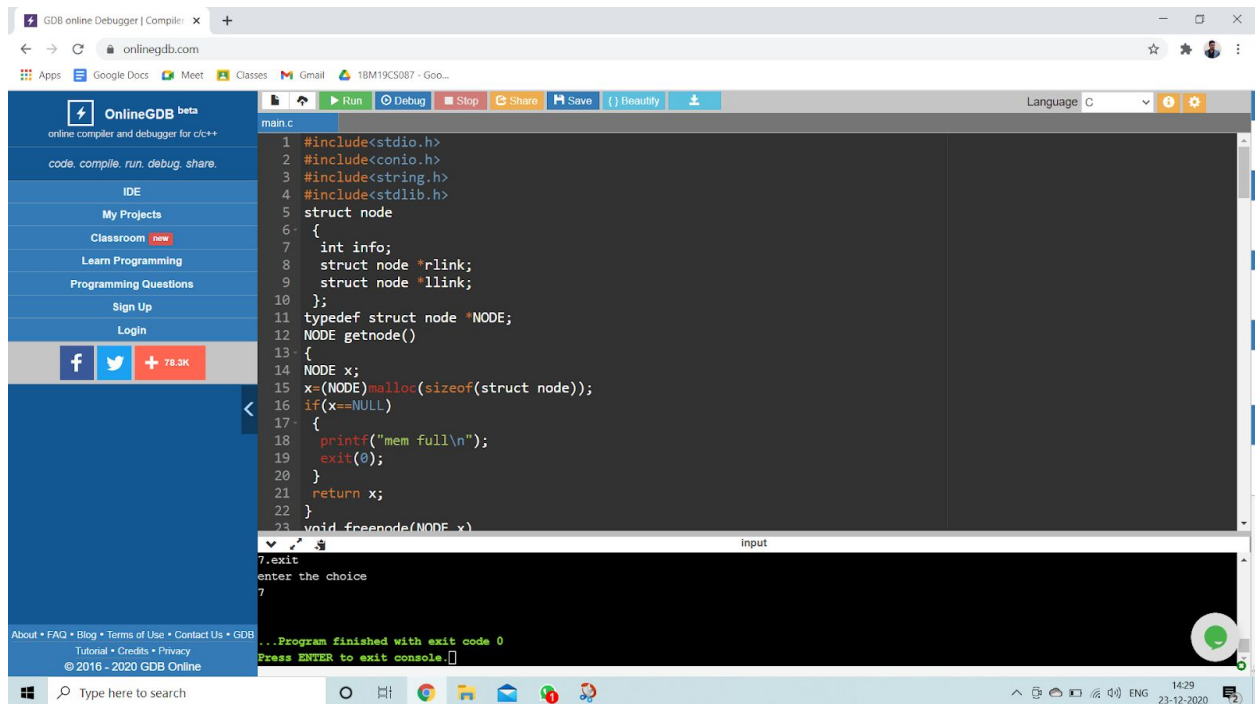


DS LAB PROGRAM 10

EXECUTION:-

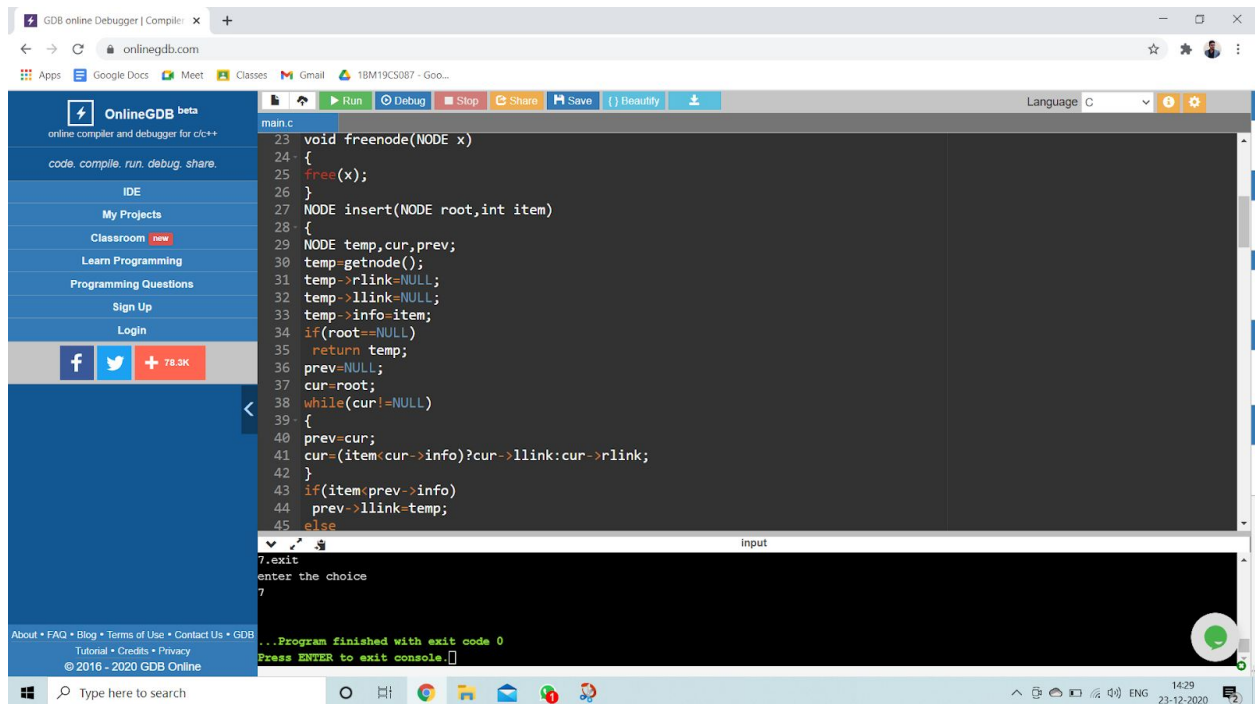


The screenshot shows the OnlineGDB interface with a C program being executed. The program defines a linked list structure and a `getnode` function. The console output shows the program finished with exit code 0.

```
main.c
1 #include<stdio.h>
2 #include<conio.h>
3 #include<string.h>
4 #include<stdlib.h>
5 struct node
6 {
7     int info;
8     struct node *rlink;
9     struct node *llink;
10 };
11 typedef struct node *NODE;
12 NODE getnode()
13 {
14     NODE x;
15     x=(NODE)malloc(sizeof(struct node));
16     if(x==NULL)
17     {
18         printf("mem full\n");
19         exit(0);
20     }
21     return x;
22 }
23 void freenode(NODE x)
```

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.



The screenshot shows the OnlineGDB interface with a C program being executed. The program defines a linked list structure and an `insert` function. The console output shows the program finished with exit code 0.

```
main.c
23 void freenode(NODE x)
24 {
25     free(x);
26 }
27 NODE insert(NODE root,int item)
28 {
29     NODE temp,cur,prev;
30     temp=getnode();
31     temp->rlink=NULL;
32     temp->llink=NULL;
33     temp->info=item;
34     if(root==NULL)
35         return temp;
36     prev=NULL;
37     cur=root;
38     while(cur!=NULL)
39     {
40         prev=cur;
41         cur=(item<cur->info)?cur->llink:cur->rlink;
