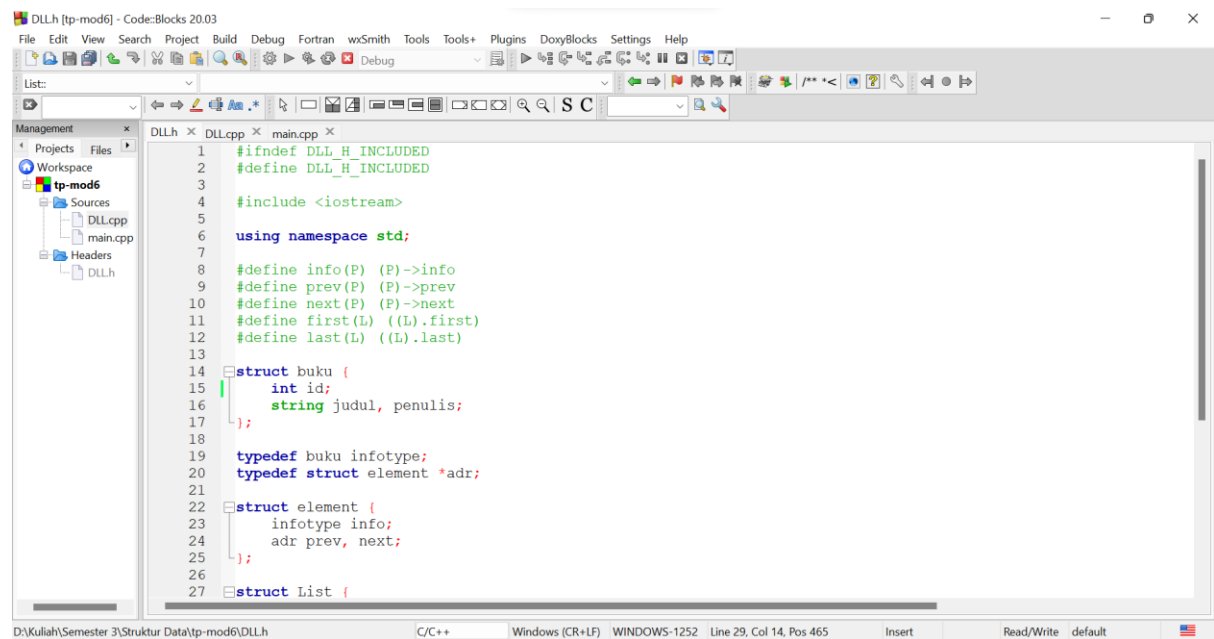
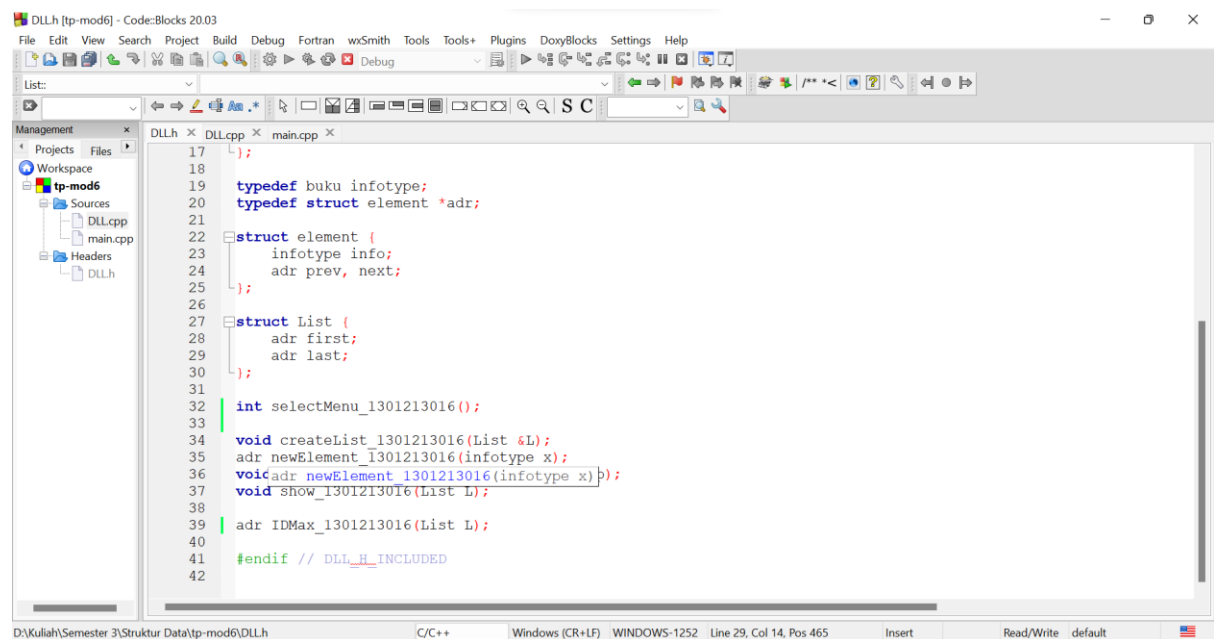


