

$\text{TwoPass}@k$ gives all the knots that can be obtained by applying one 2-pass to the knot k , which is given in modified DT form.

```
TwoPass@k_MDT := TwoPass@k = Block[{a, c, n = Length@k,
  p = List @@ Build@k //
    (#T ∪ (Abs@Reverse@# Sign@#)T)T[[2]] &, v,
  y = {}},
Do[v = Abs@p[[Mod[{i, i + 1}, 2 n, 1]]];
If[Sort@Sign@p[[Mod[{i, i + 1}, 2 n, 1]]] == {-1, 1},
  Do[If[Total@Mod[1, 2] == 2,
    c = Range @@@ Partition[1 + {1, -1, 1, -1}, 2];
    If[¬ MemberQ[Join @@ c, i], 1 = RotateLeft@1;
    c = Mod[Range @@@ Partition[
      1 + {1, -1, 1, 2 n - 1}, 2], 2 n, 1]];
If[Length[Join @@ c] < 2 n - 4
  && v ∪ Join @@ c == Abs@p[[Join @@ c]] ∪
    Mod[{i, i + 1}, 2 n, 1],
  AppendTo[y, Convert[Build@k /. x_Integer :>
    PassMapping[v, 1, p, c, n, Abs@x, i]]]],
{1, Sort@Join[#, v] & /@
  Subsets[Delete[Range[2 n],
    Mod[{i, i + 1}]T, 2 n, 1]], {2}]]],
{i, 2 n}];
KnotSort[Minimal /@ y ∪ {}]];
```