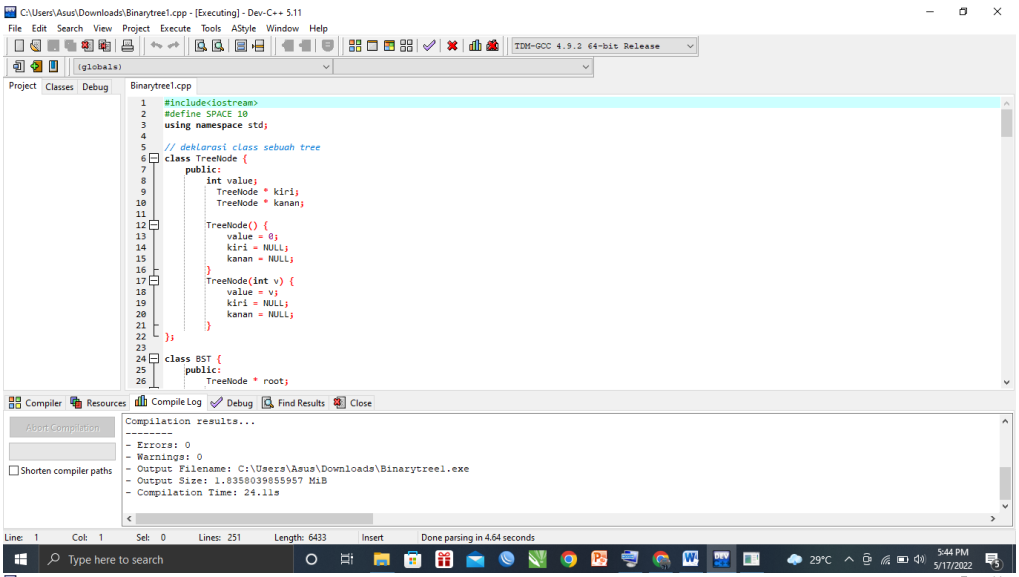
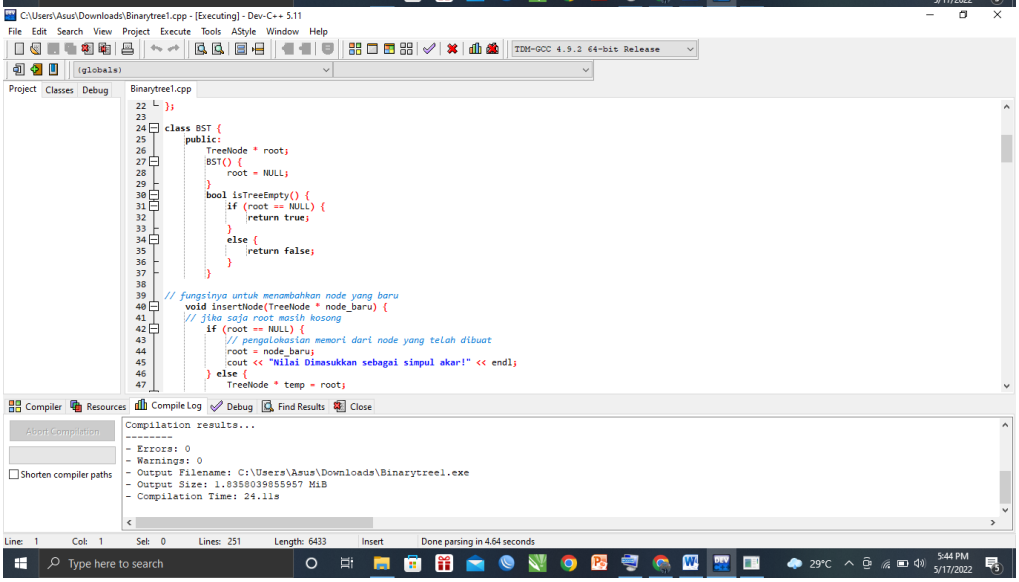
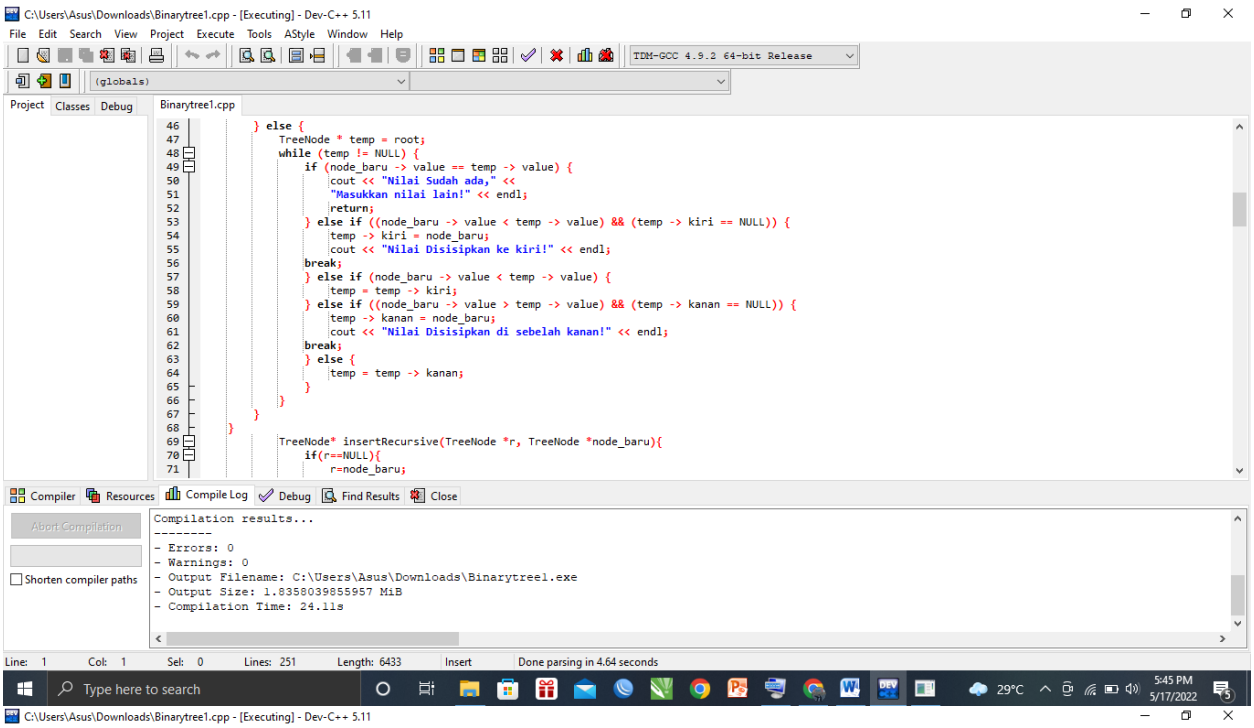
Kelompok 4

1. Shabinna Rahmadilla Santoso 004
2. Kania Meliana Fityanti 028
3. Hadi Suprayitno 032
4. Shinta Berlin Maharani 048
5. Asha Antania Anjani 068

Fungsi Membangun Tree Binary







```
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
46          } else {
47              TreeNode * temp = root;
48              while (temp != NULL) {
49                  if (node_baru -> value == temp -> value) {
50                      cout << "Nilai Sudah ada," <<
51                      "Masukkan nilai lain!" << endl;
52                      return;
53                  } else if ((node_baru -> value < temp -> value) && (temp -> kiri == NULL)) {
54                      temp -> kiri = node_baru;
55                      cout << "Nilai Disisipkan ke kiri!" << endl;
56                  break;
57                  } else if (node_baru -> value < temp -> value) {
58                      temp = temp -> kiri;
59                  } else if ((node_baru -> value > temp -> value) && (temp -> kanan == NULL)) {
60                      temp -> kanan = node_baru;
