

```

1  #include<stdio.h>
2  #include<stdlib.h>
3
4  struct BinaryTree
5  {
6      struct BinaryTree *left;
7      int data;
8      struct BinaryTree *right;
9  };
10
11 struct BinaryTree * CreateBinaryNode(int value)
12 {
13     struct BinaryTree *node = (struct BinaryTree *)malloc(sizeof(struct BinaryTree));
14     node->left=NULL;
15     node->data=value;
16     node->right=NULL;
17     return node;
18 }
19
20
21 int height(struct BinaryTree *root)
22 {
23     if(root==NULL)
24         return 0;
25     int left=height(root->left);
26     int right=height(root->right);
27
28     if(left>right)
29         return left+1;
30     else
31         return right+1;
32 }
33
34
35 int current_dia=0,max_dia=0;
36
37 int diameterOfTree(struct BinaryTree *root)
38 {
39     if(root==NULL)
40         return 0;
41     int left=height(root->left);
42     int right=height(root->right);
43     current_dia=left+right+1;
44     if(current_dia>max_dia)
45         max_dia=current_dia;
46
47     diameterOfTree(root->left);
48     diameterOfTree(root->right);
49
50     return max_dia;
51 }
52
53 }
54
55 int main()
56 {
57     struct BinaryTree *root;
58     root=CreateBinaryNode(20);
59     root->left=CreateBinaryNode(20);
60     root->right=CreateBinaryNode(20);
61     root->right->right=CreateBinaryNode(20);
62     root->left->left=CreateBinaryNode(20);
63     root->left->right=CreateBinaryNode(20);
64     root->left->right->right=CreateBinaryNode(20);
65     root->left->right->left=CreateBinaryNode(20);
66     root->left->right->left->left=CreateBinaryNode(20);

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```
67     root->left->right->left->left->left=CreateBinaryNode(20);
68     root->left->left->left=CreateBinaryNode(20);
69     root->left->left->right=CreateBinaryNode(20);
70
71
72     /*root->left          = CreateBinaryNode(2);
73     root->right           = CreateBinaryNode(3);
74     root->left->left       = CreateBinaryNode(4);
75     root->left->right      = CreateBinaryNode(5);*/
76
77     printf("height is %d",height(root));
78
79     printf("\nDiameter of tree is %d",diameterOfTree(root));
80 }
```