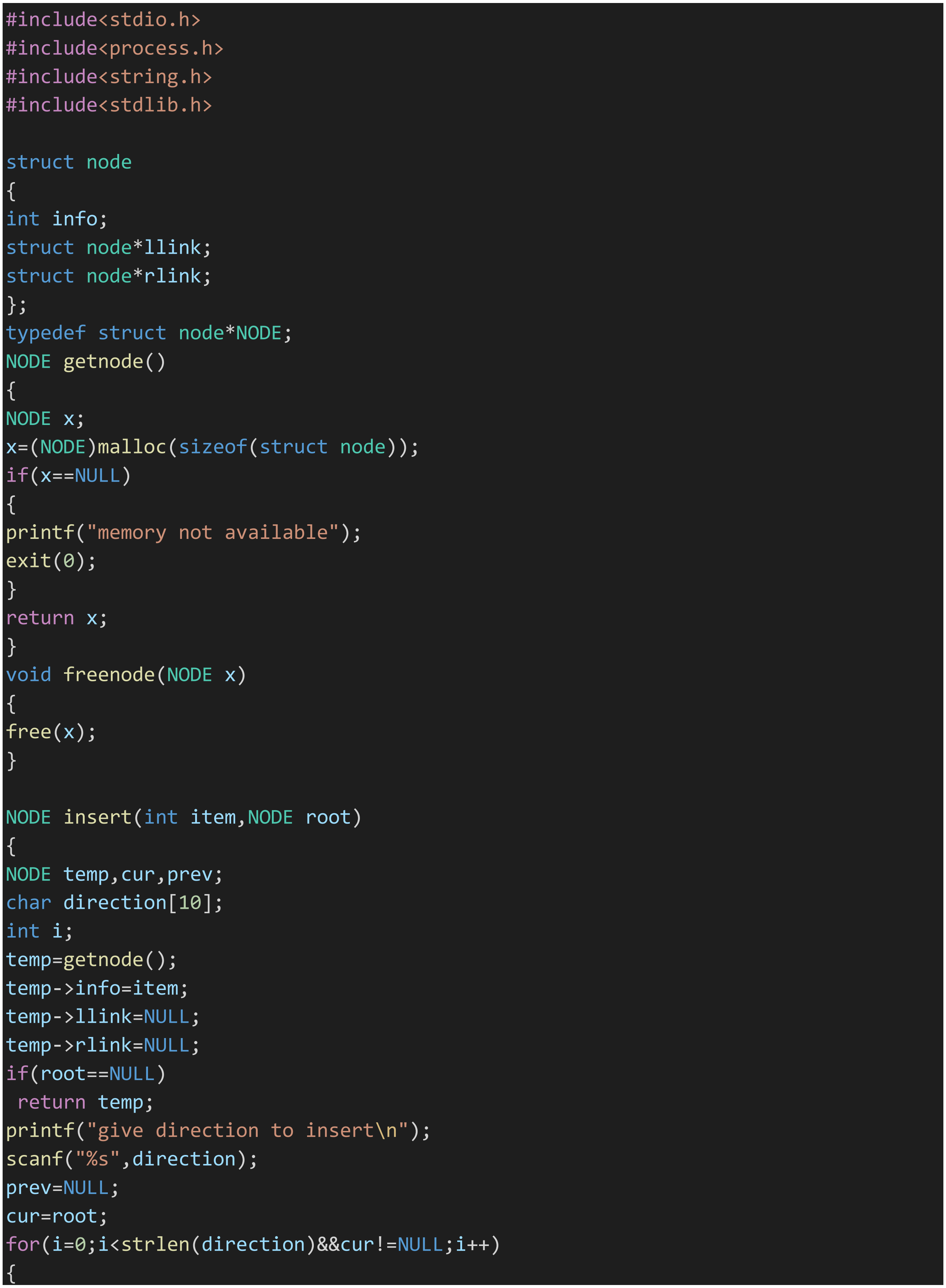
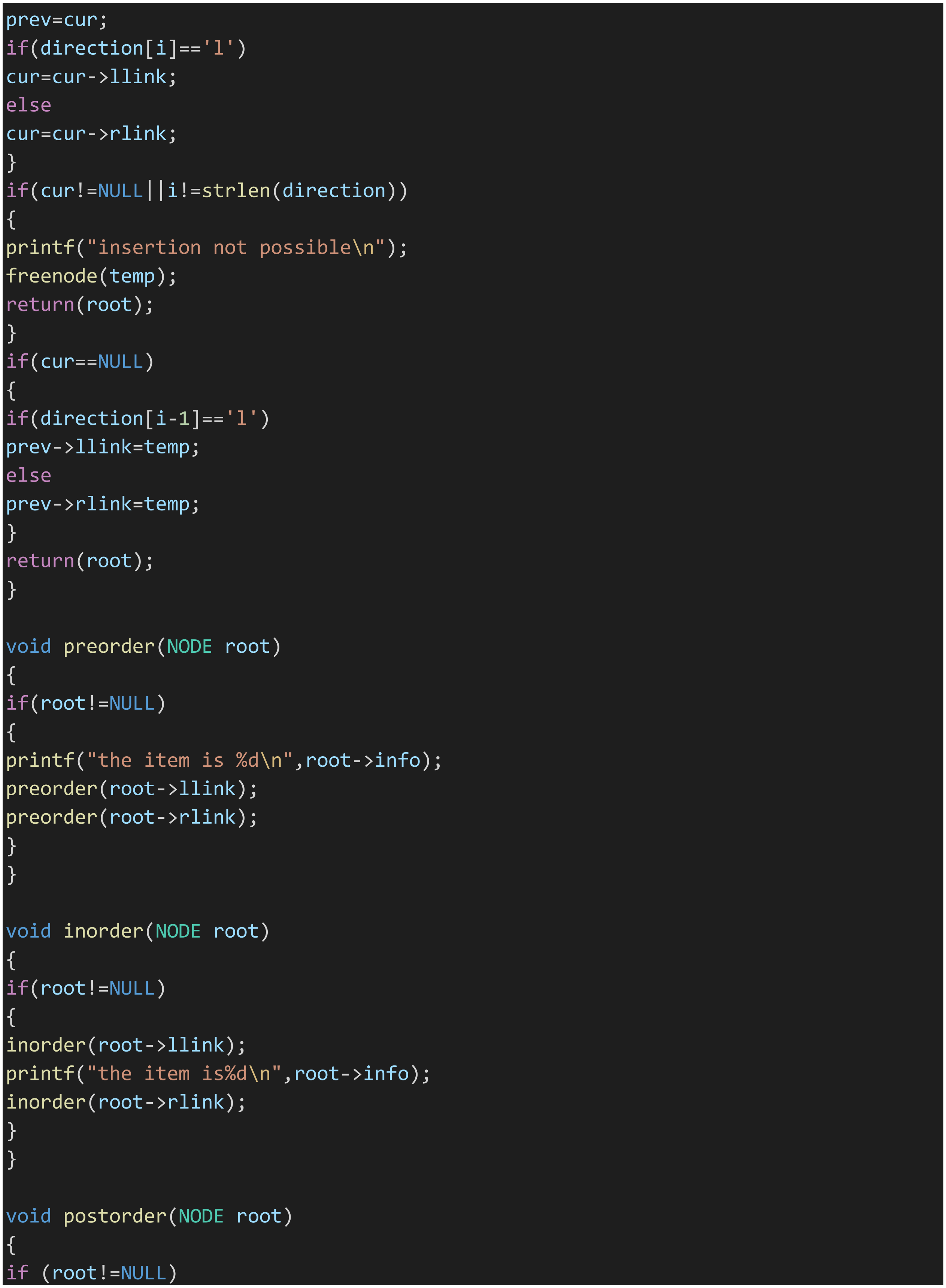
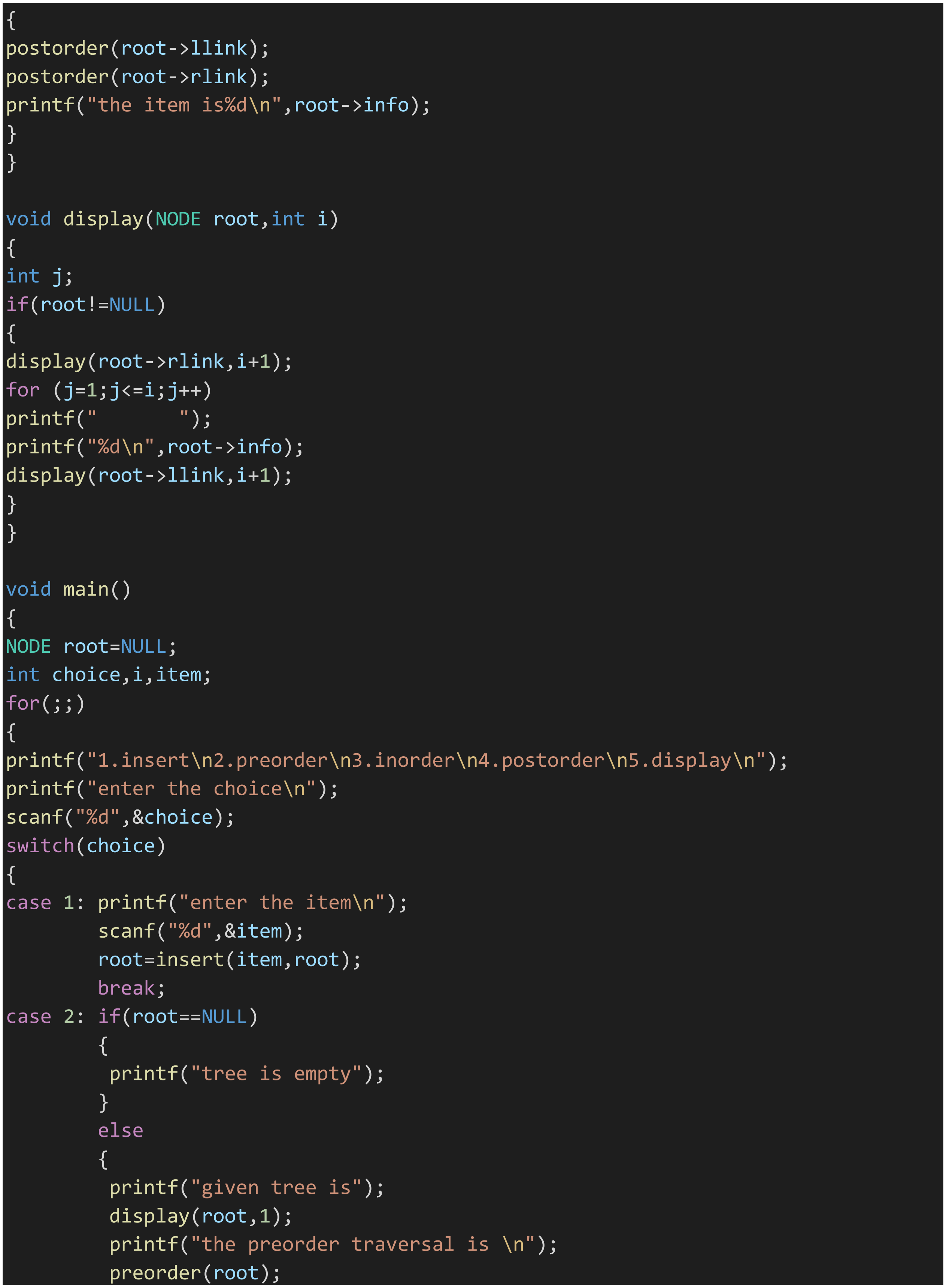


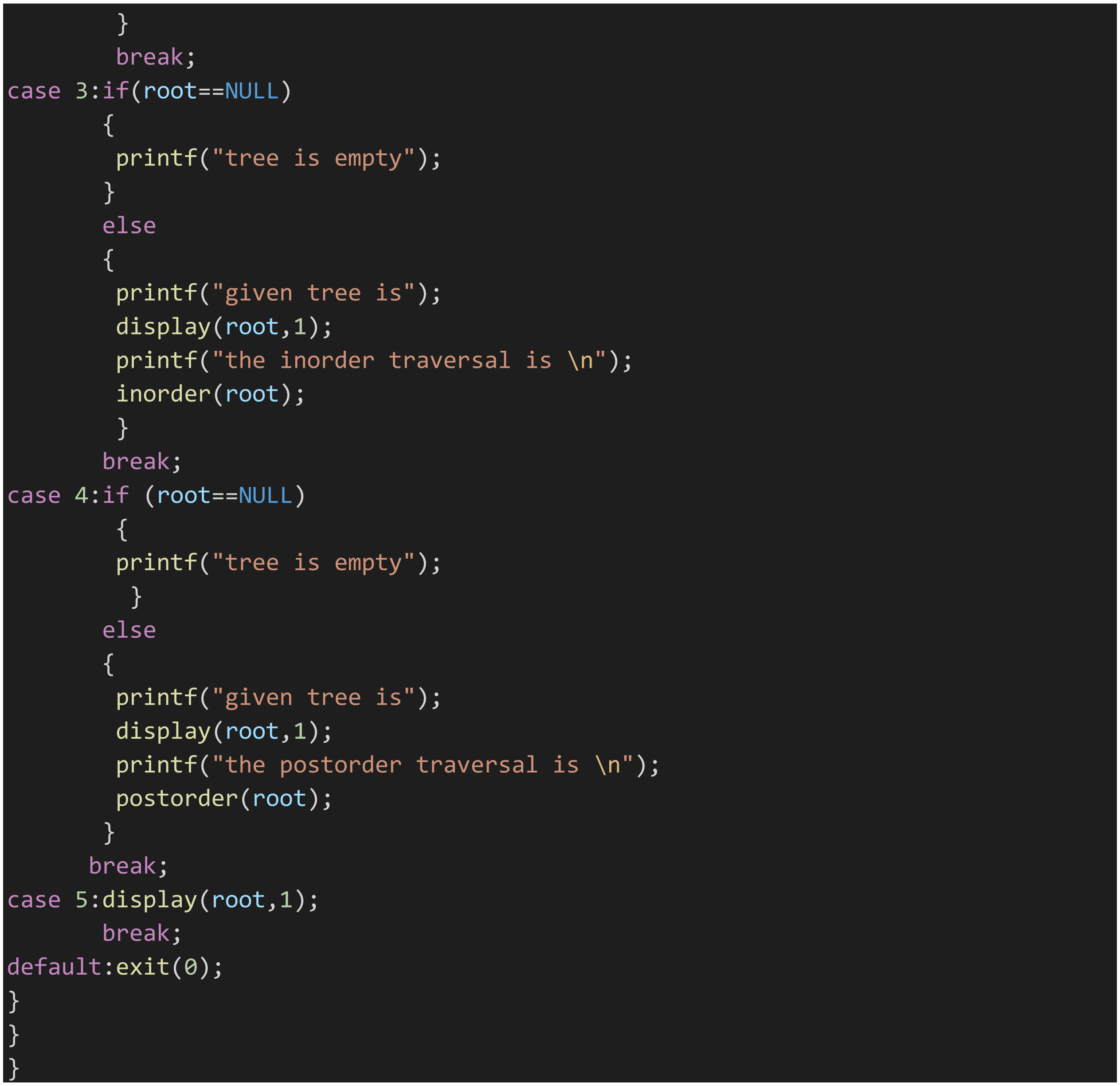
```
#include<stdio.h>
#include<process.h>
#include<string.h>
#include<stdlib.h>

struct node
{
int info;
struct node*llink;
struct node*rlink;
};
typedef struct node*NODE;
NODE getnode()
{
NODE x;
x=(NODE)malloc(sizeof(struct node));
if(x==NULL)
{
printf("memory not available");
exit(0);
}
return x;
}
void freenode(NODE x)
{
free(x);
}

NODE insert(int item,NODE root)
{
NODE temp,cur,prev;
char direction[10];
int i;
temp=getnode();
temp->info=item;
temp->llink=NULL;
temp->rlink=NULL;
