Assignment - 04

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COURSE: Data Structure

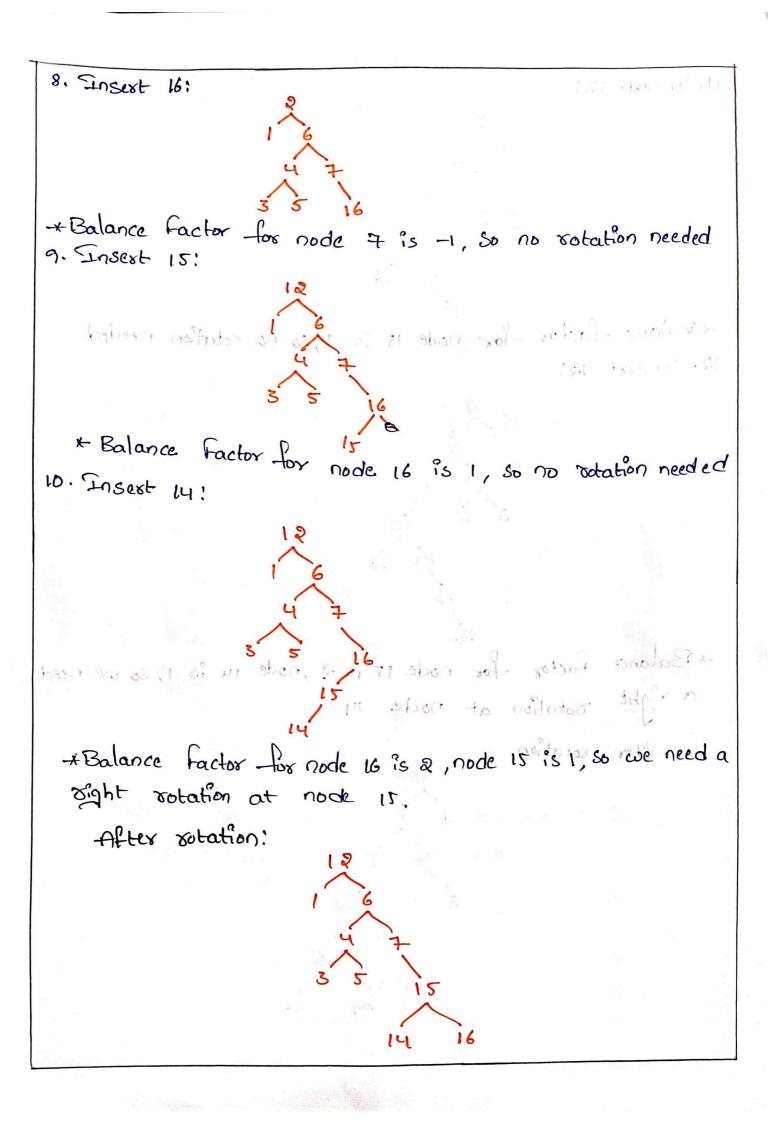
COURSE CODE: CSA0389

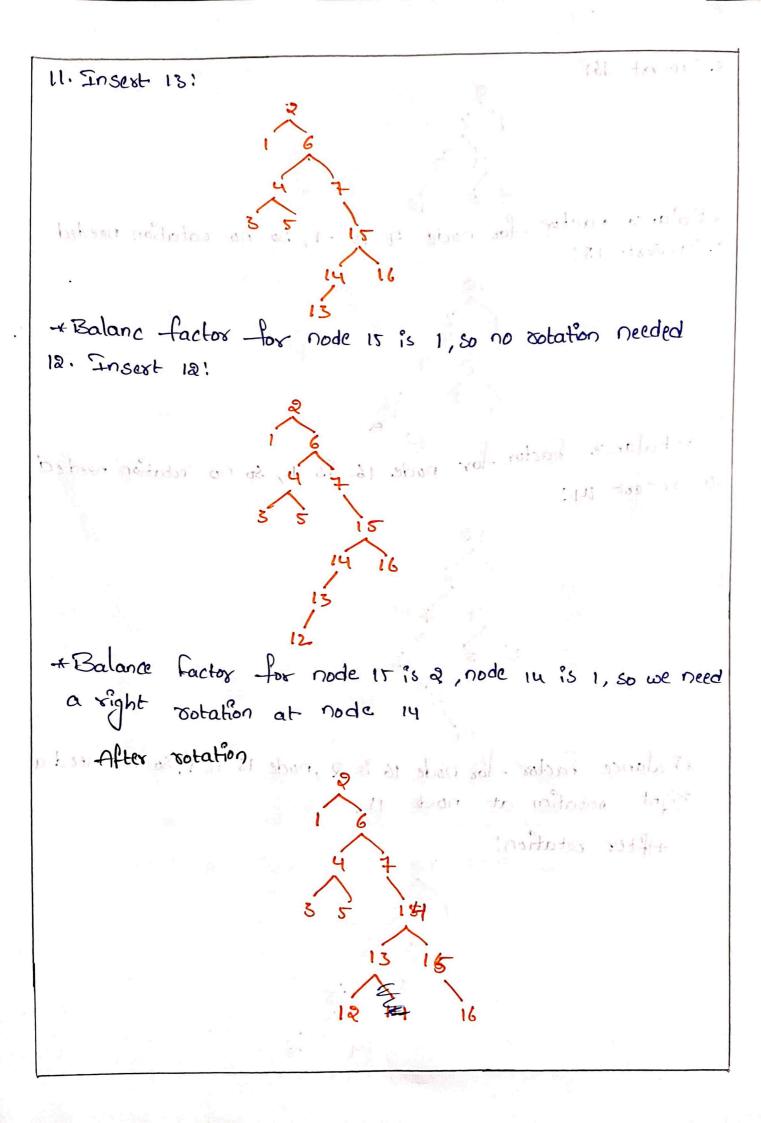
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1. Develop a C program to implement the tree traversals
  (Snorder, Proorder, Postorder).
 # include < stdio.h>
 # Include 2 stdlib.h>
  Struct Node & : Challedown addition -
     Got data:
      Struct Node* right;
  Struct Node * Create Node (int data) &
      Struct Mode * new Mode = (struct Mode *) malloc (size of (struct
      Menonlode -> data = data; (1900)
       new Mode -> Left = Mull;
       new Mode -> sight = NULL; " " " "
       return Ancomode: (Coos) berranos prostos desidados
   word inordertraversal (struct Node * root) &
       If (root == Null)
       Snowdextraversal (soot -> (eft);
       Printf ("%d", root -> data);
       anorder traversal (xoot -> sight);
  usid Pseosdestsaversal (Struct Node * root) &
   if ( xoot == NULL)
        return;
    Printf (" %d", Soot -data);
     Preorder-troversal (xoot -> left);
     Preorder traversal (root -> sight);
      Print + (" % d", root -> data);
```

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Cut Main () Essil a selle transfini
    Struct Node + root = Create Node (1);
    root → Left = Createrlode (2);
    soot → sight = create Node (E);
    200t → Left = Createrlode (4);
                                  S Divolo Pausti
    soot → sight = Createrlade (6);
    Pointh ("Inorder Traver sal!");
    Cinoxdex Traversal (xoot);
    Printf ("In"); & Costat & it I ale . stead to told . doubt
    Printf ("Preorder Traversal!"))
     Preorder Traversal (500t); atalian to a state of a
     Print ("(n");
                        . sur lorder a left = phillip
     Printf (" Postorder Traversati")
     Postorder Praversal (soot):
     Pointf ("(n");
                 wid in voduatouressal Cotouct alode " oc
     seturn o:
                               : L / rook = = rlull)
Input: Creating the tree
                  I work ("the", cook - > dates !
