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ADS - Lab - Red-Black Tree

Let x be newly inserted node.

(1) Perform standard BST insertion and make the colour of newly inserted nodes as RED.

(2) If x is the root, change the colour of x as BLACK (Black height of complete tree increases by 1).

(3) Do the following if the colour of x's parent is not BLACK and x is not the root.

(a) If ~~x~~ x's uncle is RED
  (i) Change the colour of parent and uncle as BLACK.
  (ii) Colour of grandparent as RED.
  (iii) Change x = x's grandparent, repeat steps (2) & (3) for new x.

(b) If x's uncle is BLACK, Then there can be 4 configurations for x, x's parent (p) and x's grandparent (g). (Similar to AVL Tree).

  (i) Left Left case (p is left child of g & x is left child of p)
  (ii) Left Right case (p is left child of g & x is right child of p)
  (iii) Right Right case (Mirror of case (i))
  (iv) Right Left case (Mirror of case (ii)).