if(root==NULL)
 return temp;
printf("give direction to insert\n");
scanf("%s",direction);
prev=NULL;
cur=root;
for(i=0;i<strlen(direction)&&cur!=NULL;i++)
{
```



```
prev=cur;
if(direction[i]=='l')
cur=cur->llink;
else
cur=cur->rlink;
}
if(cur!=NULL||i!=strlen(direction))
{
printf("insertion not possible\n");
freenode(temp);
return(root);
}
if(cur==NULL)
{
if(direction[i-1]=='l')
prev->llink=temp;
else
prev->rlink=temp;
}
return(root);
}

void preorder(NODE root)
{
if(root!=NULL)
{
printf("the item is %d\n",root->info);
preorder(root->llink);
preorder(root->rlink);
}
}

void inorder(NODE root)
{
if(root!=NULL)
{
inorder(root->llink);
printf("the item is%d\n",root->info);
inorder(root->rlink);
}
}

void postorder(NODE root)
{
if (root!=NULL)
```

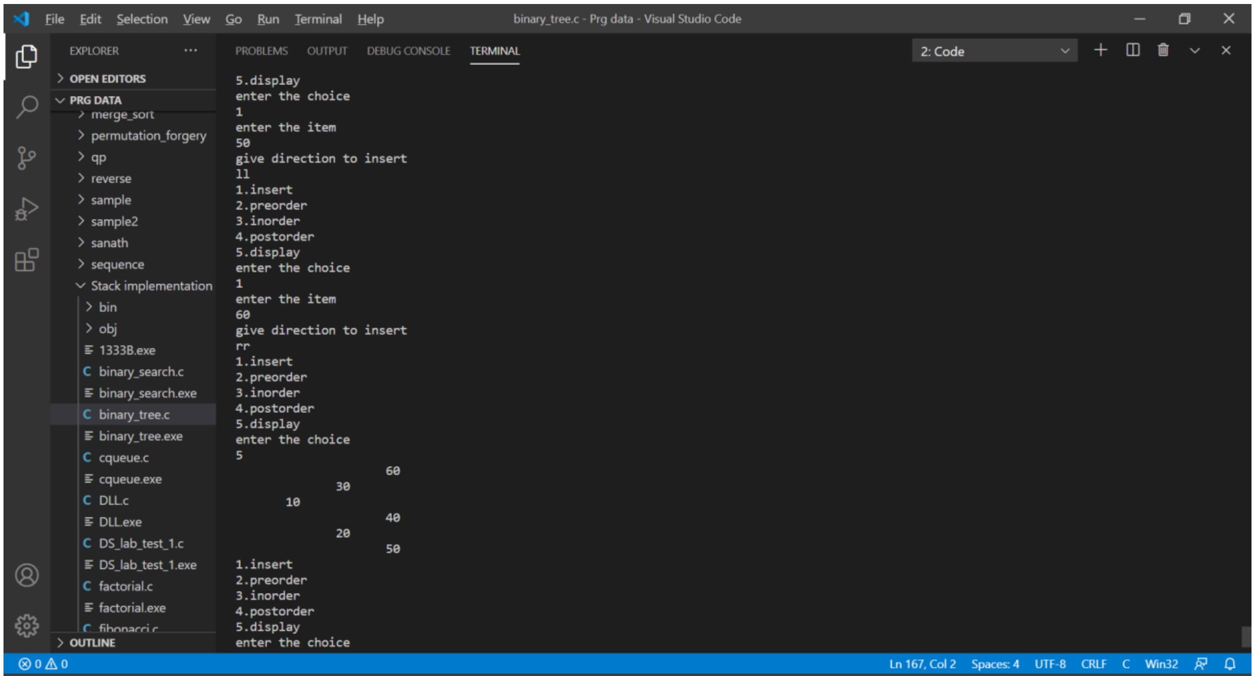


```
{
postorder(root->llink);
postorder(root->rlink);
printf("the item is%d\n",root->info);
}
}

void display(NODE root,int i)
{
int j;
if(root!=NULL)
{
display(root->rlink,i+1);
for (j=1;j<=i;j++)
printf("       ");
printf("%d\n",root->info);
display(root->llink,i+1);
}
}

void main()
{
NODE root=NULL;
int choice,i,item;
for(;;)
{
printf("1.insert\n2.preorder\n3.inorder\n4.postorder\n5.display\n");
printf("enter the choice\n");
scanf("%d",&choice);
switch(choice)
{
case 1: printf("enter the item\n");
