

Assignment-4

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Course name: CSA0389

Course code: Data Structure for stack overflow

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1) Develop a C program to implement the tree traversals (inorder, preorder, postorder).

```
#include <stdio.h>
#include <stdlib.h>
typedef struct node {
    int data;
    struct Node *left, *right;
} Node;

void preorder (Node *root) {
    if (root == NULL) {
        return;
    }
    printf ("%d", root->data);
    preorder (root->left);
    preorder (root->right);
}

void inorder (Node *root) {
    if (root == NULL) {
        return;
    }
    inorder (root->left);
    printf ("%d", root->data);
    inorder (root->right);
}

void postorder (Node *root) {
    if (root == NULL) {
        return;
    }
}
```

```

    postorder (root → left);
    postorder (root → right);
    printf("%d", root → data);
}

```

```

int main () {
    printf("Preorder Traversal: ");
    preorder (root);
    printf("\n");

    printf("Inorder Traversal: ");
    inorder (root);
    printf("\n");

    printf("postorder Traversal: ");
    postorder (root);
    printf("\n");

    return 0;
}

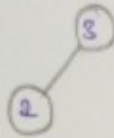
```


Construct AVL tree for the following elements 3, 2, 1, 4, 5, 6, 7, followed by 10 to 16 in reverse order.

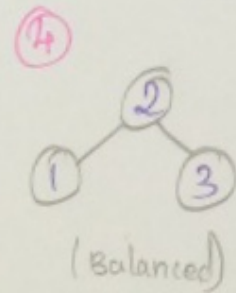
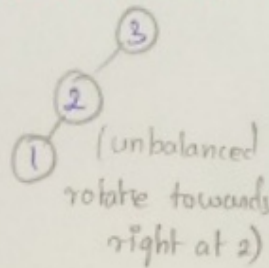
① Insert 3:



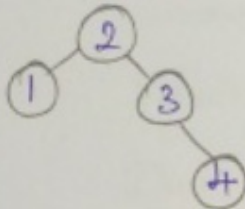
② Insert 2:



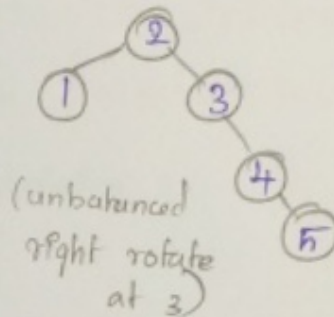
③ Insert 1:



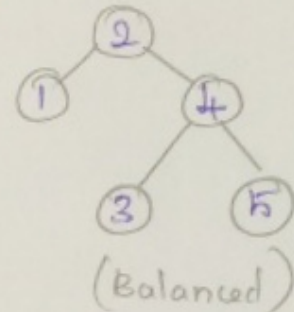
⑤ Insert 4:



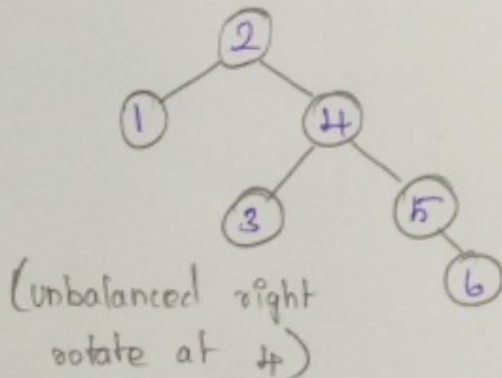
⑥ Insert 5:



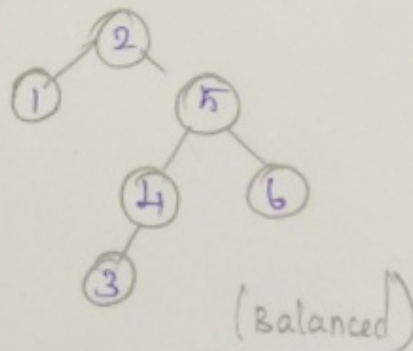
⑦



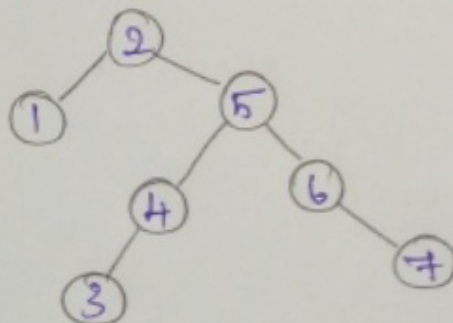
⑧ Insert 6:



⑨



⑩ Insert 7:



The tree is balanced.