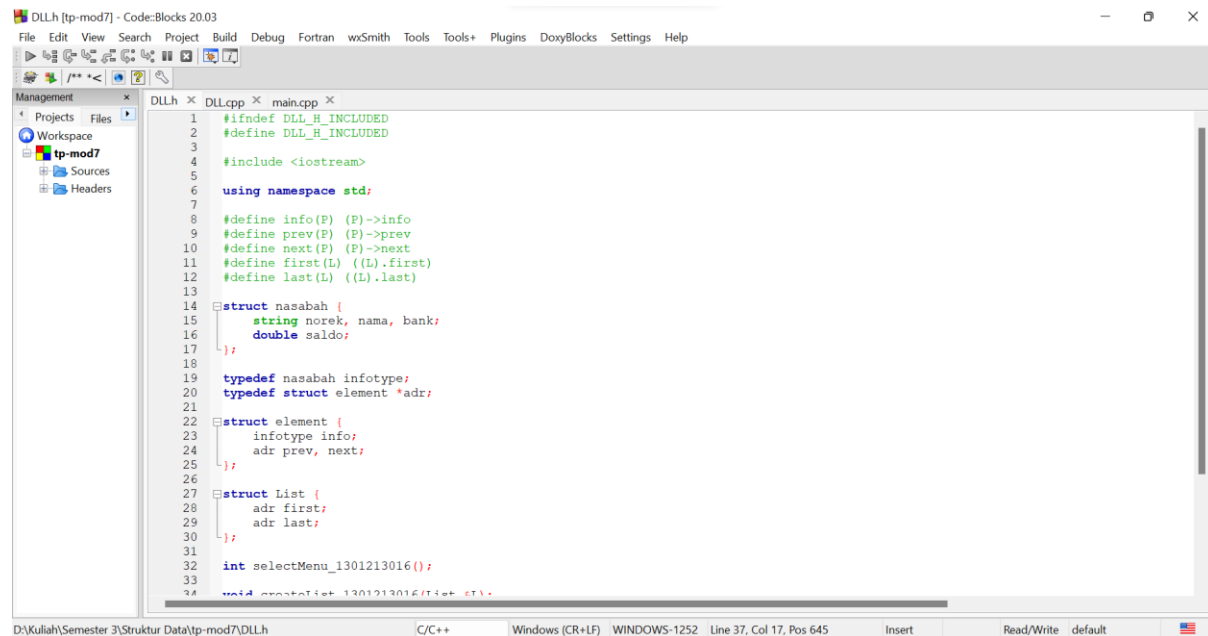


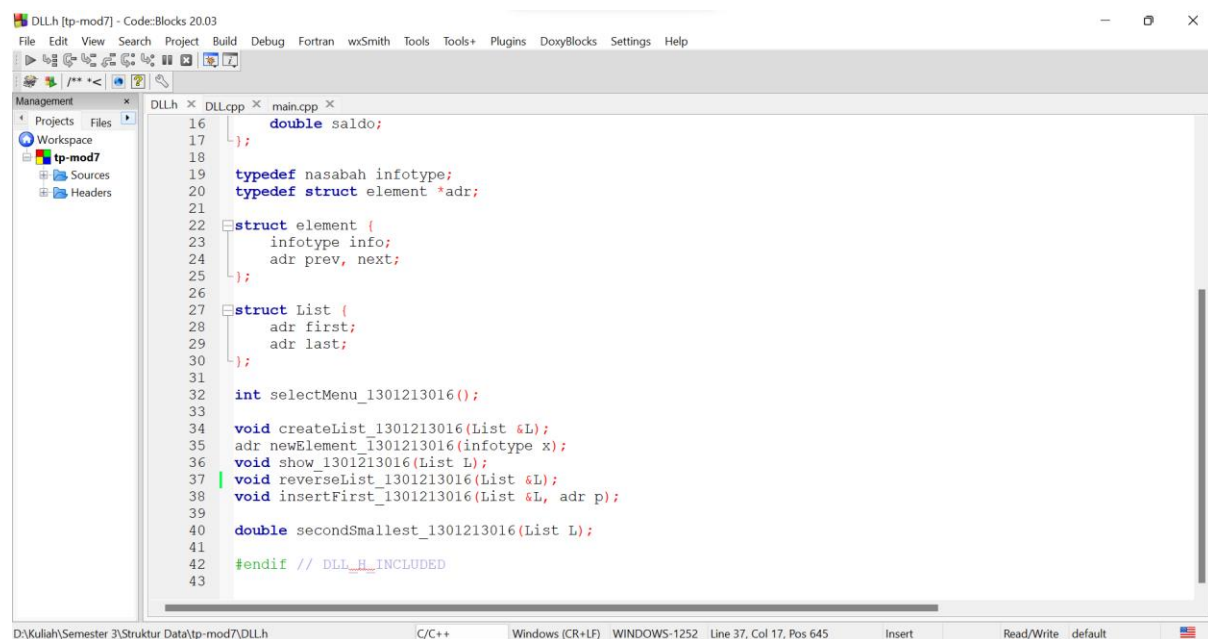
Nama : Fawaz Al Rasyid

NIM : 1301213016

DLL.H

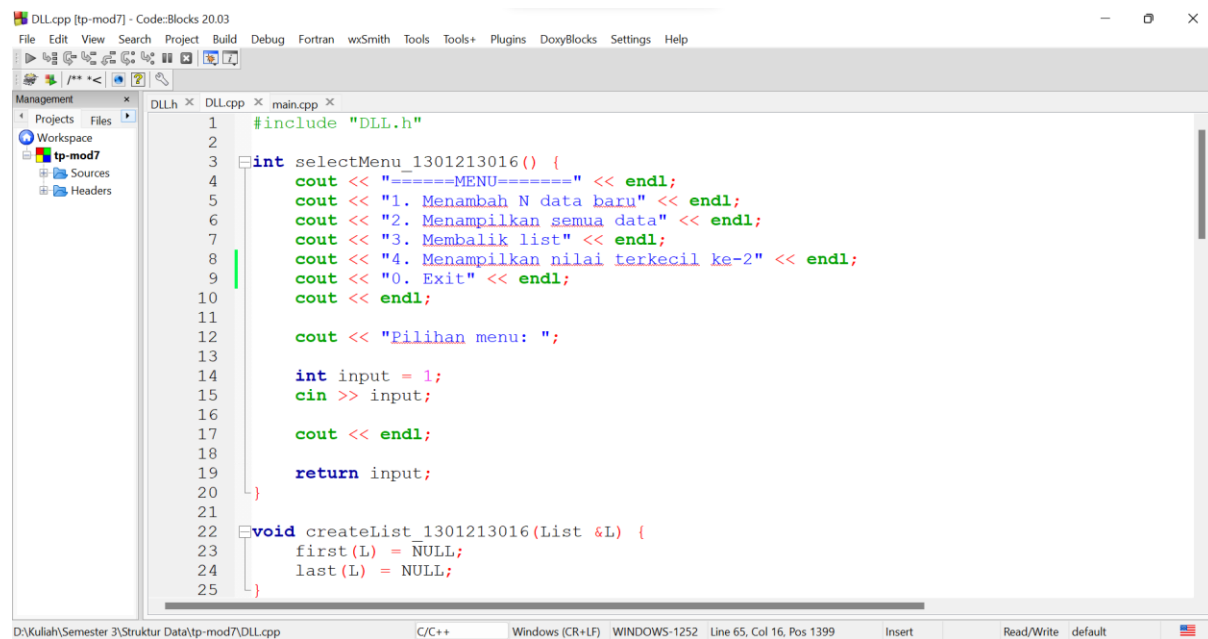


```
1 #ifndef DLL_H_INCLUDED
2 #define DLL_H_INCLUDED
3
4 #include <iostream>
5
6 using namespace std;
7
8 #define info(P) (P->info)
9 #define prev(P) (P->prev)
10 #define next(P) (P->next)
11 #define first(L) ((L).first)
12 #define last(L) ((L).last)
13
14 struct nasabah {
15     string norek, nama, bank;
16     double saldo;
17 };
18
19 typedef nasabah 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);
```



```
16     double saldo;
17 };
18
19 typedef nasabah 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 show_1301213016(List L);
37 void reverseList_1301213016(List &L);
38 void insertFirst_1301213016(List &L, adr p);
39
40 double secondSmallest_1301213016(List L);
41
42 #endif // DLL_H_INCLUDED
43
```

