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

struct tree
{
 int info;
 struct tree *left;
 struct tree *right;
   };
struct tree *insert(struct tree *,int);
void inorder(struct tree *);
void postorder(struct tree *);
void preorder(struct tree *);
struct tree *delet(struct tree *,int);
struct tree *search(struct tree *);

int main(void)
 {
 struct tree *root;
 int choice, item,item_no;
 root = NULL;
 // rear = NULL;
 do {
 do {
 printf("\n \t 1. Insert in Binary Tree ");
 printf("\n\t 2. Delete from Binary Tree ");
 printf("\n\t 3. Inorder traversal of Binary tree");
 printf("\n\t 4. Search");
 printf("\n\t 5. Exit ");
 printf("\n\t Enter choice : ");
 scanf(" %d",&choice);
```

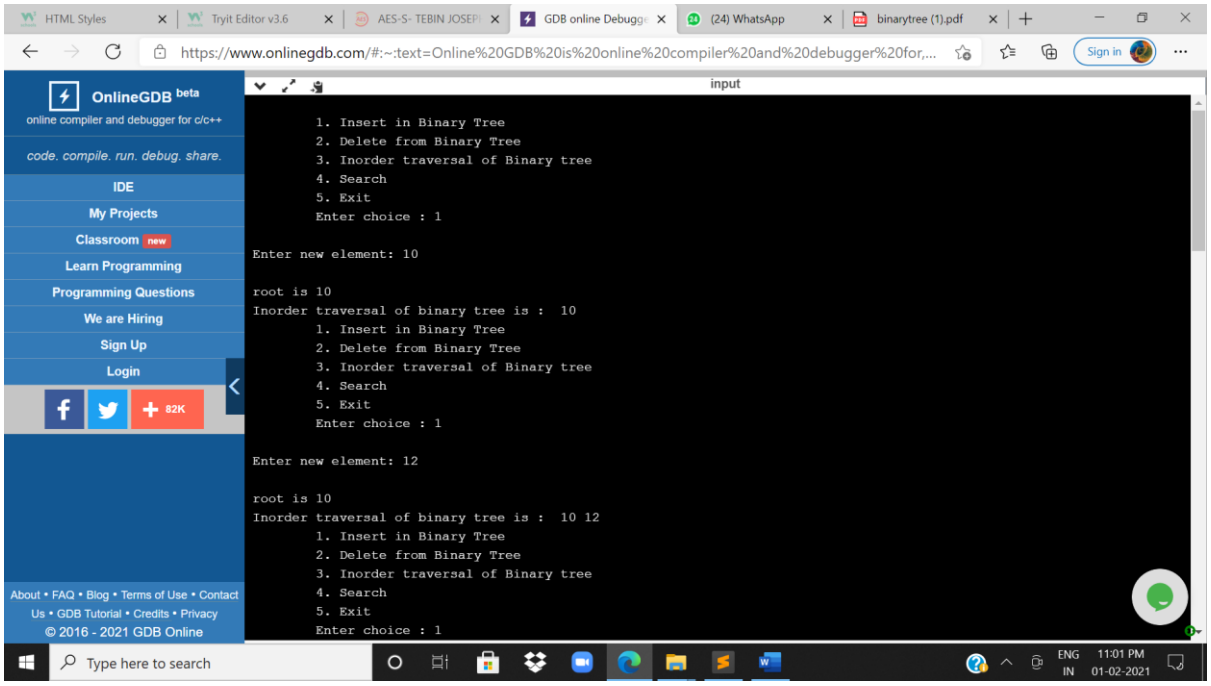
```
if(choice<1 || choice>7)
printf("\n Invalid choice - try again");
 }

while (choice<1 || choice>7);
switch(choice)
 {
  case 1:
  printf("\n Enter new element: ");
  scanf("%d", &item);
  root= insert(root,item);
  printf("\n root is %d",root->info);
  printf("\n Inorder traversal of binary tree is : ");
  inorder(root);
  break;

