Subject: Re: Recursive Function Program in IDL
Posted by Paolo Grigis on Wed, 14 Dec 2005 16:36:44 GMT
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this computes the binomial coefficients recursively
(the numbers showing up in Pascal's triangle)

```
FUNCTION  binomial,n,j

IF n LT j THEN  BEGIN
   print,'INVALID INPUT IN BINOMIAL'
   RETURN,-1
ENDIF

IF j LE 0 THEN  RETURN,1

IF j EQ n THEN $
    RETURN,1 ELSE $
    RETURN,binomial(n-1,j)+binomial(n-1,j-1)

END
```

Ciao,
Paolo

David Fanning wrote:
> 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
>

Subject: Re: Recursive Function Program in IDL
Posted by David Fanning on Wed, 14 Dec 2005 16:51:29 GMT
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Paolo Grigis writes:

> this computes the binomial coefficients recursively
> (the numbers showing up in Pascal's triangle)

Thanks, Paolo.

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/

Subject: Re: Recursive Function Program in IDL
Posted by Antonio Santiago on Wed, 14 Dec 2005 17:16:45 GMT
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David Fanning wrote:
> 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
>

Working with trees are almos always a good place to work with recursion:

http://en.wikipedia.org/wiki/Depth-first_search
http://en.wikipedia.org/wiki/Breadth-first_search

--

Antonio Santiago Pï¿½rez
(email: santiago<<at>>grahi.upc.edu)
(www: http://www.grahi.upc.edu/santiago)
(www: http://asantiago.blogsite.org)

GRAHI - Grup de Recerca Aplicada en Hidrometeorologia
Universitat Politï¿½cnica de Catalunya

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

Subject: Re: Recursive Function Program in IDL
Posted by David Fanning on Wed, 14 Dec 2005 17:50:50 GMT
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R.G. Stockwell writes:

> 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).

Gosh, maybe I'll make a collection of these and post them.
It will probably keep other people from crossing their eyes
and sticking their tongues out the corner of their mouths when
they try to write a recursive function. Thanks!

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