DLL.h

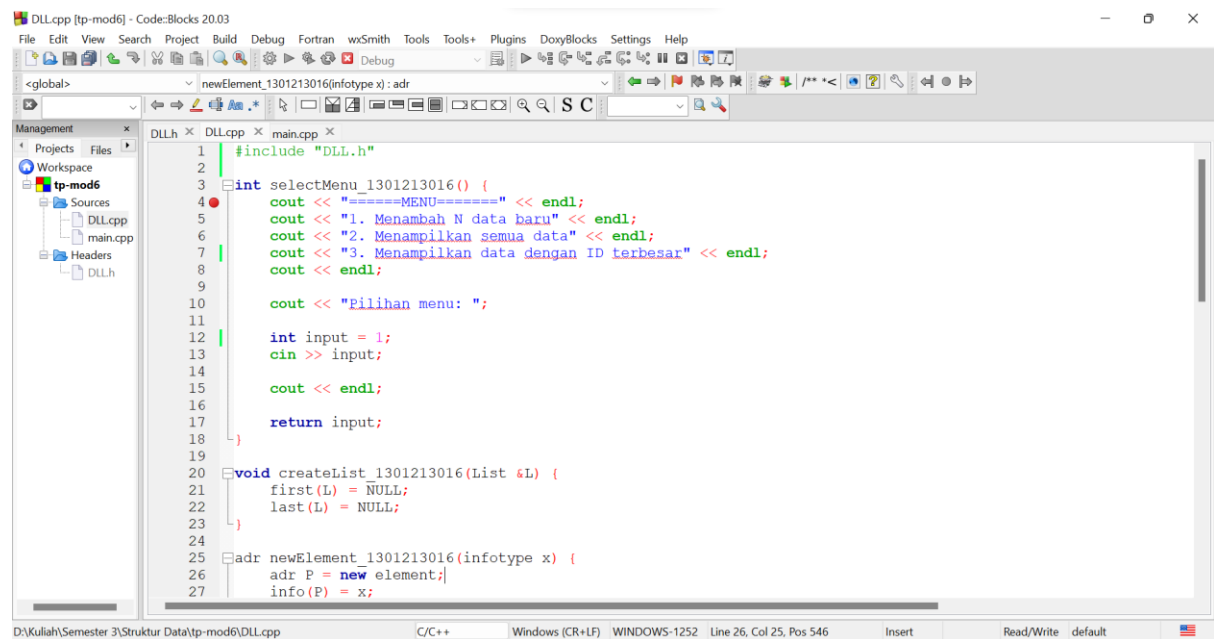


```
1 #ifndef DLL_H_INCLUDED
2 #define DLL_H_INCLUDED
3
4 #include <iostream>
5
6 using namespace std;
7
8 #define info(P) (P)->info
9 #define prev(P) (P)->prev
10 #define next(P) (P)->next
11 #define first(L) ((L).first)
12 #define last(L) ((L).last)
13
14 struct buku {
15     int id;
16     string judul, penulis;
17 };
18
19 typedef buku infotype;
20 typedef struct element *adr;
21
22 struct element {
23     infotype info;
24     adr prev, next;
25 };
26
27 struct List {
```