61                      cout << "Nilai Disisipkan di sebelah kanan!" << endl;
62                  break;
63                  } else {
64                      temp = temp -> kanan;
65                  }
66              }
67          }
68      }
69          TreeNode* insertRecursive(TreeNode *r, TreeNode *node_baru){
70              if(r==NULL){
71                  r=node_baru;
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Asus\Downloads\Binarytree1.exe
- Output Size: 1.8358039855957 MiB
- Compilation Time: 24.11s
Line: 1 Col: 1 Sel: 0 Lines: 251 Length: 6433 Insert Done parsing in 4.64 seconds
Type here to search
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5/17/2022
```

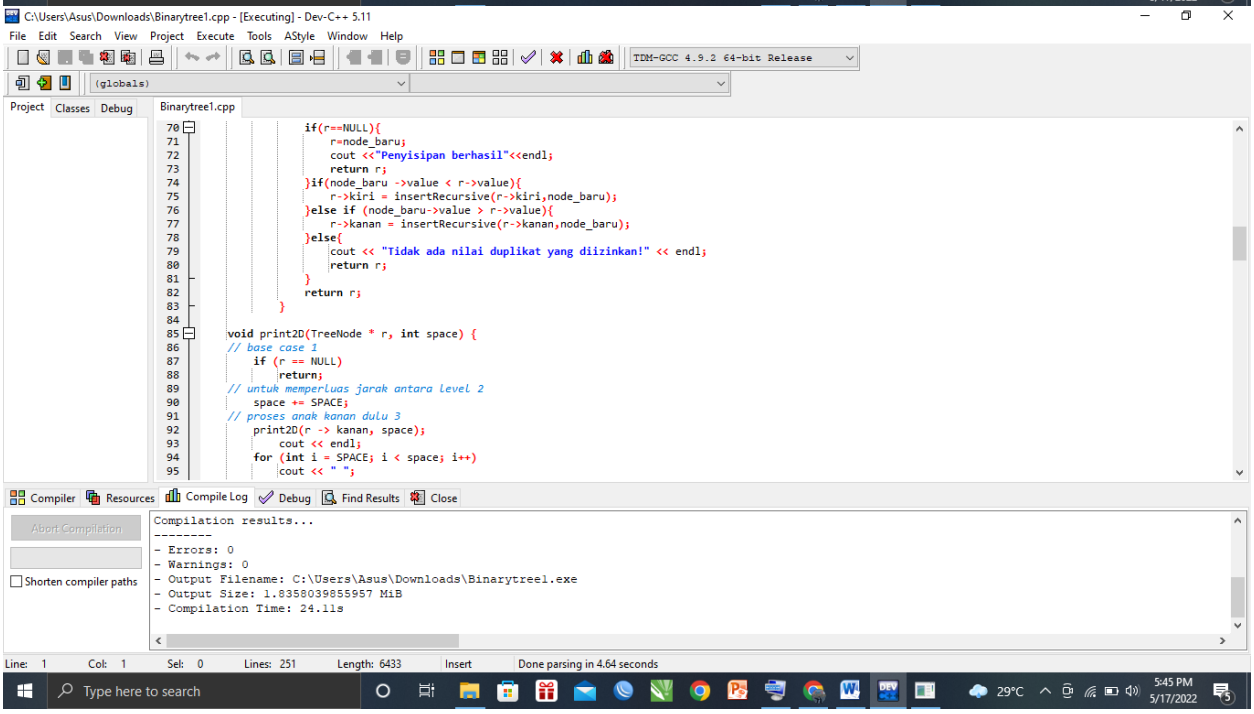

```
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
70              if(r==NULL){
71                  r=node_baru;
72                  cout <<"Penyisipan berhasil"<<endl;
73                  return r;
74              }if(node_baru ->value < r->value){
75                  r->kiri = insertRecursive(r->kiri,node_baru);
76              }else if (node_baru->value > r->value){
