Subject: Re: Selecting groups of 5 coords from a set of n (nC5) Posted by Paolo Grigis on Fri, 03 Mar 2006 17:19:34 GMT

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Some time ago I needed combinations and I came up with this function. Example:

IDL> print,pgcomb(5,3)

0	1	2	
0	1	3	
0	1	4	
0	2	3	
0	2	4	
0	3	4	
1	2	3	
1	2	4	
1	3	4	
2	3	4	

It might not be the most efficient solution, but at least I understand the (quite simple) underlying algorithm.

Be careful that no check is made for bad inputs, it's up to the user to make sure that 1<=j<=n.

Ciao, Paolo

FUNCTION pgcomb,n,j

;;number of combinations of j elements chosen from n nelres=long(factorial(n)/(factorial(j)*factorial(n-j)))

res=intarr(j,nelres);array for the result res[*,0]=indgen(j);initialize first combination

FOR i=1,nelres-1 DO BEGIN;go over all combinations res[*,i]=res[*,i-1];initialize with previous value

FOR k=1,j DO BEGIN;scan numbers from right to left

IF res[j-k,i] LT n-k THEN BEGIN; check if number can be increased

;if number has been increased, set all numbers to its right ;as low as possible

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IF k GT 1 THEN res[j-k+1:j-1,i]=indgen(k-1)+res[j-k,i]+1
    BREAK; we can skip to the next combination
    ENDIF
  ENDFOR
ENDFOR
RETURN, res
END
Olivia wrote:
> Dear All,
> I am trying to write a loop to perform a calculation on all possible
> sets of 5 coordinates from a group of n. The test case I am working on
> has a total number of coordinates of 8, so there will be 8c5=56 unique
> solutions. At the moment, I am thinking of using 5 for loops as an
> extension of a similar problem I worked on choosing 3 points. The 3
> point code ran like this:
>
> ;Select groups of 3 boundary points
> ;for p=1, n, 1 do begin
> ; for k=1, n, 1 do begin
> ; for m=0, n-1, 1 do begin
 ; ellipse points=[[bx[m], by[m]],$
             [bx[m+k], by[m+k]],$
>
             [bx[m+k+p], by[m+k+p]]
>
> On reflection, I was wondering if there might be a better way of doing
> this. This is probably only a fear as my code is already looking really
> complicated and I am worried about putting rubbish in and getting
> rubbish out whilst being completely unaware. If anyone has any ideas I
  would be really grateful to hear them. Thank you very much,
> Olivia
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Subject: Re: Selecting groups of 5 coords from a set of n (nC5) Posted by Olivia on Fri, 03 Mar 2006 18:00:10 GMT

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Wow, thanks Paolo! That is far more elegant than my attempts. You are fast becoming the most important person in my masters project! Thanks again for all your help,

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