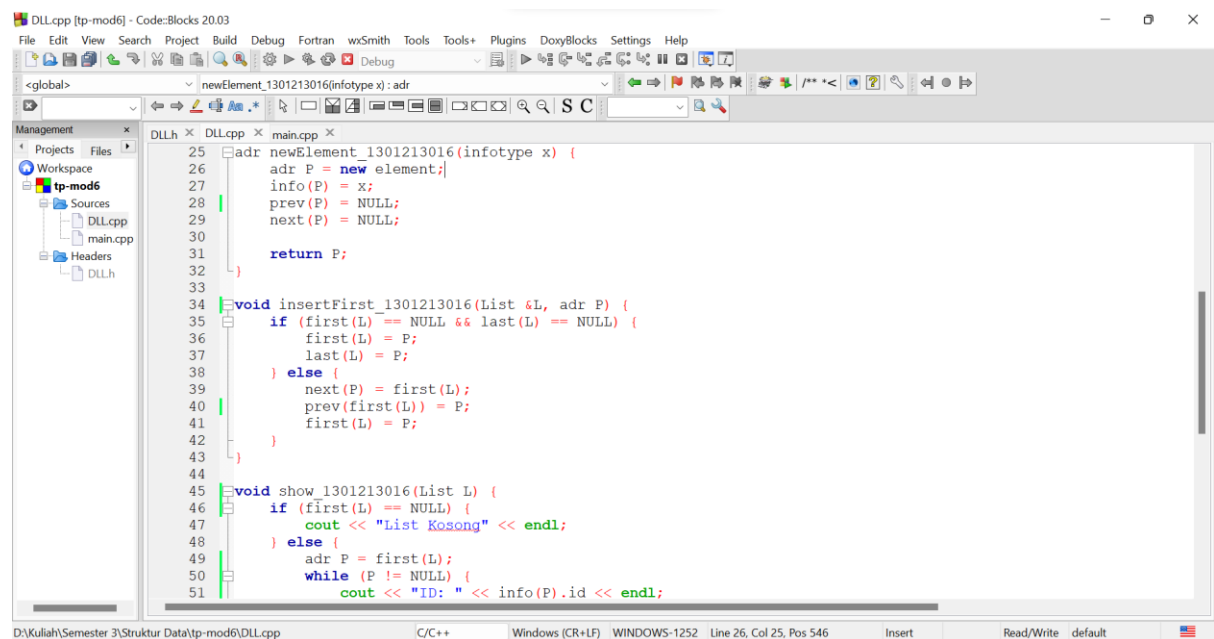


```
17 };
18
19 typedef buku infotype;
20 typedef struct element *adr;
21
22 struct element {
23     infotype info;
24     adr prev, next;
25 };
26
27 struct List {
28     adr first;
29     adr last;
30 };
31
32 int selectMenu_1301213016();
33
34 void createList_1301213016(List &L);
35 adr newElement_1301213016(infotype x);
36 void(&adr newElement_1301213016(infotype x))();
37 void show_1301213016(List L);
38
39 adr IDMax_1301213016(List L);
40
41 #endif // DLL_H_INCLUDED
42
```

DLL.cpp



```
1 #include "DLL.h"
2
3 int selectMenu_1301213016() {
4     cout << "====MENU====" << endl;
5     cout << "1. Menambah N data baru" << endl;
6     cout << "2. Menampilkan semua data" << endl;
7     cout << "3. Menampilkan data dengan ID terbesar" << endl;
8     cout << endl;
9
10    cout << "Pilihan menu: ";
11
12    int input = 1;
13    cin >> input;
14
15    cout << endl;
16
17    return input;
18 }
19
20 void createList_1301213016(List &L) {
21     first(L) = NULL;
22     last(L) = NULL;
23 }
24
25 adr newElement_1301213016(inftype x) {
26     adr P = new element;
27     info(P) = x;
```



```
25 adr newElement_1301213016(inftype x) {
26     adr P = new element;
27     info(P) = x;
28     prev(P) = NULL;
29     next(P) = NULL;
30
31     return P;
32 }
33
34 void insertFirst_1301213016(List &L, adr P) {
35     if (first(L) == NULL && last(L) == NULL) {
36         first(L) = P;
37         last(L) = P;
38     } else {
39         next(P) = first(L);
40         prev(first(L)) = P;
41         first(L) = P;
42     }
43 }
44
45 void show_1301213016(List L) {
46     if (first(L) == NULL) {
47         cout << "List Kosong" << endl;
48     } else {
49         adr P = first(L);
50         while (P != NULL) {
51             cout << "ID: " << info(P).id << endl;
```