        scanf("%d",&item);
        root=insert(item,root);
        break;
case 2: if(root==NULL)
        {
         printf("tree is empty");
        }
        else
        {
         printf("given tree is");
         display(root,1);
         printf("the preorder traversal is \n");
         preorder(root);
```

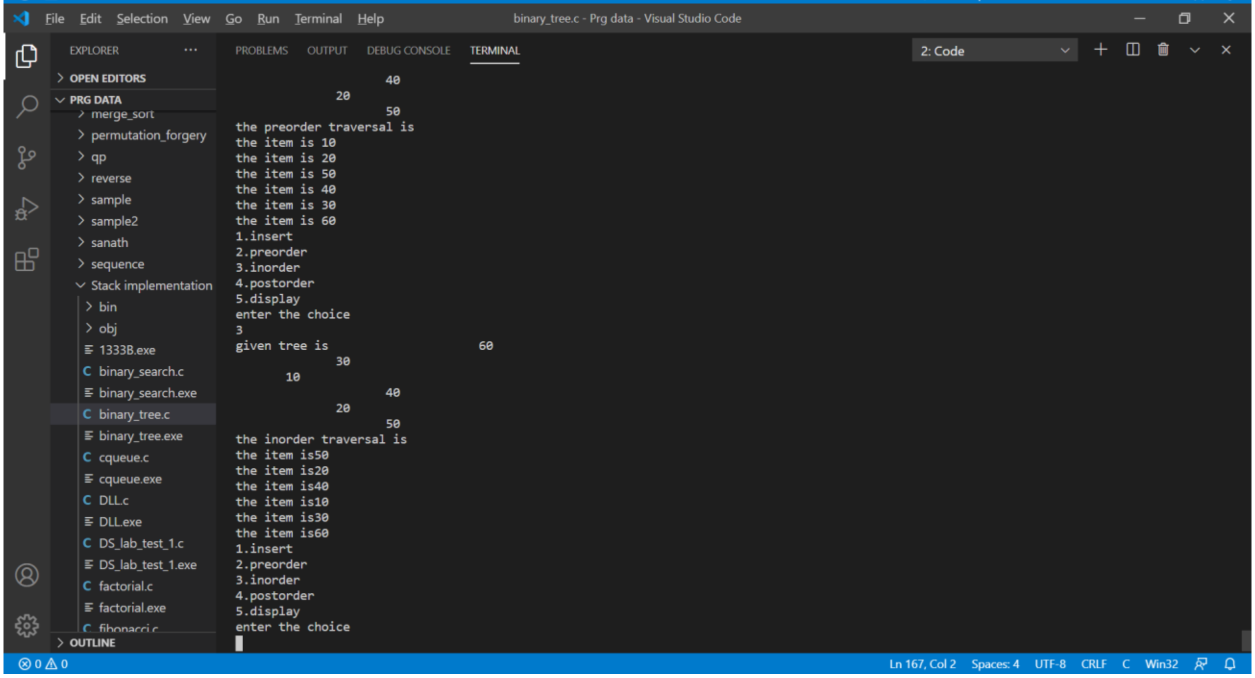


```
        }
        break;
case 3:if(root==NULL)
       {
        printf("tree is empty");
       }
       else
       {
        printf("given tree is");
        display(root,1);
        printf("the inorder traversal is \n");
        inorder(root);
        }
       break;
case 4:if (root==NULL)
        {
        printf("tree is empty");
         }
       else
       {
        printf("given tree is");
        display(root,1);
        printf("the postorder traversal is \n");
        postorder(root);
       }
      break;
case 5:display(root,1);
       break;
default:exit(0);
}
}
}
```

Output:



```
5.display
enter the choice
1
enter the item
50
give direction to insert
ll
1.insert
2.preorder
3.inorder
4.postorder
5.display
enter the choice
1
enter the item
60
give direction to insert
rr
1.insert
2.preorder
3.inorder
4.postorder
5.display
enter the choice
5
                     60
              30
       10
                     40
              20
                     50
1.insert
2.preorder
3.inorder
4.postorder
5.display
enter the choice
```



```
                     40
              20
                     50
the preorder traversal is
the item is 10
the item is 20
the item is 50
the item is 40
the item is 30
the item is 60
1.insert
2.preorder
3.inorder
4.postorder
5.display
enter the choice
3
given tree is                     60
              30
       10
                     40
              20
                     50
the inorder traversal is
the item is50
the item is20
the item is40
the item is10
the item is30
the item is60
1.insert
2.preorder
3.inorder
4.postorder
5.display
enter the choice
█
```