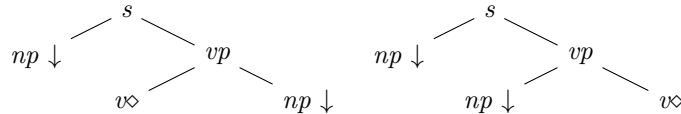# Tree Adjoining Grammars
Exercises

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Exercise 1 (19.11.2015) *Add dominance and precedence constraints to the class* **ex1** *to get (only) the following two solution trees:*


```
class ex1
declare ?S ?VP ?V ?NP0 ?NP1
{
   <syn >{
        node S[cat=s];
        node VP[cat=vp];
        node V(mark=anchor)[cat=v];
        node NP0(mark=subst)[cat=np, case=nom];
        node NP1(mark=subst)[cat=np, case=acc];
        ...
   }
}
```

Solution to Exercise 1

```
class ex1
declare ?S ?VP ?V ?NP0 ?NP1
{
   <syn >{
        node S[cat=s];
        node VP[cat=vp];
        node V(mark=anchor)[cat=v];
        node NP0(mark=subst)[cat=np, case=nom];
        node NP1(mark=subst)[cat=np, case=acc];
        S -> NP0;
        S -> VP;
        NP0 >> VP;
        VP -> V;
        VP -> NP1
   }
}
```

Exercise 2 (19.11.2015) *Give all the trees which are described by the following XMG class:*

```
class ex2
declare ?A ?B ?C ?D
{
```

```
<syn>{
        node A[cat=s];
        node B[cat=v];
        node C[cat=s];
        node D[cat=n];
        A ->  B;
        A ->* C;
        A ->  D;
        B >> D
}
}
```

Solution to Exercise 2

We get the five following models (the node variables are indicated into brackets, (A,C) being the result of the unification of nodes A and C):

$$s_{(A,C)}$$
$$v_{(B)} \quad n_{(D)}$$

$$s_{(A)}$$
$$v_{(B)} \quad n_{(D)} \quad s_{(C)}$$

$$s_{(A)}$$
$$s_{(C)} \quad v_{(B)} \quad n_{(D)}$$

$$s_{(A)}$$
$$v_{(B)} \quad n_{(D)}$$
$$s_{(C)}$$

$$s_{(A)}$$
$$v_{(B)} \quad n_{(D)}$$
$$s_{(C)}$$