
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 $1 \leq j \leq n$.

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
```

```
      res[j-k,i]=res[j-k,i-1]+1;do so
```

```
    ;if number has been increased, set all numbers to its right
```

```
    ;as low as possible
```

```
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

>

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,

Olivia
