

Colourings[k, o] gives the number of colourings of the knot k,
which is given in modified DT form onto the permutation group S_o .

```
Colourings[k_MDT, o_Integer] :=  
  Colourings[k, o] = If[k === MDT[],  
    Length /@ (Sort[Length /@  
      (List @@ PermutationCycles@#) [[1]] &  
      // GroupBy[Permutations@Range@o, #] &  
      // Values]),  
    Block[{e = EdgeSequence@k,  
      s, v, w = List @@@ List @@ ToPD@k},  
      s = SortBy[If[Order[Position[Join @@ e, #[[1]]],  
        Position[Join @@ e, #[[3]]] == 1,  
        #, Reverse@#] & /@  
        (w /. (Max@# -> Min@# & /@ w[[;;, {3, 5}]])) [[  
          ;;, 2 ;; 4]],  
        Max@Table[Position[Join @@ e, #[[j]], {j, 2}] &]],  
      Total /@  
        Table[If[ValidColouring[k, e[[1]], s, g], 1, 0],  
          {p, (Length /@ (List @@ PermutationCycles@#) [[1]]  
            // Sort) &  
            // GroupBy[Permutations@Range@o, #] &  
            // Values},  
          {g, Tuples[p, Length@e[[1]]]}]]];
```