

Tugas Pendahuluan 5

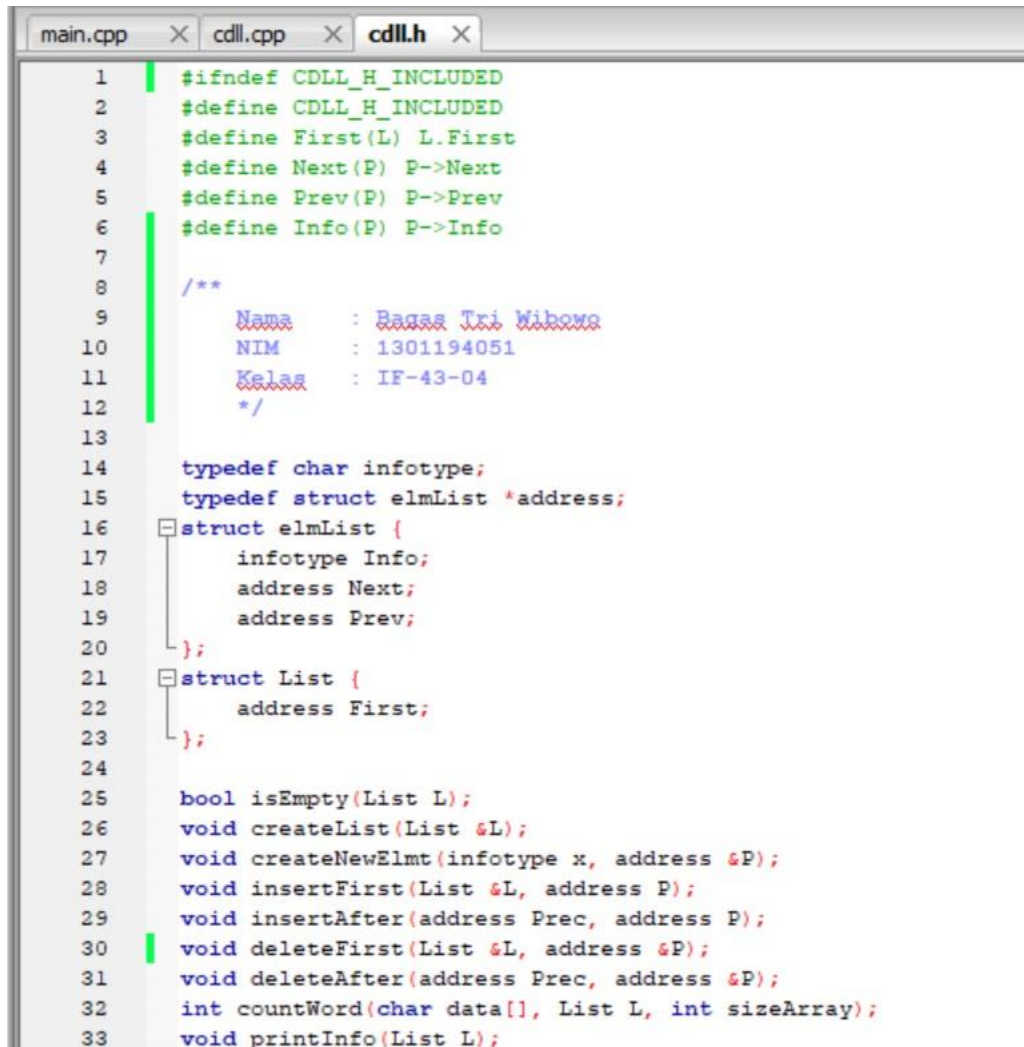
Struktur Data

Nama : Bagas Tri Wibowo

NIM : 1301194051

Kelas : IF-43-04

Header :



```
1  #ifndef CDLL_H_INCLUDED
2  #define CDLL_H_INCLUDED
3  #define First(L) L.First
4  #define Next(P) P->Next
5  #define Prev(P) P->Prev
6  #define Info(P) P->Info
7
8  /**
9   * Nama      : Bagas Tri Wibowo
10  * NIM       : 1301194051
11  * Kelas     : IF-43-04
12  */
13
14  typedef char infotype;
15  typedef struct elmList *address;
16  struct elmList {
17     infotype Info;
18     address Next;
19     address Prev;
20 };
21 struct List {
22     address First;
23 };
24
25 bool isEmpty(List L);
26 void createList(List &L);
27 void createNewElmt(infotype x, address &P);
28 void insertFirst(List &L, address P);
29 void insertAfter(address Prec, address P);
30 void deleteFirst(List &L, address &P);
31 void deleteAfter(address Prec, address &P);
32 int countWord(char data[], List L, int sizeArray);
33 void printInfo(List L);
```

Implementation :

```
main.cpp X cdll.cpp X cdll.h X
1  #include <iostream>
2  #include "cdll.h"
3  using namespace std;
4
5  /**
6   Nama    : Bagas Tri Wibowo
7   NIM     : 1301194051
8   Kelas  : IF-43-04
9   */
10
11 bool isEmpty(List L) {
12     if (First(L) != NULL) {
13         return false;
14     } else {
15         return true;
16     }
17 }
18
19 void createList(List &L) {
20     First(L) = NULL;
21 }
22
23 void createNewElmt(infotype x, address &P) {
24     P = new elmList;
25     if (P != NULL) {
26         Info(P) = x;
27         Next(P) = NULL;
28         Prev(P) = NULL;
29     }
30 }
31
32 void insertFirst(List &L, address P) {
33     if (isEmpty(L)) {
34         First(L) = P;
35         Next(P) = P;
36         Prev(P) = P;
37     } else {
38         Next(P) = First(L);
39         Prev(P) = Prev(First(L));