42     }
43     if(item<prev->info)
44         prev->llink=temp;
45     else
```

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.

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main.c

```
45 else
46     prev->rlink=temp;
47     return root;
48 }
49 void display(NODE root,int i)
50 {
51     int j;
52     if(root!=NULL)
53     {
54         display(root->rlink,i+1);
55         for(j=0;j<i;j++)
56             printf(" ");
57         printf("%d\n",root->info);
58         display(root->llink,i+1);
59     }
60 }
61 NODE delete(NODE root,int item)
62 {
63     NODE cur,parent,q,suc;
64     if(root==NULL)
65     {
66         printf("empty\n");
67         return root;
68     }
69     parent=NULL;
70     cur=root;
71     while(cur!=NULL&&item!=cur->info)
72     {
73         parent=cur;
74         cur=(item<cur->info)?cur->llink:cur->rlink;
75     }
76     if(cur==NULL)
77     {
78         printf("not found\n");
79         return root;
80     }
81     if(cur->llink==NULL)
82         q=cur->rlink;
83     else if(cur->rlink==NULL)
84         q=cur->llink;
85     else
86     {
87         suc=cur->rlink;
88         while(suc->llink!=NULL)
89             suc=suc->llink;
90         suc->llink=cur->llink;
91     }
92     if(parent==NULL)
93         root=q;
94     else
95         parent->rlink=q;
96     return root;
97 }
```

input

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.