77                  r->kanan = insertRecursive(r->kanan,node_baru);
78              }else{
79                  cout << "Tidak ada nilai duplikat yang diizinkan!" << endl;
80                  return r;
81              }
82              return r;
83          }
84
85      void print2D(TreeNode * r, int space) {
86      // base case 1
87          if (r == NULL)
88              return;
89      // untuk memperluas jarak antara level 2
90          space += SPACE;
91      // proses anak kanan dulu 3
92          print2D(r -> kanan, space);
93              cout << endl;
94          for (int i = SPACE; i < space; i++)
95              cout << " ";
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
--------
- Errors: 0
- Warnings: 0
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Line: 1 Col: 1 Sel: 0 Lines: 251 Length: 6433 Insert Done parsing in 4.64 seconds
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5/17/2022
```

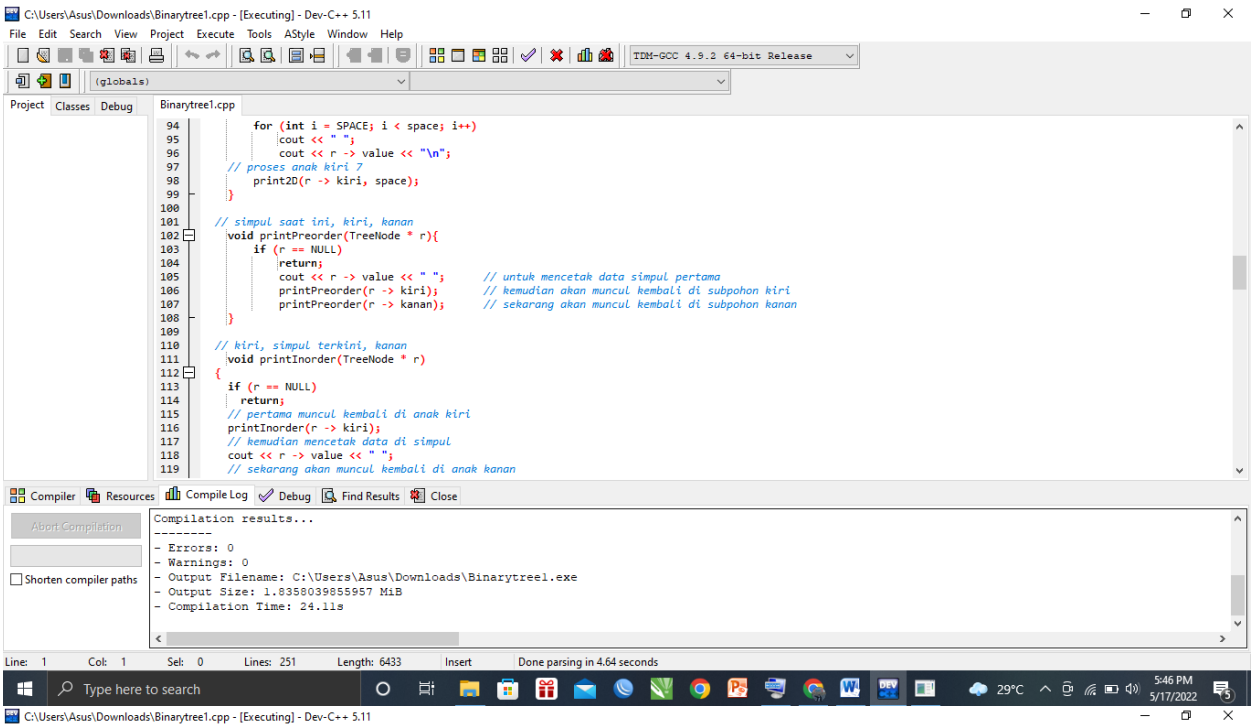

```
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
94          for (int i = SPACE; i < space; i++)
95              cout << " ";
96              cout << r -> value << "\n";
97      // proses anak kiri 7
