Introduction to symbolic CL (684.01) — OSU Linguistics
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Exercise sheet 5
(Due: Wednesday, 14. Feb)

1. Consider the following small DCG grammar (on the web as file `sheet5.pl`):

```
top_s --> s([],[]).
s(G1,G3) --> np(G1,G2), vp(G2,G3).

np([gap],[]) --> [].
np(G,G) --> [the, man], postmod.

postmod --> [].
postmod --> [who], s([gap],[]).

vp(G,G) --> [slept].
vp(G1,G2) --> [saw], np(G1,G2).
```

   Explain why the standard Prolog parser accepts the string "the man who the man saw slept" but does not accept "the man who saw slept" as a `top_s`.

2. Carefully read chapter 8 of the notes. Try out the code presented there, which you can download from the course web page.

   (a) Write a small example grammar which works fine with the shift-reduce parser but does not terminate with the top-down parser. Provide the grammar and a three sentence explanation.

   (b) Write a second small example grammar which works fine with the top-down parser but does not terminate with the shift-reduce parser. Provide the grammar and a three sentence explanation.

   (c) Where does a shift-reduce parser differ from a left-corner parser? Show this by explaining the difference in the tree traversal they perform for a simple example tree.