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%% FILE: combosets.pro
%% TYPE: Prolog source
%% LINE: a bit of combinatorial set code
%% DATE: November, 1995
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% -----
% combination procedures
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```
combos(set(N1,N2,N3), combo(N1,N2), extras(N3)).
combos(set(N1,N2,N3), combo(N2,N3), extras(N1)).
combos(set(N1,N2,N3), combo(N1,N3), extras(N2)).
```

```
combos(set(N1,N2,N3,N4), combo(N1,N2), extras(N3,N4)).
combos(set(N1,N2,N3,N4), combo(N1,N3), extras(N2,N4)).
combos(set(N1,N2,N3,N4), combo(N1,N4), extras(N2,N3)).
combos(set(N1,N2,N3,N4), combo(N2,N3), extras(N1,N4)).
combos(set(N1,N2,N3,N4), combo(N2,N4), extras(N1,N3)).
combos(set(N1,N2,N3,N4), combo(N3,N4), extras(N1,N2)).
```

```
combos(set(N1,N2,N3,N4,N5), combo(N1,N2), extras(N3,N4,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N1,N3), extras(N2,N4,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N1,N4), extras(N2,N3,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N1,N5), extras(N2,N3,N4)).
combos(set(N1,N2,N3,N4,N5), combo(N2,N3), extras(N1,N4,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N2,N4), extras(N1,N3,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N2,N5), extras(N1,N3,N4)).
combos(set(N1,N2,N3,N4,N5), combo(N3,N4), extras(N1,N2,N5)).
combos(set(N1,N2,N3,N4,N5), combo(N3,N5), extras(N1,N2,N4)).
combos(set(N1,N2,N3,N4,N5), combo(N4,N5), extras(N1,N2,N3)).
```

```
% -----
% the permutation facts
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```
perm(s(A,B), p(A,B)).
perm(s(A,B), p(B,A)).
```

```
perm(s(A,B,C), p(A,X,Y)) :- perm(s(B,C), p(X,Y)).
perm(s(A,B,C), p(B,X,Y)) :- perm(s(A,C), p(X,Y)).
perm(s(A,B,C), p(C,X,Y)) :- perm(s(A,B), p(X,Y)).
```

```
perm(s(A,B,C,D), p(A,X,Y,Z)) :- perm(s(B,C,D), p(X,Y,Z)).
perm(s(A,B,C,D), p(B,X,Y,Z)) :- perm(s(A,C,D), p(X,Y,Z)).
perm(s(A,B,C,D), p(C,X,Y,Z)) :- perm(s(A,B,D), p(X,Y,Z)).
perm(s(A,B,C,D), p(D,X,Y,Z)) :- perm(s(A,B,C), p(X,Y,Z)).
```

```
perm(s(A,B,C,D,E), p(A,X,Y,Z,W)) :- perm(s(B,C,D,E), p(X,Y,Z,W)).
perm(s(A,B,C,D,E), p(B,X,Y,Z,W)) :- perm(s(A,C,D,E), p(X,Y,Z,W)).
perm(s(A,B,C,D,E), p(C,X,Y,Z,W)) :- perm(s(A,B,D,E), p(X,Y,Z,W)).
perm(s(A,B,C,D,E), p(D,X,Y,Z,W)) :- perm(s(A,B,C,E), p(X,Y,Z,W)).
perm(s(A,B,C,D,E), p(E,X,Y,Z,W)) :- perm(s(A,B,C,D), p(X,Y,Z,W)).
```