SOLUTION NOTES

Prolog for Artificial Intelligence 2001 Paper 6 Question 7 (WFC)

The details are given in the notes as the solution to Worksheet 32. Briefly, the key to this is to do as much as possible at the same time. Variables do all the "work". When a node is encountered, a copy can be made, the highest val so far can be accumulated, and a variable "hole" can stand for the output tree's value, to co-refer with all other "holes". At the end of the search, the accumulated highest co-refers with the all the "holes". Here is a program:

```
/* mt(InTree, OutTree, Hole, AccumHighest, Highest) */

maxtree(A, B) :- mt(A, B, H, 0, H).

mt(n(W, A, B), n(H, A1, B1), H, AC, N) :-
W < AC,
mt(A, A1, H, AC, ACA),
mt(B, B1, H, ACA, N).
mt(n(W, A, B), n(H, A1, B1), H, AC, N) :-
W < AC,
mt(A, A1, H, AC, ACA),
mt(B, B1, H, ACA, N).
mt([], [], H, A, A).
```