98          print2D(r -> kiri, space);
99      }
100
101     // simpul saat ini, kiri, kanan
102     void printPreorder(TreeNode * r){
103         if (r == NULL)
104             return;
105             cout << r -> value << " ";      // untuk mencetak data simpul pertama
106             printPreorder(r -> kiri);       // kemudian akan muncul kembali di subpohon kiri
107             printPreorder(r -> kanan);      // sekarang akan muncul kembali di subpohon kanan
108     }
109
110   // kiri, simpul terkini, kanan
111     void printInorder(TreeNode * r)
112   {
113     if (r == NULL)
114       return;
115     // pertama muncul kembali di anak kiri
116     printInorder(r -> kiri);
117     // kemudian mencetak data di simpul
118     cout << r -> value << " ";
119     // sekarang akan muncul kembali di anak kanan
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
--------
- Errors: 0
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Line: 1  Col: 1  Sel: 0  Lines: 251  Length: 6433  Insert  Done parsing in 4.64 seconds
Type here to search
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5/17/2022
```

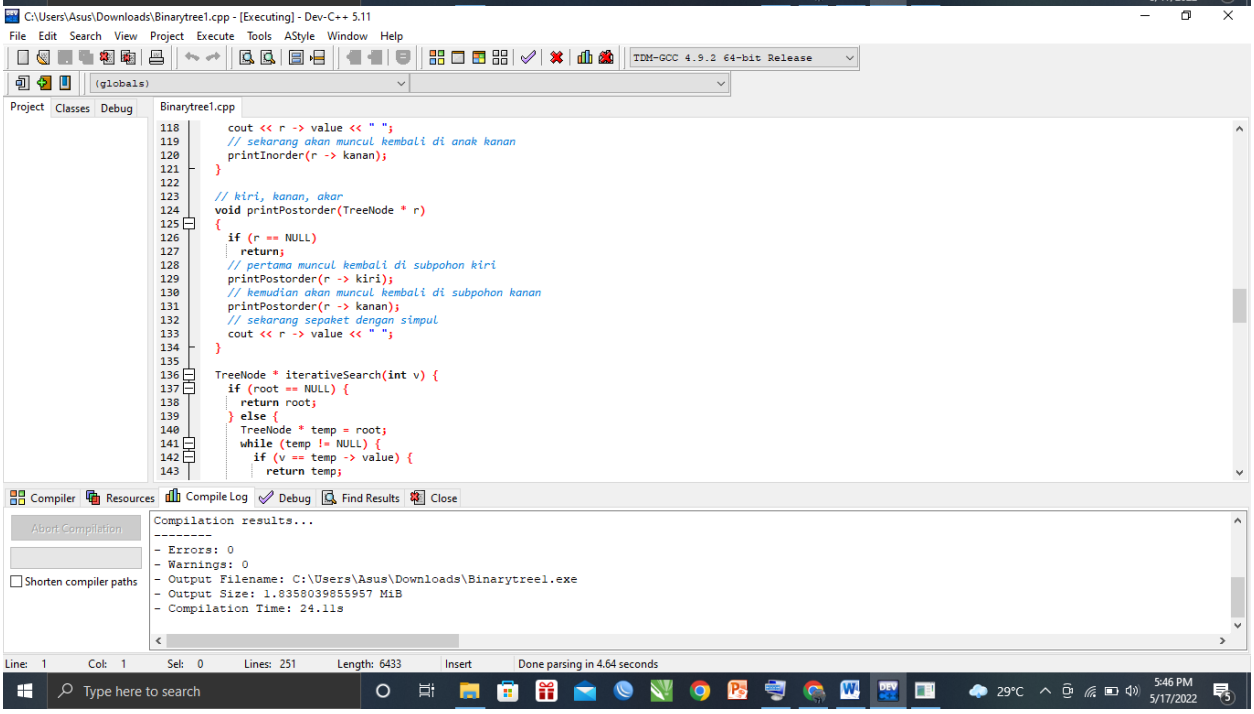