DLL.cpp [tp-mod6] - Code::Blocks 20.03

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

<global> show_1301213016(List L): void

Management x DLLh x DLLcpp x main.cpp x

```

44
45 void show_1301213016(List L) {
46     if (first(L) == NULL) {
47         cout << "List Kosong" << endl;
48     } else {
49         adr P = first(L);
50         while (P != NULL) {
51             cout << "ID: " << info(P).id << endl;
52             cout << "Judul: " << info(P).judul << endl;
53             cout << "Penulis: " << info(P).penulis << endl;
54
55             cout << endl;
56
57             P = next(P);
58         }
59         cout << endl;
60     }
61 }
62
63 adr IDMax_1301213016(List L) {
64     adr P = first(L);
65     adr Q = first(L);
66
67     while (P != NULL) {
68         if (info(P).id > info(Q).id) {
69             Q = P;
70         }
71     }

```

D:\Kuliah\Semester 3\Struktur Data\tp-mod6\DLL.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 51, Col 50, Pos 1097 Insert Read/Write default

DLL.cpp [tp-mod6] - Code::Blocks 20.03

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

<global> IDMax_1301213016(List L): adr

Management x DLLh x DLLcpp x main.cpp x

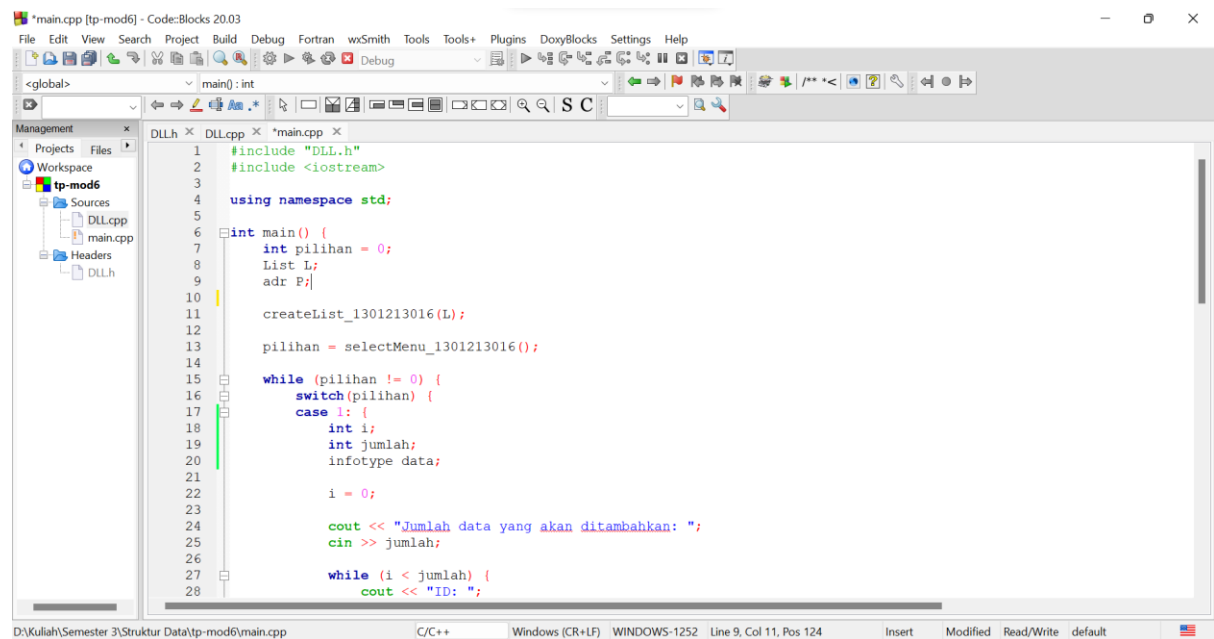
```

