

The following code demonstrates one way of converting any number to standard scientific notation. This code is from newsletter 139, posted here by the author.

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' test program for scientific notation function
by Grahame King - released to public domain August 2006
a=1
while a<>0
input "test number ="; a
a$ = str$(a)
print "test number as string = "+a$
print "test number in scientific notation = "+ScNotation$(a)
wend
end
function ScNotation$(numin)
' function to express a number as a string in 'scientific notation'
if numin = 0 then ScNotation$ = "0" : exit function
' separate number into sign, significant numeric part (mantissa), and
exponent
' first extract the sign
absNumIn = abs(numin)
sgnNumIn = absNumIn/numin
if sgnNumIn>0 then
sgnNumIn$ = ""
else
sgnNumIn$ = "-"
end if
' represent unsigned number as a string using str$
absNumIn$ = str$(absNumIn)
' find the "e" in case LB has already put it in a form with an exponen
t
inde = instr(absNumIn$,"e")
if inde>0 then
expon = val(mid$(absNumIn$,inde+1))
mantissa$ = mid$(absNumIn$,1,inde-1)
else
expon = 0
mantissa$ = absNumIn$
end if
' move the decimal point in the old mantissa so that there is just one
nonzero digit in front of it
' and adjust the exponent accordingly
' start by finding the decimal point and breaking mantissa into its wh
ole part and fractional part
indDot = instr(mantissa$,".")
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if indDot = 0 then ' for integers
indDot = len(mantissa$)
whole$ = mantissa$
fract$ = ""
else
whole$ = mid$(mantissa$,1,indDot-1)
fract$ = mid$(mantissa$,indDot+1)
end if
while val(whole$) > 9 ' to move decimal point to the left if necessary
indDot = indDot-1
fract$ = right$(whole$,1)+fract$ ' add the last digit from the whole number part to the beginning of fract$
whole$ = left$(whole$,len(whole$)-1) ' and then remove that digit from the whole$
expon = expon+1 ' adjust exponent to keep the net result correct
wend
while val(whole$) <= 0 ' to move decimal point to the right if necessary
indDot = indDot+1
whole$ = whole$+left$(fract$,1) ' add the first digit of fractional part to the whole number part
fract$ = mid$(fract$,2) ' and then remove that digit from the beginning of the fractional part
expon = expon-1 ' adjust exponent to keep the net result correct
wend
' build Scientific Notation string from the three parts - sign, new mantissa and new exponent
ScNotation$ = sgnNumIn$+str$(val(whole$))+ "." +fract$+"e"+str$(expon)
end function
```