
Subject: Re: Recursive Function Program in IDL
Posted by news.qwest.net on Wed, 14 Dec 2005 17:46:00 GMT
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"David Fanning" <davidf@dfanning.com> wrote in message
news:MPG.1e09eff8986d3ab0989ae7@news.frii.com...
> Folks,
>
> Does anyone have a handy recursive function that does something neat?
> Someone is asking, and I don't have time to work on this. He
> (apparently) can't get to the newsgroup.
>
> Thanks,
>
> David
>
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

An old program in my hackware style of programming.
Honest, I program much better nowadays!!

This finds the prime factors of a number (i.e. for 9, it returns 3, 3).
Very useful for making sure you pass a factorable length time series to
an fft routine (if time is important to you).

Cheers,
bob

; find the factors of a number

function factors, n, prevfactors=prevfactors

```
maxfactor = fix(sqrt(n))
if maxfactor le 1 then begin
  if keyword_set(prevfactors) then begin
    prevfactors = [prevfactors, n]
    return, n
  endif else begin
    return, n
  endelse
```

endif

fac = findgen(maxfactor-1)+2 ; 2 -- sqrt(n)

doloop = 1

factorflag = 0

counter = 0

while doloop do begin

if n mod fac(counter) eq 0 then begin

factorflag = 1

newfactor = fac(counter)

if keyword_set(prevfactors) then prevfactors = [prevfactors,newfactor] \$

else prevfactors = newfactor

newnumber = n/newfactor

; to iterate is human, to recurse is divine

r = factors(newnumber,prevfactors=prevfactors)

doloop = 0

endif

counter = counter+1

if counter ge maxfactor-1 then doloop = 0

endwhile

if n_elements(prevfactors) eq 0 then prevfactors = n else begin

; only if n is prime do we add it here

if not(factorflag) then prevfactors = [prevfactors,n]

endelse

return,prevfactors

end

;;;_____ test code here _____

n = 5001

r = factors(n)

print

print

```
print,'Finished calculating factors_____'
print,'Number: ',n
print,'Factors:'
print,r
```

```
end
```