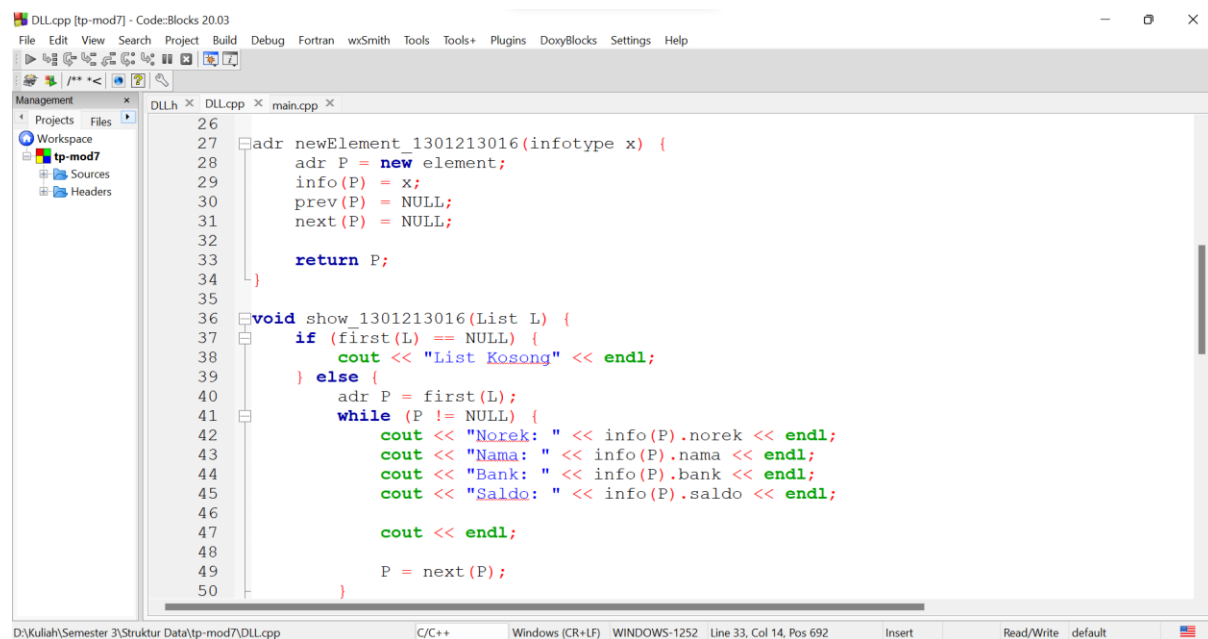
DLL.cpp



The screenshot shows the Code::Blocks 20.03 IDE with the file `DLL.cpp` open. The code defines two functions: `selectMenu_1301213016()` and `createList_1301213016(List &L)`. The menu function displays a menu with options to add, display, reverse, find minimum, and exit. The list creation function initializes the `first` and `last` pointers to `NULL`.

```
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. Membalik list" << endl;
8      cout << "4. Menampilkan nilai terkecil ke-2" << endl;
9      cout << "0. Exit" << endl;
10     cout << endl;
11
12     cout << "Pilihan menu: ";
13
14     int input = 1;
15     cin >> input;
16
17     cout << endl;
18
19     return input;
20 }
21
22 void createList_1301213016(List &L) {
23     first(L) = NULL;
24     last(L) = NULL;
25 }
```

The status bar at the bottom indicates the file path is `D:\Kuliah\Semester 3\Struktur Data\tp-mod7\DLL.cpp`, the language is `C/C++`, and the current line is 65, column 16, position 1399.