  case 2:
  printf("\n Enter the element to be deleted : ");
  scanf(" %d",&item_no);
  root=delet(root,item_no);
  inorder(root);
  break;

  case 3:
  printf("\n Inorder traversal of binary tree is : ");
  inorder(root);
  break;

  case 4:
  printf("\n Search operation in binary tree ");
  root=search(root);
```

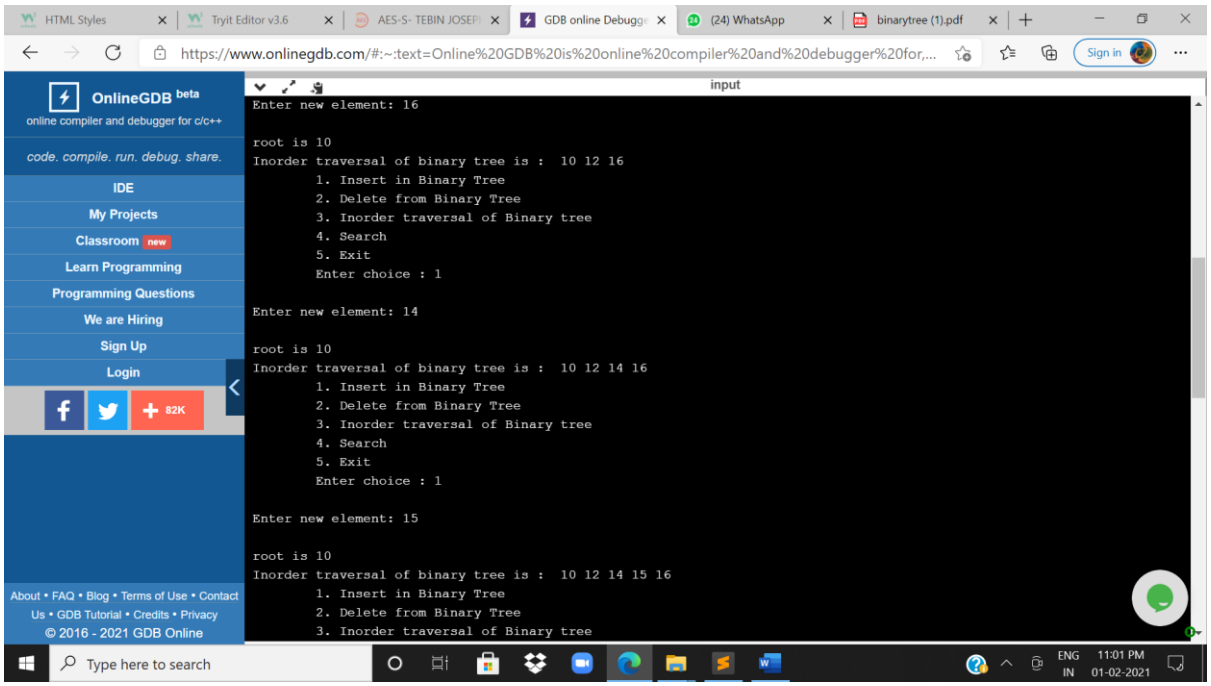
```
    break;
    default:
    printf("\n End of program ");
    }
 }
 while(choice !=5);
 return(0);
}
struct tree *insert(struct tree *root, int x)
  {
 if(!root)
   {
    root=(struct tree*)malloc(sizeof(struct tree));
     root->info = x;
     root->left = NULL;
     root->right = NULL;
     return(root);
    }
 if(root->info > x)
 root->left = insert(root->left,x); else {
 if(root->info < x)