Type here to search

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main.c

```
68 }
69 parent=NULL;
70 cur=root;
71 while(cur!=NULL&&item!=cur->info)
72 {
73     parent=cur;
74     cur=(item<cur->info)?cur->llink:cur->rlink;
75 }
76 if(cur==NULL)
77 {
78     printf("not found\n");
79     return root;
80 }
81 if(cur->llink==NULL)
82     q=cur->rlink;
83 else if(cur->rlink==NULL)
84     q=cur->llink;
85 else
86 {
87     suc=cur->rlink;
88     while(suc->llink!=NULL)
89         suc=suc->llink;
90     suc->llink=cur->llink;
91 }
92 if(parent==NULL)
93     root=q;
94 else
95     parent->rlink=q;
96 return root;
97 }
```

input

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.

Type here to search

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main.c

90 suc->llink=cur->llink;

91 q=cur->rlink;

92 }

93 if(parent==NULL)

94 return q;

95 if(cur==parent->llink)

96 parent->llink=q;

97 else

98 parent->rlink=q;

99 freenode(cur);

100 return root;

101 }

102

103 void preorder(NODE root)

104 {

105 if(root!=NULL)

106 {

107 printf("%d\n",root->info);

108 preorder(root->llink);

109 preorder(root->rlink);

110 }

111 }

112 void postorder(NODE root)

7.exit

enter the choice

7

...Program finished with exit code 0

Press ENTER to exit console.

Language C

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```
main.c
113- {
114- if(root!=NULL)
115- {
116-
117-     postorder(root->llink);
118-     postorder(root->rlink);
119-     printf("%d\n",root->info);
120- }
121- }
122- void inorder(NODE root)
123- {
124- if(root!=NULL)
125- {
126-
127-     inorder(root->llink);
128-     printf("%d\n",root->info);
129-     inorder(root->rlink);
130- }
131- }
132- void main()
133- {
134- int item,choice;
135- ...
136- }
137- }
138- }
139- }
140- }
141- }
142- }
143- }
144- }
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990- }
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997- }
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999- }
1000- }
```

input

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.

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```
main.c
141- switch(choice)
142- {
143-     case 1:printf("enter the item\n");
144-             scanf("%d",&item);
145-             root=insert(root,item);
146-             break;
147-     case 2:display(root,0);
148-             break;
149-     case 3:preorder(root);
150-             break;
151-     case 4:postorder(root);
152-             break;
153-     case 5:inorder(root);
154-             break;
155-     case 6:printf("enter the item\n");
156-             scanf("%d",&item);
157-             root=delete(root,item);
158-             break;
159-     default:exit(0);
160-             break;
161- }
162- }
163- }
```

input

7.exit
enter the choice
7

...Program finished with exit code 0
Press ENTER to exit console.

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OUTPUT:-

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```
main.c
141 switch(choice)
142 {
143     case 1:printf("enter the item\n");
144             scanf("%d",&item);
145             root=insert(root,item);
146 }
```

Input

```
1.insert
2.display
3.pre
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
100
1.insert
2.display
3.pre
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
20
1.insert
2.display
```

Type here to search

14:30 23-12-2020

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```
main.c
141 switch(choice)
142 {
143     case 1:printf("enter the item\n");
144             scanf("%d",&item);
145             root=insert(root,item);
146 }
```

Input

```
2.display
3.pre
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
10
1.insert
2.display
3.pre
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
30
1.insert
2.display
3.pre
4.post
```

Type here to search

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```
main.c
141 switch(choice)
142 {
143     case 1:printf("enter the item\n");
144             scanf("%d",&item);
145             root=insert(root,item);
146 }
```

Input

```
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
150
1.insert
2.display
3.pre
4.post
5.in
6.delete
7.exit
enter the choice
1
enter the item
200
1.insert
2.display
3.pre
4.post
5.in
6.delete
```

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7.exit
enter the choice
3
100
20
10
30
150
200
300
1.insert
2.display
3.pre
```

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Samarth Cousin
Missed voice call
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7.exit
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20
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