52     cout << "Judul: " << info(P).judul << endl;
53     cout << "Penulis: " << info(P).penulis << endl;
54
55     cout << endl;
56
57     P = next(P);
58 }
59 cout << endl;
60 }
61 }
62
63 adr IDMax_1301213016(List L) {
64     adr P = first(L);
65     adr Q = first(L);
66
67     while (P != NULL) {
68         if (info(P).id > info(Q).id) {
69             Q = P;
70         }
71     }
72
73     P = next(P);
74
75     return Q;
76 }
77

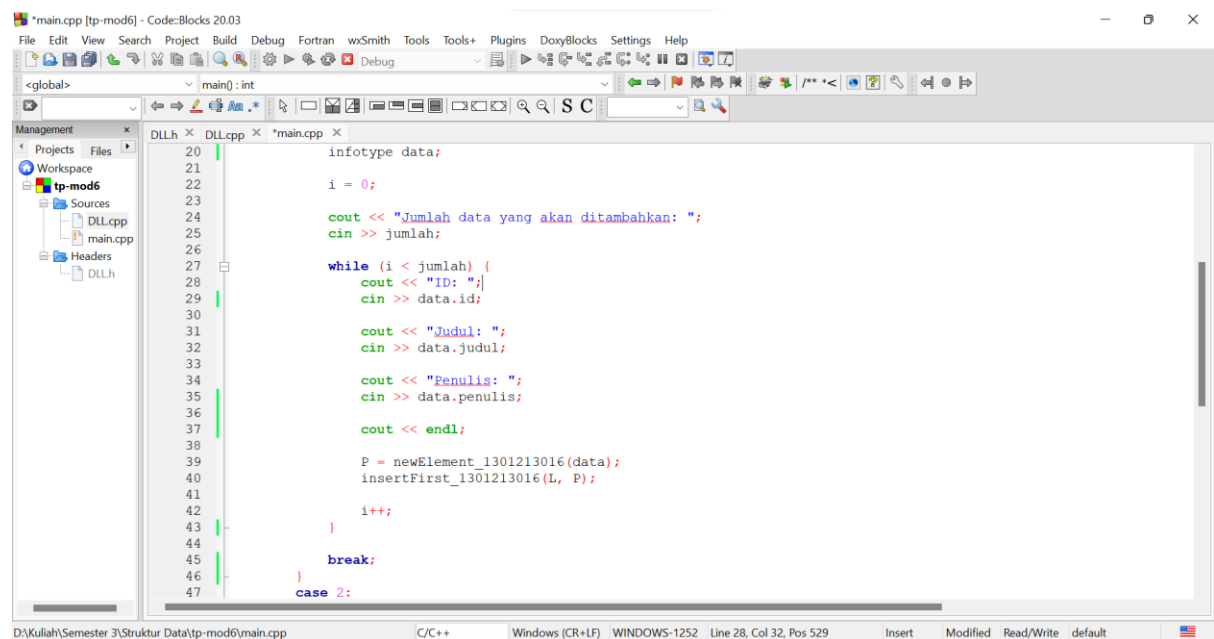
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod6\DLL.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 70, Col 10, Pos 1494 Insert Read/Write default

Main.cpp



```
1 #include "DLL.h"
2 #include <iostream>
3
4 using namespace std;
5
6 int main() {
7     int pilihan = 0;
8     List L;
9     adr P;
10
11     createList_1301213016(L);
12
13     pilihan = selectMenu_1301213016();
14
15     while (pilihan != 0) {
16         switch(pilihan) {
17             case 1: {
18                 int i;
19                 int jumlah;
20                 infotype data;
21
22                 i = 0;
23
24                 cout << "Jumlah data yang akan ditambahkan: ";
25                 cin >> jumlah;
26
27                 while (i < jumlah) {
28                     cout << "ID: ";
```



