

Nested Sets – from Wikipedia article

Using the nested set model as described has some performance limitations during certain tree traversal operations.

For example, trying to find the immediate child nodes given a parent node requires pruning the subtree to a specific level as in the following **SQL** code example:

Nested Sets

```
SELECT Child.Node, Child.Left, Child.Right
FROM Tree as Parent, Tree as Child
WHERE
    Child.Left BETWEEN Parent.Left AND Parent.Right
    AND NOT EXISTS ( -- No Middle Node
        SELECT *
        FROM Tree as Mid
        WHERE Mid.Left BETWEEN Parent.Left AND Parent.Right
              AND Child.Left BETWEEN Mid.Left AND Mid.Right
              AND Mid.Node NOT IN (Parent.Node, Child.Node)
    )
    AND Parent.Left = 1 -- Given Parent Node Left Index
```

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```
SELECT DISTINCT Child.Node, Child.Left, Child.Right
FROM Tree as Child, Tree as Parent
WHERE Parent.Left < Child.Left
      AND Parent.Right > Child.Right -- associate Child Nodes with ancestors
GROUP BY Child.Node, Child.Left, Child.Right
HAVING max(Parent.Left) = 1 -- Subset for those with the given Parent Node as the nearest ancestor
```

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To overcome this limitation and simplify tree traversal an additional column is added to the model to maintain the depth of a node within a tree.

Node	Left	Right	Depth
Clothing	1	22	0
Men's	2	9	1
Women's	10	21	1
Suits	3	8	2
Slacks	4	5	3
Jackets	6	7	3
Dresses	11	16	2
Skirts	17	18	2
Blouses	19	20	2
Evening Gowns	12	13	3
Sun Dresses	14	15	3