;
; Modified   : Replace calls to NINT by ROUND.  CDP, 17-Jun-95
;
; Version    : Version 2, 17-Jun-95
;-

```

```
function round_off,num,acc
```

```

;
; check enough parameters
;
if n_params() lt 2 then begin
    bell
    print,'Use: num = round_off(input, accuracy)'
    return,0.0
endif

;
; check for negative input
;
if num lt 0.0 then neg=1 else neg=0

;
; round off according to the accuracy required
;
num = abs(num)
if acc lt 1.0 then begin
    factor = round(1.0/acc)
    x = long((num+0.5*acc)*factor)/double(factor)
endif else begin
    x = long((long((num+acc/2.)/acc))*acc)
endelse

;
; return in same form received
;
case datatype(num) of
    'BYT': x = byte(x)
    'INT': x = fix(x)
    'LON': x = long(x)
    'DOU': x = double(x)
    'FLO': x = float(x)
endcase

if neg then return,-x else return,x

end

```

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