

## Splay Insertion Algorithm

Splay insertion is like root insertion, except rotation occur with respect to the grandparent rather than the parent.

If the orientation of the two links between grandparent and grandchild have the same orientation\*:

1. Rotate the parent and grandparent.
2. Rotate the grandchild with parent.

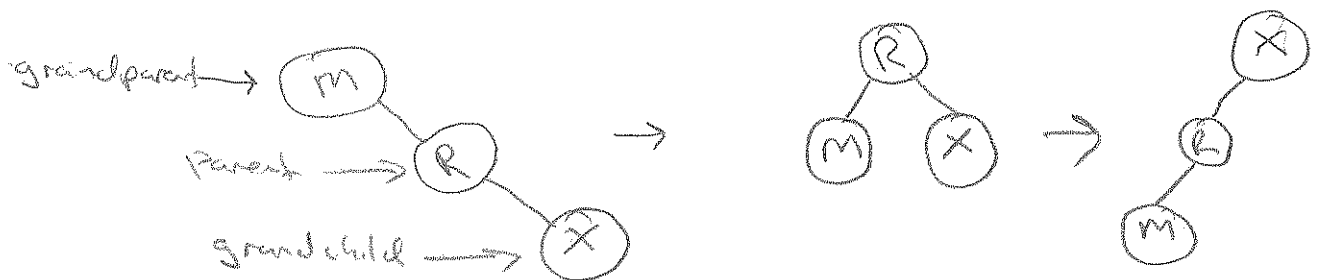
If the orientation of the two links between grandparent and grandchild have different orientations:

1. Rotate the grandchild and the parent
2. Rotate the grandchild and the grandparent.

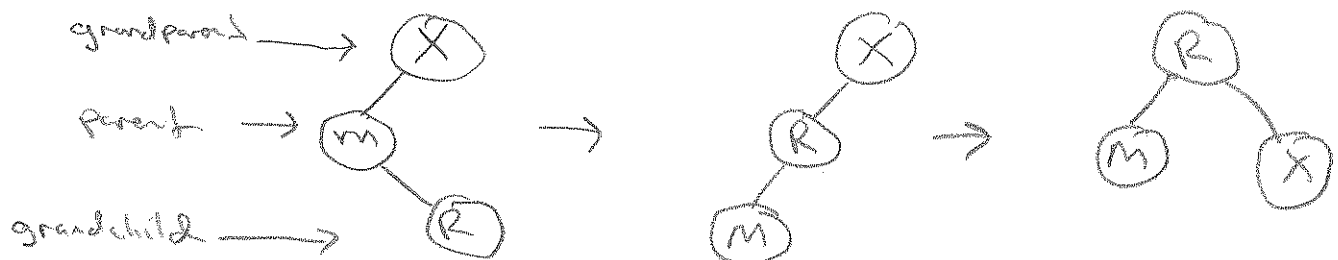
If the path from the root to the newly inserted node (inclusive) cannot be partitioned into overlapping groups of 3 nodes, insert the new node using the insert at root algorithm.

\*Descriptions of nodes as grandparent, parent, and grandchild are relative to the original tree configuration.

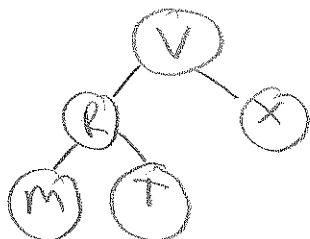
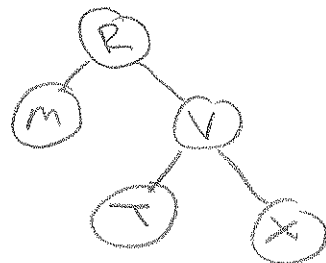
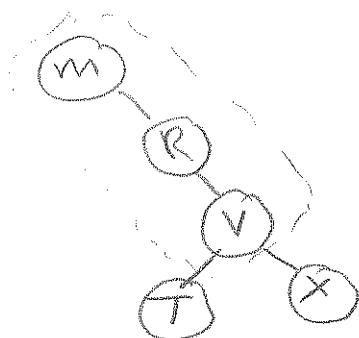
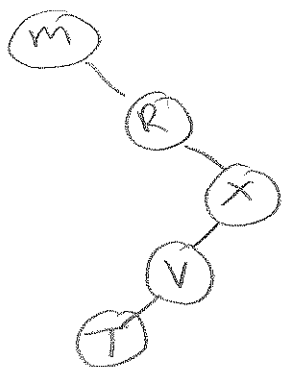
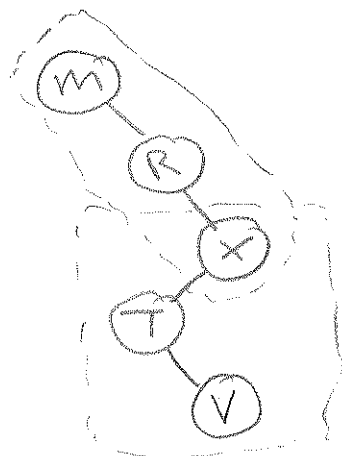
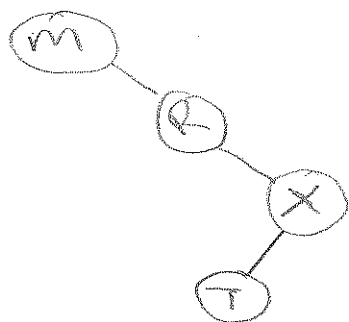
Links have the same orientation:



Links have different orientations:



Path to newly inserted node can be partitioned into overlapping groups of 3.



Path to newly inserted node cannot be partitioned into overlapping groups of 3.

