

Q1:

The screenshot displays a C++ IDE with a source file named `main.c` and a terminal window showing the execution output of a tree program.

Source Code (main.c):

```
1 #include <stdlib.h>
2 #include <stdio.h>
3 #include "tree.h"
4
5 void printTree(type *c){
6     printf("%d ", *c);
7 }
8
9 int main()
10 {
11     Tree t;
12     createTree(&t);
13
14     fillTree(&t);
15     printf("The tree size -> %d\n", treeSize(t));
16
17     printf("The tree height -> %d\n", treeHeight(t));
18
19     printf("\nThe tree in inorder form: ");
20     inorder(t, printTree);
21
22     printf("\n\nThe tree in inorderWithStack form: ");
23     inorderWithStack(t, printTree);
24
25     printf("\n\nThe tree in levelByLevel form: ");
26     traverseLevels(t, printTree);
27
28     printf("\n");
29
30     printf("\n\nThe tree in preorder form: ");
31     preorder(t, printTree);
32
33     printf("\n\nThe tree in postorder form: ");
34     postorder(t, printTree);
35
36     printf("\n");
37 }
38
```

Execution Output (Terminal):

```
Select E:\Bassel\PC\Tree\bin\Debug\Tree.exe
The tree size -> 7
The tree height -> 4

The tree in inorder form: 22 81 41 6 17 18 9
The tree in inorderWithStack form: 22 81 41 6 17 18 9
The tree in levelByLevel form: 17 41 9 22 6 18 81
The tree in preorder form: 17 41 22 81 6 9 18
The tree in postorder form: 81 22 6 41 18 9 17

Process returned 0 (0x0)   execution time : 0.031 s
Press any key to continue.
```

The IDE status bar shows the file path `E:\Bassel\PC\Tree\main.c`, the language `C/C++`, and the window title `Windows (CR+LF)`. The system tray at the bottom indicates a temperature of 17°C, the date 11/11/23, and the time 05:39.

tree.c [Tree] - Code::Blocks 20.03

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

```
main.c x tree.c x tree.h x
52         p = p->left;
53     }
54     p = pop(&s);
55     (*fn)(&p->info);
56     p = p->right;
57 } while (!isEmpty(s) || p);
58
59 }
60
61
62 void traverseLevels(Tree t, void (*fn) (type *)) {
63     Queue q;
64     createQueue(&q);
65     enqueue(t, &q);
66     NodeT *tmp = dequeue(&q);
67     while (q.head || tmp) {
68         (*fn)(&tmp->info);
69         if (tmp->left)
70             enqueue(tmp->left, &q);
71         if (tmp->right)
72             enqueue(tmp->right, &q);
73         tmp = dequeue(&q);
74     }
75     clearQueue(&q);
76 }
77
78 int treeSize(Tree t) {
79     if (t) {
80         return (1+treeSize(t->left)+treeSize(t->right));
81     }
82     return 0;
83 }
84
85 int treeHeight(Tree t) {
86     if (t) {
87         int a = treeHeight(t->left);
88         int b = treeHeight(t->right);
89         return a>b ? a+1 : b+1;
```

Activate Windows
Go to Settings to activate Windows.

E:\Basse\p\c\Tree\tree.c

C/C++

Windows (CR+LF)

WINDOWS-1256

Line 87, Col 1, Pos 1655

Insert

Read/Write default



17°C عالم جزينا ENG 05:39 م ٢٠٢٢/١١/١٢

tree.h [Tree] - Code::Blocks 20.03

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

main.c x tree.c x tree.h x

```
1  #ifndef TREE_H_INCLUDED
2  #define TREE_H_INCLUDED
3
4  typedef int type;
5
6  typedef struct node{
7      type info;
8      struct node *right;
9      struct node *left;
10 }NodeT;
11
12 typedef NodeT *Tree;
13
14 void createTree(Tree *t);
15 int isEmpty(Tree t);
16 int isFull(Tree t);
17 void inorder(Tree t, void (*fn) (type *));
18 void preorder(Tree t, void (*fn) (type *));
19 void inorder(Tree t, void (*fn) (type *));
20 void traverseLevels(Tree t, void (*fn) (type *));
21 int treeSize(Tree t);
22 int treeHeight(Tree t);
23 void ClearTree(Tree *t);
24 void fillTree(Tree *t);
25
26 #endif // TREE_H_INCLUDED
27
```

Activate Windows
Go to Settings to activate Windows.

E:\Basse\p\c\Tree\tree.h C/C++ Windows (CR+LF) WINDOWS-1256 Line 20, Col 50, Pos 455 Insert Read/Write default

17°C عالم جزئیات ENG 05:39 م ٢٠٢٢/١١/١٢

Q3:

