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9. Write a program in C to create a binary search tree and traverse it in all three orders.

• Source Code:-

```
 #include <stdio.h>
 #include <stdlib.h>

 typedef struct Bnode {
        int data;
        struct Bnode *left;
        struct Bnode *right;
   } bnode;

bnode*  createBST(bnode *root, int n)
{
      if(root==NULL){
       root =(bnode*) malloc(sizeof(bnode));
          root -> data=n;
          root->left= root->right =NULL;
      }
      else if (n> root-> data)
           root->right = createBST(root -> right, n);
         else
             root ->left = createBST (root-> left, n);
      return root;
  }
```

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//traversal of tree

```
void inorder (bnode* root){
        if (root != NULL){
           inorder(root→left);
              printf("%d ", root→data);
               inorder (root→right);
           }
    }

void preorder (bnode * root){
      if (root != NULL){
         printf("%d ", root→data);
         preorder (root→left);
         preorder( root→right);
      }
}

void postorder (bnode *root){
          if (root != NULL){
             postorder (root→left);
              postorder (root→right);
             printf ("%d ", root→data);
        }
}
```

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```
void main() {
        bnode *root;
        int x,c;
        char ch='Y';
        root=NULL;
          do {
         printf("Enter root data:\n");
         scanf("%d", &x);
         root = createBST(root, x);
       printf("Do you want to enter another no.(Y/N)?");
     }   while(ch!='N');
     printf("1- for inorder traversal \n 2-for preorder
                traversal \n 3-for postorder traversal");
      scanf("%d", &c);
       switch(c){
         Case 1 : inorder(root); break;
         Case 2: preorder (root); break;
         Case 3: postorder(root); break;
         default: printf("Invalid Input");
       }
}
```

— x —

• Output :-

```
Enter root data :
10
Do you want to put another no. (Y/N)? Y
Enter root data:
9
Do you want to enter another no (Y/N)? Y
Enter root data :
11
Do you want to enter another no. (Y/N)? Y
Enter root data:
8
Do you want to enter another no. (Y/N)? N
1- for inorder traversal
2- for preorder traversal
3- for postorder traversal
3
Post order : 8 9 11 10
```

→ TREE FORMED IS :