

F28PL1 Programming Languages

Tutorial 10

Write Prolog programs to:

- 1) generate a list of N copies of variable V
 - the list from 0 is empty
 - the list from N has V in the head and N-1 copies of V in the tail
- 2) generate a descending list of halves of integers from N to 1:
 - the list from 0 is empty
 - the list from N has half N in the head and the list of halves from N-1 to 0 in the tail
- 3) generate an ascending list of all the squares of integers from M to N:
 - if M is bigger than N then the list is empty
 - otherwise, the list has M in the head and all the squares from M+1 to N in the tail
- 4) A box may be described by its colour, length, breadth and height.

The red box is 3 cm * 4 cm * 5 cm. The blue box is 5 cm * 8 cm * 10cm. The yellow box is 9 cm * 15 cm * 2 cm. The green box is 11 cm * 12cm * 13 cm. The white box is 19 cm * 1 cm * 4 cm. The black box is 3 cm * 11 cm * 12 cm. The orange box is 1 cm * 2 cm * 1 cm.

Assuming box facts are in the database, write Prolog rules to find lists of:

- i) the volumes of the boxes;
- ii) the longest box;
- iii) the boxes which can fit inside each other.