 root->right = insert(root->right,x);
 }
 return(root);
}
void inorder(struct tree *root) {
 if(root != NULL) {
 inorder(root->left);
 printf(" %d",root->info);
 inorder(root->right);
 }
```

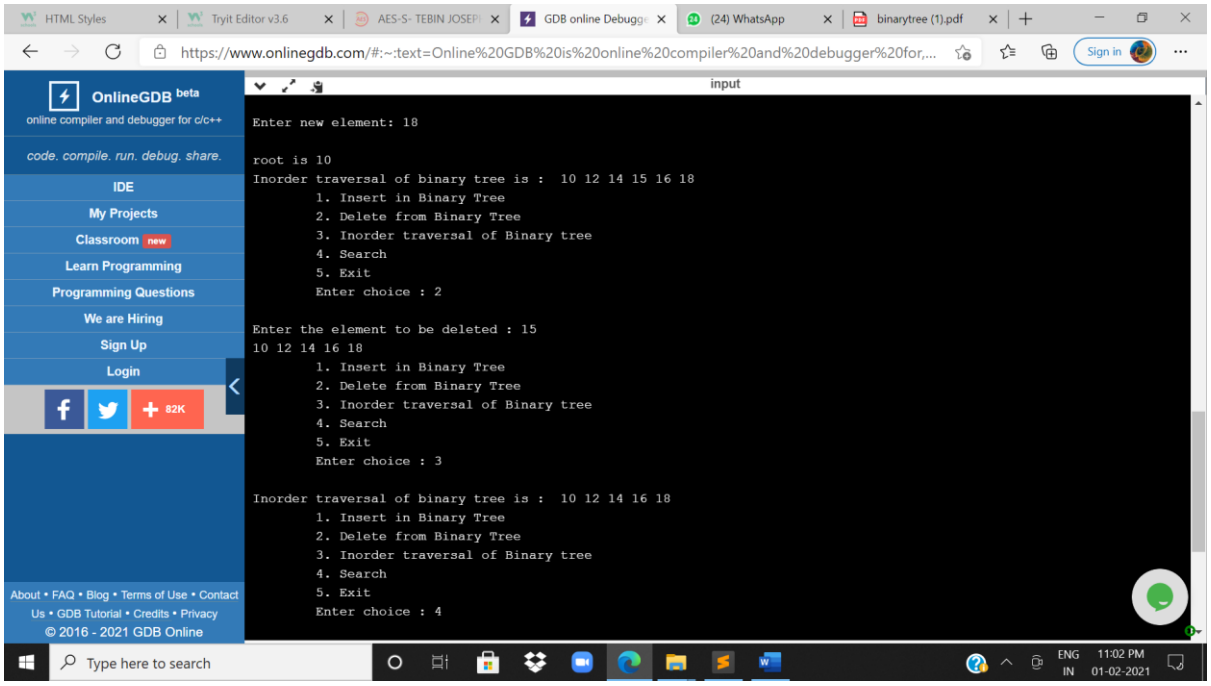
```
 return;
}
struct tree *delet(struct tree *ptr,int x) {
 struct tree *p1,*p2;
 if(!ptr) {
 printf("\n Node not found ");
 return(ptr);
 } else {
 if(ptr->info < x) {
 ptr->right = delet(ptr->right,x);
 /*return(ptr);*/
 } else if (ptr->info >x) {
 ptr->left=delet(ptr->left,x);
 return ptr;
 } else
 {
 if(ptr->info == x)
 {
 if(ptr->left == ptr->right)
 {
 free(ptr);
 return(NULL);
 } else if(ptr->left==NULL)
 {
 p1=ptr->right;
 free(ptr);
 return p1;
 } else if(ptr->right==NULL)
 {
 p1=ptr->left;
 free(ptr);
```