The screenshot shows the Code::Blocks 20.03 IDE with the file `DLL.cpp` open. The code defines two functions: `newElement_1301213016(infotype x)` and `show_1301213016(List L)`. The `newElement` function creates a new node and returns its address. The `show` function displays the contents of the list, either as an empty list or by iterating through each node and printing its data.

```
26
27 adr newElement_1301213016(infotype x) {
28     adr P = new element;
29     info(P) = x;
30     prev(P) = NULL;
31     next(P) = NULL;
32
33     return P;
34 }
35
36 void show_1301213016(List L) {
37     if (first(L) == NULL) {
38         cout << "List Kosong" << endl;
39     } else {
40         adr P = first(L);
41         while (P != NULL) {
42             cout << "Norek: " << info(P).norek << endl;
43             cout << "Nama: " << info(P).nama << endl;
44             cout << "Bank: " << info(P).bank << endl;
45             cout << "Saldo: " << info(P).saldo << endl;
46
47             cout << endl;
48
49             P = next(P);
50         }
51     }
```

The status bar at the bottom indicates the file path is `D:\Kuliah\Semester 3\Struktur Data\tp-mod7\DLL.cpp`, the language is `C/C++`, and the current line is 33, column 14, position 692.

DLL.cpp [tp-mod7] - Code::Blocks 20.03

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Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLL.cpp x main.cpp x

```
48
49
50     P = next(P);
51     cout << endl;
52 }
53
54
55 void reverseList_1301213016(List &L) {
56     adr P = first(L);
57     adr Q = first(L);
58
59     while (next(P) != NULL) {
60         P = next(P);
61     }
62
63     first(L) = P;
64     next(P) = Q;
65     prev(Q) = P;
66     last(L) = Q;
67     next(Q) = NULL;
68 }
69
70 void insertFirst_1301213016(List &L, adr P) {
71     if (first(L) == NULL && last(L) == NULL) {
72         first(L) = P;
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\DLL.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 50, Col 10, Pos 1160 Insert Read/Write default

DLL.cpp [tp-mod7] - Code::Blocks 20.03

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

Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLL.cpp x main.cpp x

```
69
70 void insertFirst_1301213016(List &L, adr P) {
71     if (first(L) == NULL && last(L) == NULL) {
72         first(L) = P;
73         last(L) = P;
74     } else {
75         next(P) = first(L);
76         prev(first(L)) = P;
77         first(L) = P;
78     }
79 }
80
81 double secondSmallest_1301213016(List L) {
82     adr P = first(L);
83     double smallest = info(P).saldo;
84     double secSmallest = info(P).saldo;
85
86     while (next(P) != NULL) {
87         if (info(P).saldo < smallest) {
88             secSmallest = smallest;
89             smallest = info(P).saldo;
90         } else if (info(P).saldo < secSmallest) {
91             secSmallest = info(P).saldo;
92         }
93 }
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\DLL.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 50, Col 10, Pos 1160 Insert Read/Write default

DLL.cpp [tp-mod7] - Code::Blocks 20.03

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

Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLL.cpp x main.cpp x

```
76     prev(first(L)) = P;
77     first(L) = P;
78 }
79 }
80
81 double secondSmallest_1301213016(List L) {
82     adr P = first(L);
83     double smallest = info(P).saldo;
84     double secSmallest = info(P).saldo;
85
86     while (next(P) != NULL) {
87         if (info(P).saldo < smallest) {
88             secSmallest = smallest;
89             smallest = info(P).saldo;
90         } else if (info(P).saldo < secSmallest) {
91             secSmallest = info(P).saldo;
92         }
93
94         P = next(P);
95     }
96
97     return secSmallest;
98 }
99 }
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\DLL.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 78, Col 6, Pos 1686 Insert Read/Write default

Main.cpp

main.cpp [tp-mod7] - Code::Blocks 20.03

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

Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLL.cpp x main.cpp x

```
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             }
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 13, Col 39, Pos 199 Insert Read/Write default

main.cpp [tp-mod7] - Code::Blocks 20.03

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

Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLLcpp x main.cpp x

```
22 i = 0;
23
24 cout << "Jumlah data yang akan ditambahkan: ";
25 cin >> jumlah;
26
27 while (i < jumlah) {
28     cout << "Norek: ";
29     cin >> data.norek;
30
31     cout << "Nama: ";
32     cin >> data.nama;
33
34     cout << "Bank: ";
35     cin >> data.bank;
36
37     cout << "Saldo: ";
38     cin >> data.saldo;
39
40     cout << endl;
41
42     P = newElement_1301213016(data);
43     insertFirst_1301213016(L, P);
44
45     i++;
46 }
47
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 25, Col 27, Pos 460 Insert Read/Write default

main.cpp [tp-mod7] - Code::Blocks 20.03

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Management

Projects Files

Workspace

tp-mod7

Sources

Headers

DLLh x DLLcpp x main.cpp x

