Abstract. We illustrate the layout of oriented trees (trees where all edges are directed) for \( n \leq 7 \) nodes as counted in sequence [1, A000238]. The trees are grouped according to shape of the underlying undirected tree, where shapes are counted in [1, A000055].

1. 2 nodes 1 arc (1 tree)

2. 3 nodes 2 arcs (3 trees)

3. 4 nodes 3 arcs (8 trees)
   3.1. shape 1, linear (4 trees).
   3.2. shape 2, star (4 trees).

4. 5 nodes 4 arcs (27 trees)
   4.1. shape 1, linear (10 trees).
   4.2. shape 2 (12 trees).
   4.3. shape 3 (star) (5 trees).

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5. 6 nodes 5 arcs (91 trees)

5.1. shape 1, linear (16 trees).

5.2. shape 2 (24 trees).

5.3. shape 3 (20 trees).

5.4. shape 4 (9 trees).

5.5. shape 5 (16 trees).

5.6. shape 6, star (6 trees).

6. 7 nodes 6 arcs (350 trees)

6.1. shape 1, linear (36 trees).
6.2. shape 2 (48 trees).

6.3. shape 3 (64 trees).
6.4. shape 4 (20 trees).

6.5. shape 5 (21 trees).

6.6. shape 6 (48 trees).

6.7. shape 7 (32 trees).
6.8. shape 8 (30 trees).

6.9. shape 9 (24 trees).

6.10. shape 10 (20 trees).
6.11. shape 11, star (7 trees).

7. Summary

One may (conjecturally) derive from the simple linear tree of \( n \) nodes as many as \( A051437(n - 2) \) directed trees. The number of directed trees from the star tree of \( n \) nodes is obviously \( n \).

References

   
   URL: http://www.mpia.de/~mathar
   
   HOESCHSTR. 7, 52372 KREUZAU, GERMANY