```
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
118     cout << r -> value << " ";
119     // sekarang akan muncul kembali di anak kanan
120     printInorder(r -> kanan);
121   }
122
123   // kiri, kanan, akar
124   void printPostorder(TreeNode * r)
125   {
126     if (r == NULL)
127       return;
128     // pertama muncul kembali di subpohon kiri
129     printPostorder(r -> kiri);
130     // kemudian akan muncul kembali di subpohon kanan
131     printPostorder(r -> kanan);
132     // sekarang sepaket dengan simpul
133     cout << r -> value << " ";
134   }
135
136   TreeNode * iterativeSearch(int v) {
137     if (root == NULL) {
138       return root;
139     } else {
140       TreeNode * temp = root;
141       while (temp != NULL) {
142         if (v == temp -> value) {
143           return temp;
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Asus\Downloads\Binarytree1.exe
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Line: 1  Col: 1  Sel: 0  Lines: 251  Length: 6433  Insert  Done parsing in 4.64 seconds
Type here to search
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```

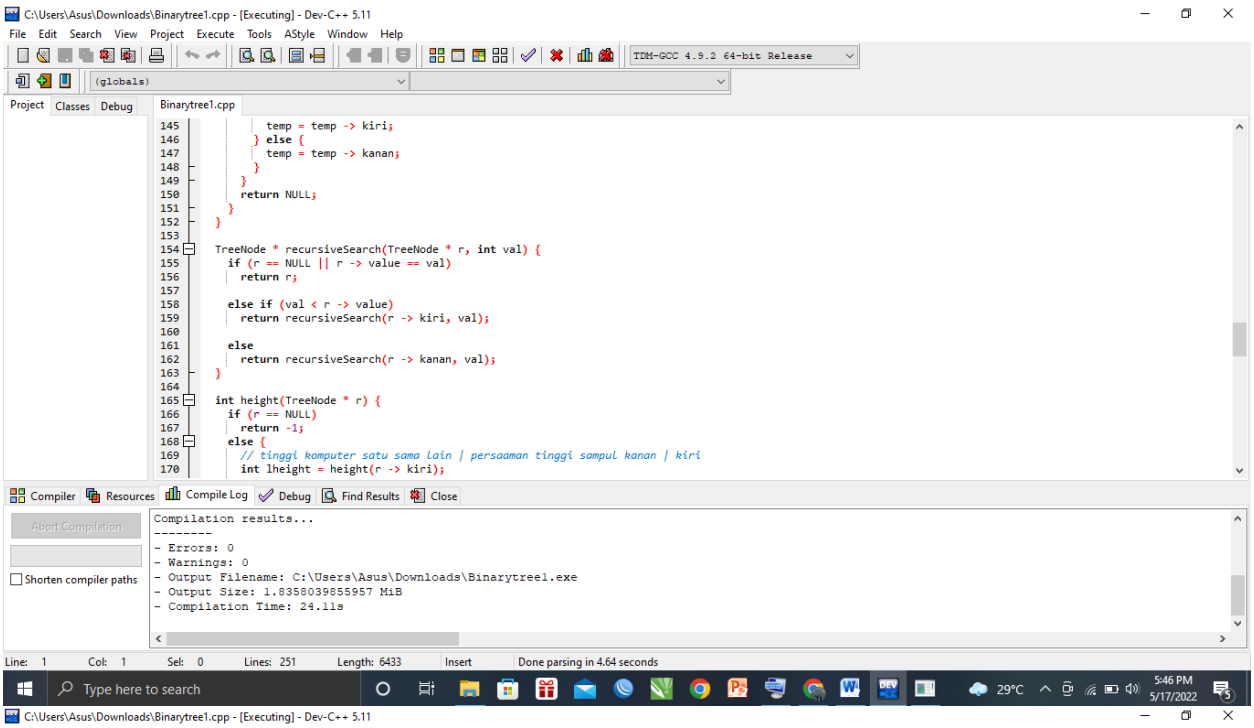
