

Re: Create subspace from Basis : Maple

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- *From:* israel@xxxxxxxxxxx (Robert Israel)
 - *Date:* 25 May 2006 22:17:40 GMT
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In article <1148567059.226496.293590@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>, matrix <iyerns@xxxxxxxx> wrote:

Hi,
I have the Basis vectors of a subspace. How can I form the whole subspace (all possible linear combinations) from these basis vectors in Maple ?

I use symbolic computations mod 2.

If your field is Z_2 (i.e. the integers mod 2), and the "vectors" are implemented as lists or Vectors, then the span of a set of vectors V can be obtained as follows:

```
T:= combinat[cartprod]([seq]([0,1],i=V));  
  
n:= nops(V);  
makevec:= proc(L) add(L[i]*V[i],i=1..n); % mod 2 end;  
{seq}(makevec(T[nextvalue]()), i=1..2^n);
```

Note: if the set is not necessarily linearly independent, it's better using lists here rather than Maple's Vectors, because duplicate lists are automatically removed from a set, while duplicate Vectors are not. Of course you can easily convert from lists to Vectors or vice versa.

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