                2 17 1000 - 1000 ) 100 000 0 100 10000
              Will intendentendental (Stourt 1904 Tout)
                                  CJULT == Just 1
Output:
  Inorder Frances Sal: 4 2 5 13 6000 " hat" " ) Along
   Preorder Traversal: 1 2 3 4 5 6
   Post-order Traversalius & 6 31
```

2. Construct AUL Tree for the following elements 3,2,1,4,5,6,7 followed by 10 to 16 in reverse order. Construct an AUL Tree for the given elements. Elements to insert a cobon rol- rotal-· First Sequence: 3,2,1,4,5,6,7 · Second Sequence (reverse Order)! 16,15,14,13,12,11,16 Steps to Construct AUL Tree: 1. Insert 3! : 6 dobd or 6: 2. Insext 2: - Balance factor for node 3 is 1, so no rotation reeded. 1 + 3 85 D. . 1-* Balance factor for node 3 is 2, and node 2 is 1, so we need a right rotation at node 3. After sotation, the tree becomes need left restation at reals u. rifter retation: 4. Insert 4: boll- traini Min sea, train - Balance factor for node & is 0, so no rotation needed

while colored for the first water that the S. Insert 5 and the second s wife with the wind recelled in group in a - Balancing factor for node-2 is ondso node 11 is -1, so are need a left votabation at node s essent somals posses After solution! 18 185 36 11 6. Insext 6: +Balance factor for node 4 is -1, so no sotation needed 7. Insert 7: a interest factor not roda (is), not roda vis 1, is all red Table of the mode to danie * Balance factor for node uis -2 and note sis 1. So we need left sotation at node 4. After sotation: the despersion Next, we will insert the elements 16,15,14,15,12,11,10 in Dener Sei Order





ter relation, The - burnt - Tree: 13. Insext 11: - Balance Factor lor node 14 is 1, so no sotation needed. lu. Insert 10: 16: 1/11 1866 is now of ancied with fuen 1. 2009 853 n. 4. 52000 p. . - Balance Factor for node 14 is 2, node 13 is 1, so we need a zight rotation at node 11.

After volation, The final Tree: This AUL Tree is now balanced with given Sequence of insertions. si si shor , e. si vu shar val miser shoris . s Il short to contain define a live in