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
temp = temp -> kiri;
} else {
temp = temp -> kanan;
}
}
return NULL;
}
}
TreeNode * recursiveSearch(TreeNode * r, int val) {
if (r == NULL || r -> value == val)
return r;
else if (val < r -> value)
return recursiveSearch(r -> kiri, val);
else
return recursiveSearch(r -> kanan, val);
}
int height(TreeNode * r) {
if (r == NULL)
return -1;
else {
// tinggi komputer satu sama lain | persaaman tinggi sampul kanan | kiri
int lheight = height(r -> kiri);
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
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Line: 1 Col: 1 Sel: 0 Lines: 251 Length: 6433 Insert Done parsing in 4.64 seconds
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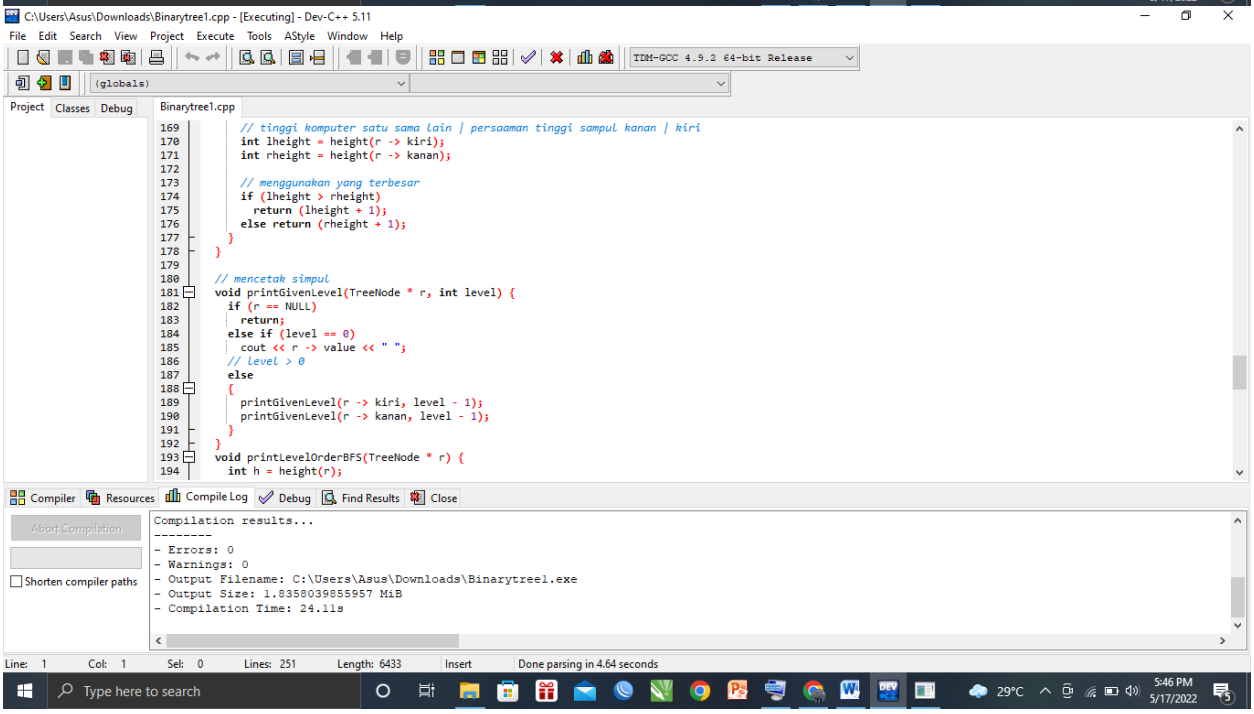
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
// tinggi komputer satu sama lain | persaaman tinggi sampul kanan | kiri
int lheight = height(r -> kiri);
int rheight = height(r -> kanan);
// menggunakan yang terbesar
if (lheight > rheight)
return (lheight + 1);
else return (rheight + 1);
}
}
// mencetak simpul
void printGivenLevel(TreeNode * r, int level) {
