1. Give a DCG that recognizes the set of strings in \( \{0, 1, 2\}^* \) that are palindromes so that, for example,

\[
\text{?- s([0,2,1,2,0],[]).}
\]

yes

\[
\text{?- s([1,0],[]).}
\]

no

\[
\text{?- s([1,0,0],[]).}
\]

no

2. Give a DCG that recognizes strings in \( \{0, 1, 2, 3\}^* \) of the form

\[
w 3 0^k 1^n 2^{kn}
\]

(encoded as lists) where \( w \) is a palindrome in \( \{0, 1, 2\}^* \) with exactly \( k \) 0's, \( n \) 1's and \( kn \) 2's. E.g.

\[
\text{?- s([3],[]).}
\]

yes

\[
\text{?- s([0,2,1,2,0,3|L],[]).}
\]

\( L=[0,0,1,2,2] \)

Be sure you understand how the DCG clauses translate to ordinary Prolog clauses with difference lists. (Try listing.)

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\(^1\)Demonstrate during lab (Tues 2-3) or, failing that, submit to Blackboard. For any extensions beyond Nov 1, email one of your demonstrators, Bojan Bozic (bozicb@scss.tcd.ie), David Woods (dwoods@tcd.ie). E-mail submissions to Tim Fernando will receive an F3.