
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 Piç¹/₂rez

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(www: <http://www.grahi.upc.edu/santiago>)

(www: <http://asantiago.blogspot.org>)

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Universitat Politè¹/₂cnica 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.
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