if (r == NULL)
return;
else if (level == 0)
cout << r -> value << " ";
// level > 0
else
{
printGivenLevel(r -> kiri, level - 1);
printGivenLevel(r -> kanan, level - 1);
}
}
void printLevelOrderBFS(TreeNode * r) {
int h = height(r);
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Asus\Downloads\Binarytree1.exe
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Line: 1 Col: 1 Sel: 0 Lines: 251 Length: 6433 Insert Done parsing in 4.64 seconds
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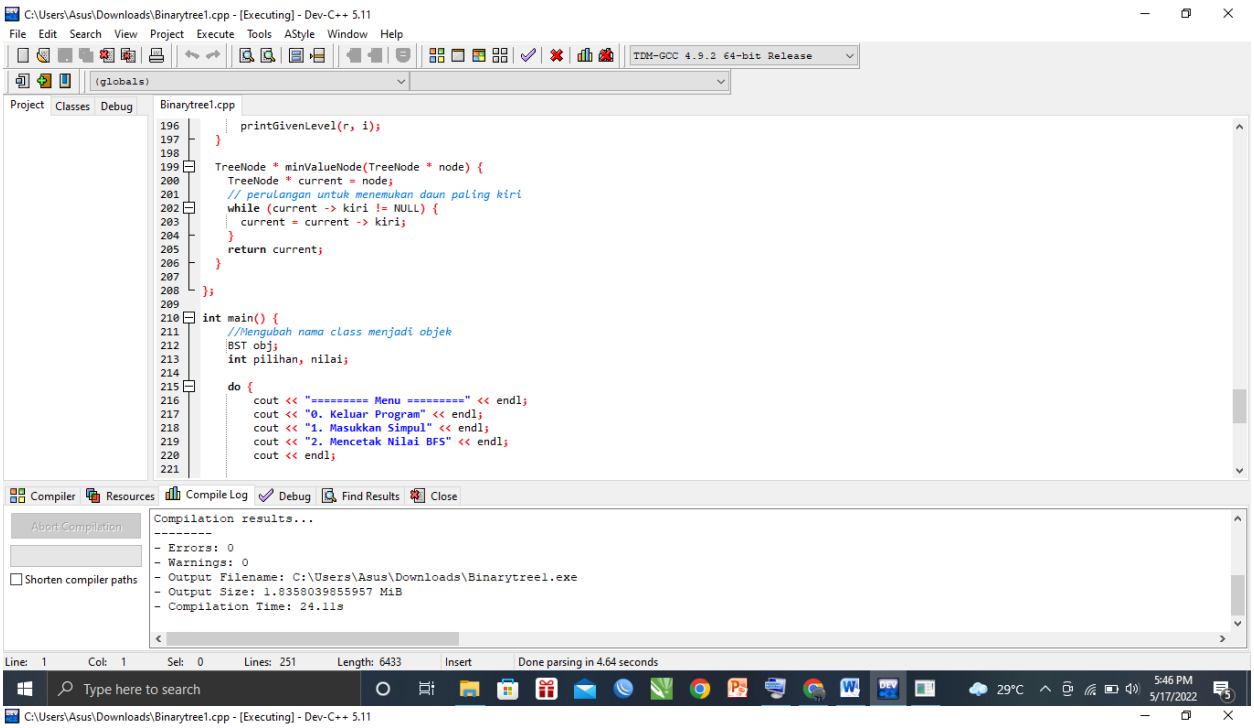
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
196 printGivenLevel(r, i);
197 }
198
199 TreeNode * minValueNode(TreeNode * node) {
200 TreeNode * current = node;
201 // perulangan untuk menemukan daun paling kiri
202 while (current -> kiri != NULL) {
203 current = current -> kiri;
204 }
205 return current;
206 }
207
208 };
209
210 int main() {
211 //Mengubah nama class menjadi objek
212 BST obj;
213 int pilihan, nilai;
214
215 do {
216 cout << "========= Menu =========" << endl;
217 cout << "0. Keluar Program" << endl;
218 cout << "1. Masukkan Simpul" << endl;
219 cout << "2. Mencetak Nilai BFS" << endl;