```
40 cout << endl;
41
42 P = newElement_1301213016(data);
43 insertFirst_1301213016(L, P);
44
45 i++;
46 }
47
48 break;
49 }
50 case 2:
51     show_1301213016(L);
52
53     break;
54 case 3:
55     reverseList_1301213016(L);
56
57     show_1301213016(L);
58
59     break;
60 case 4:
61     double secSmall;
62
63     secSmall = secondSmallest_1301213016(L);
64
65     cout << "Nilai saldo terkecil ke-2: " << secSmall << endl;
```

D:\Kuliah\Semester 3\Struktur Data\tp-mod7\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 55, Col 39, Pos 1119 Insert Read/Write default

```
main.cpp [tp-mod7] - Code::Blocks 20.03
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Management
  Projects
  Files
  Workspace
  tp-mod7
  Sources
  Headers

63      secSmall = secondSmallest_1301213016(L);
64
65      cout << "Nilai saldo terkecil ke-2: " << secSmall << endl;
66
67      cout << endl;
68
69      break;
70  }
71
72  char kembali;
73  cout << "Kembali ke menu utama? (Y/N): ";
74  cin >> kembali;
75  cout << endl;
76
77  if (kembali == 'Y') {
78      pilihan = selectMenu_1301213016();
79  } else {
80      pilihan = 0;
81  }
82
83
84  }
85
86  cout << "ANDA TELAH KELUAR DARI PROGRAM" << endl;
87
88  return 0;
```

Output

```
"D:\Kuliah\Semester 3\Struktur Data\tp-mod7\bin\Debug\tp-mod7.exe"
=====MENU=====
1. Menambah N data baru
2. Menampilkan semua data
3. Membalik list
4. Menampilkan nilai terkecil ke-2
0. Exit

Pilihan menu: 1

Jumlah data yang akan ditambahkan: 4
Norek: 1393
Nama: Budi
Bank: BCA
Saldo: 200000

Norek: 8975
Nama: Jon
Bank: BCA
Saldo: 150000

Norek: 3289
Nama: Agus
Bank: BRI
Saldo: 600000

Norek: 8534
Nama: Lala
Bank: BRI
Saldo: 200000

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

=====MENU=====
1. Menambah N data baru
2. Menampilkan semua data
3. Membalik list
4. Menampilkan nilai terkecil ke-2
0. Exit

Pilihan menu: 2
```

```
"D:\Kuliah\Semester 3\Struktur Data\tp-mod7\bin\Debug\tp-mod7.exe"

Pilihan menu: 2

Norek: 8534
Nama: Lala
Bank: BRI
Saldo: 200000

Norek: 3289
Nama: Agus
Bank: BRI
Saldo: 600000

Norek: 8975
Nama: Jon
Bank: BCA
Saldo: 150000

Norek: 1393
Nama: Budi
Bank: BCA
Saldo: 200000

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

=====MENU=====
1. Menambah N data baru
2. Menampilkan semua data
3. Membalik list
4. Menampilkan nilai terkecil ke-2
0. Exit

Pilihan menu: 3

Norek: 1393
Nama: Budi
Bank: BCA
Saldo: 200000
```

```
"D:\Kuliah\Semester 3\Struktur Data\tp-mod7\bin\Debug\tp-mod7.exe"

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

=====MENU=====
1. Menambah N data baru
2. Menampilkan semua data
3. Membalik list
4. Menampilkan nilai terkecil ke-2
0. Exit

Pilihan menu: 3

Norek: 1393
Nama: Budi
Bank: BCA
Saldo: 200000

Norek: 8534
Nama: Lala
Bank: BRI
Saldo: 200000

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

=====MENU=====
1. Menambah N data baru
2. Menampilkan semua data
3. Membalik list
4. Menampilkan nilai terkecil ke-2
0. Exit

Pilihan menu: 4

Nilai saldo terkecil ke-2: 200000

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