```
20     infotype data;
21
22     i = 0;
23
24     cout << "Jumlah data yang akan ditambahkan: ";
25     cin >> jumlah;
26
27     while (i < jumlah) {
28         cout << "ID: ";
29         cin >> data.id;
30
31         cout << "Judul: ";
32         cin >> data.judul;
33
34         cout << "Penulis: ";
35         cin >> data.penulis;
36
37         cout << endl;
38
39         P = newElement_1301213016(data);
40         insertFirst_1301213016(L, P);
41
42         i++;
43     }
44
45     break;
46 }
47 case 2:
```

The screenshot shows a C++ IDE with the following details:

- Title Bar:** *main.cpp [tp-mod6] - Code::Blocks 20.03
- Menu Bar:** File, Edit, View, Search, Project, Build, Debug, Fortran, wxSmith, Tools, Tools+, Plugins, DoxyBlocks, Settings, Help
- Toolbar:** Standard IDE icons for file operations, compilation, and debugging.
- Left Panel (Management):**
 - Workspace: tp-mod6
 - Sources: DLL.cpp, main.cpp
 - Headers: DLL.h
- Main Editor:** Displays the code for 'main.cpp' with line numbers 47 to 74.

```
47     case 2:  
48         show_1301213016(L);  
49  
50         break;  
51     case 3:  
52         adr Z = IDMax_1301213016(L);  
53  
54         cout << "ID: " << info(Z).id << endl;  
55         cout << "Judul: " << info(Z).judul << endl;  
56         cout << "Penulis: " << info(Z).penulis << endl;  
57  
58         cout << endl;  
59     }  
60  
61     char kembali;  
62     cout << "Kembali ke menu utama? (Y/N): ";  
63     cin >> kembali;  
64     cout << endl;  
65  
66     if (kembali == 'Y') {  
67         pilihan = selectMenu_1301213016();  
68     } else {  
69         pilihan = 0;  
70     }  
71  
72  
73  
74 }
```
- Status Bar:** D:\Kuliah\Semester 3\Struktur Data\tp-mod6\main.cpp | C/C++ | Windows (CR+LF) | WINDOWS-1252 | Line 46, Col 10, Pos 918 | Insert | Modified | Read/Write | default

Output

The screenshot shows a Windows command prompt window titled "D:\Kuliah\Semester 3\Struktur Data\tp-mod6\bin\Debug\tp-mod6.exe" with the following output:

```
=====MENU=====  
1. Menambah N data baru  
2. Menampilkan semua data  
3. Menampilkan data dengan ID terbesar  
  
Pilihan menu: 1  
  
Jumlah data yang akan ditambahkan: 5  
ID: 1  
Judul: Buku1  
Penulis: PenulisA  
  
ID: 2  
Judul: Buku2  
Penulis: PenulisB  
  
ID: 3  
Judul: Buku3  
Penulis: PenulisC  
  
ID: 4  
Judul: Buku4  
Penulis: PenulisD  
  
ID: 5  
Judul: Buku5  
Penulis: PenulisE  
  
Kembali ke menu utama? (Y/N): Y  
  
=====MENU=====  
1. Menambah N data baru  
2. Menampilkan semua data  
3. Menampilkan data dengan ID terbesar  
  
Pilihan menu: 2  
  
ID: 5  
Judul: Buku5  
Penulis: PenulisE
```

"D:\Kuliah\Semester 3\Struktur Data\tp-mod6\bin\Debug\tp-mod6.exe"

3. Menampilkan data dengan ID terbesar

Pilihan menu: 2

ID: 5

Judul: Buku5

Penulis: PenulisE

ID: 4

Judul: Buku4

Penulis: PenulisD

ID: 3

Judul: Buku3

Penulis: PenulisC

ID: 2

Judul: Buku2

Penulis: PenulisB

ID: 1

Judul: Buku1

Penulis: PenulisA

Kembali ke menu utama? (Y/N): Y

====MENU=====

1. Menambah N data baru

2. Menampilkan semua data

3. Menampilkan data dengan ID terbesar

Pilihan menu: 3

ID: 5

Judul: Buku5

Penulis: PenulisE

Kembali ke menu utama? (Y/N):