220 cout << endl;
221
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

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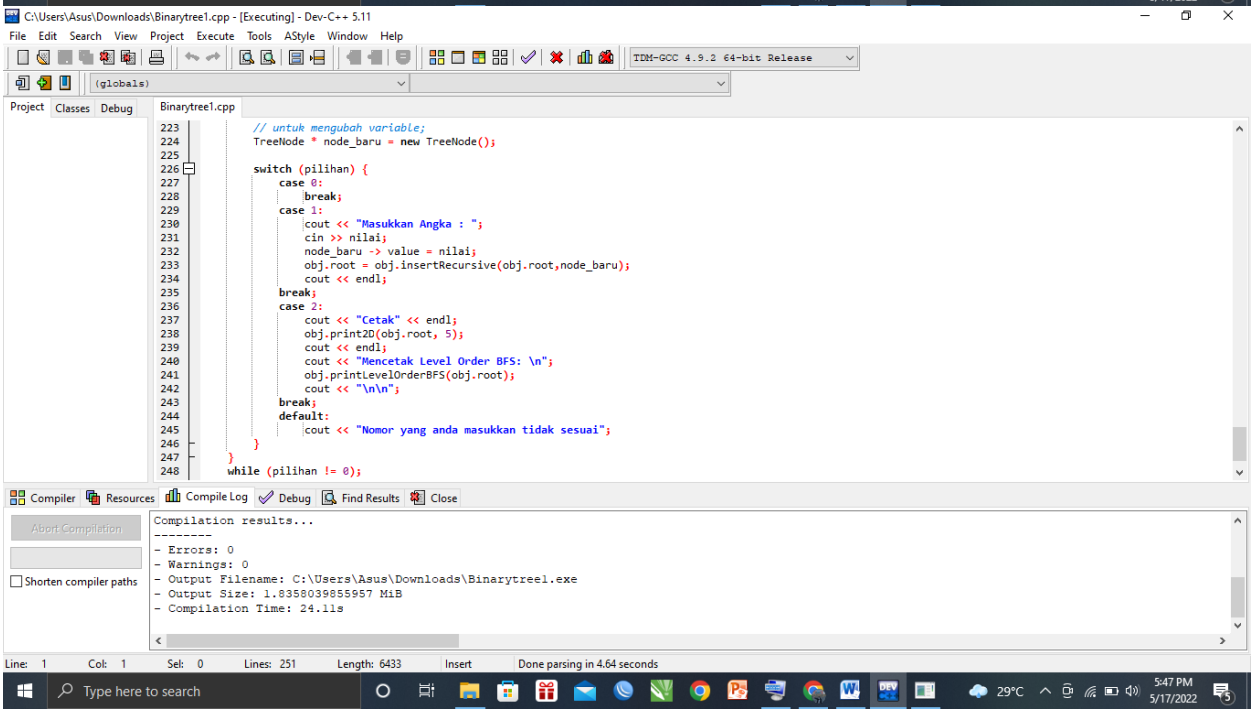
C:\Users\Asus\Downloads\Binarytree1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Binarytree1.cpp
223 // untuk mengubah variable;
224 TreeNode * node_baru = new TreeNode();
225
226 switch (pilihan) {
227 case 0:
228 break;
229 case 1:
230 cout << "Masukkan Angka : ";
231 cin >> nilai;
232 node_baru -> value = nilai;
233 obj.root = obj.insertRecursive(obj.root,node_baru);
234 cout << endl;
235 break;
236 case 2:
237 cout << "Cetak" << endl;
238 obj.print2D(obj.root, 5);
239 cout << endl;
240 cout << "Mencetak Level Order BFS: \n";
241 obj.printLevelOrderBFS(obj.root);
242 cout << "\n\n";
243 break;
244 default:
245 cout << "Nomor yang anda masukkan tidak sesuai";
246 }
247 }
248 while (pilihan != 0);
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

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- Output Filename: C:\Users\Asus\Downloads\Binarytree1.exe
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29°C
5:47 PM
5/17/2022

- Output Pemograman