```
return p1;
} else {
p1=ptr->right;
p2=ptr->right;
while(p1->left != NULL)
p1=p1->left;
p1->left=ptr->left;
free(ptr);
return p2;
}
}
}
}
return(ptr);
}
struct tree *search(struct tree *root) {
int no,i,ino;
struct tree *ptr;
ptr=root;
printf("\n Enter the element to be searched :");
scanf(" %d",&no);
fflush(stdin);
while(ptr) {
if(no>ptr->info)
ptr=ptr->right; else if(no<ptr->info)
ptr=ptr->left; else
break;
}
if(ptr) {
printf("\n Element %d which was searched is found and is = %d",no,
ptr->info);
```

```
} else
printf("\n Element %d does not exist in the binary tree",no);
return(root);
}
```






input
Enter new element: 18
root is 10
Inorder traversal of binary tree is : 10 12 14 15 16 18
1. Insert in Binary Tree
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 2
Enter the element to be deleted : 15
10 12 14 16 18
1. Insert in Binary Tree
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 3
Inorder traversal of binary tree is : 10 12 14 16 18
1. Insert in Binary Tree
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 4
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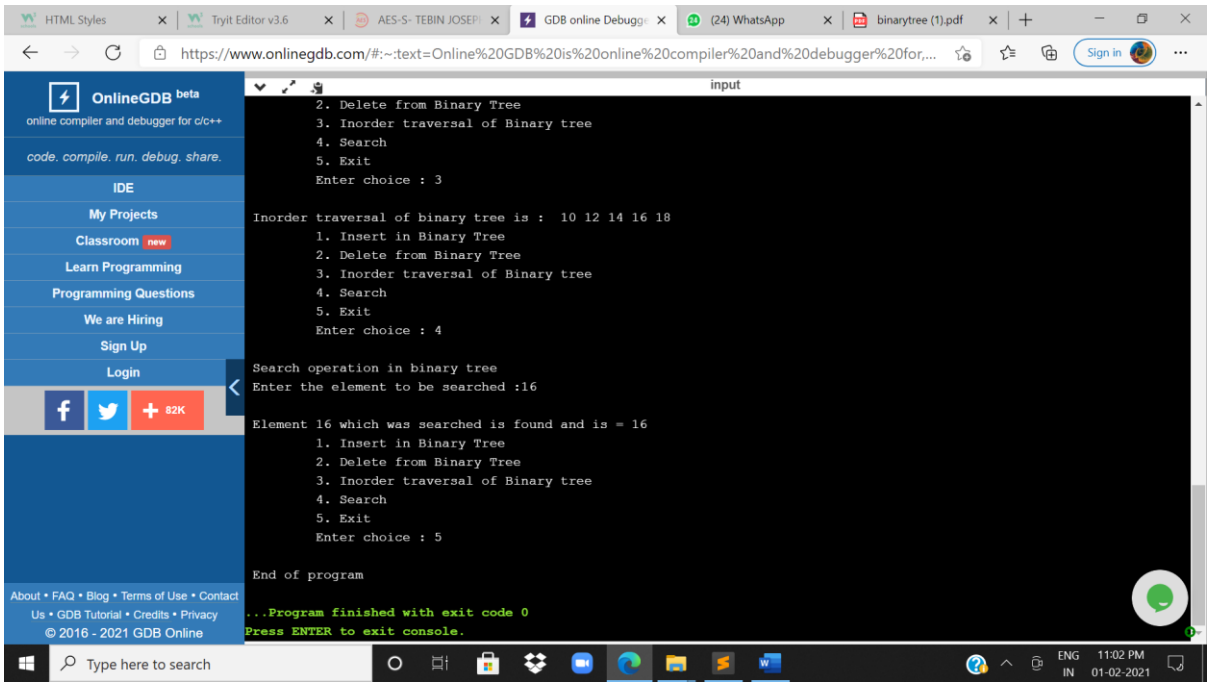
input
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 3
Inorder traversal of binary tree is : 10 12 14 16 18
1. Insert in Binary Tree
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 4
Search operation in binary tree
Enter the element to be searched :16
Element 16 which was searched is found and is = 16
1. Insert in Binary Tree
2. Delete from Binary Tree
3. Inorder traversal of Binary tree
4. Search
5. Exit
Enter choice : 5
End of program
...Program finished with exit code 0
Press ENTER to exit console.
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