40         Next(Prev(First(L))) = P;
41         Prev(First(L)) = P;
42         First(L) = P;
43     }
44 }
45
46 void insertAfter(address Prec, address P) {
47     Next(P) = Next(Prec);
48     Prev(P) = Prec;
49     Prev(Next(Prec)) = P;
50     Next(Prec) = P;
51 }
```

```

49 void deleteFirst(List &L, address &P) {
50     if (First(L) == Next(First(L))) {
51         P = First(L);
52         First(L) = NULL;
53         Next(P) = NULL;
54         Prev(P) = NULL;
55     } else {
56         P = First(L);
57         First(L) = Next(P);
58         Prev(Next(P)) = Prev(P);
59         Next(Prev(P)) = Next(P);
60         Next(P) = NULL;
61         Prev(P) = NULL;
62     }
63 }
64
65 void deleteAfter(address Prec, address &P) {
66     P = Next(Prec);
67     Next(Prec) = Next(P);
68     Prev(Next(Prec)) = Prec;
69     Next(P) = NULL;
70     Prev(P) = NULL;
71 }

```

```

72 int countWord(char data[], List L, int sizeArray) {
73     int i = 0;
74     int j = 0;
75     address A = First(L);
76     do {
77         if (data[j] == Info(A)) {
78             A = Next(A);
79             j++;
80             if (j == sizeArray) {
81                 i++;
82                 j = 0;
83             }
84         } else {
85             A = Next(A);
86             j = 0;
87         }
88     } while (A != First(L));
89     if (data[j] == Info(A)) {
90         j++;
91         if (j == sizeArray) {
92             i++;
93         }
94     }
95     return i;
96 }
97

```

```

98 void printInfo(List L) {
99     if (isEmpty(L)) {
100         cout<<"List Kosong"<<endl;
101     } else {
102         address A = First(L);
103         do {
104             cout<<Info(A);
105             A = Next(A);
106         }
107         while (A != First(L));
108         cout<<endl;
109     }
110 }
111

```

Main :

```

main.cpp x cdll.cpp x cdll.h x
1  #include <iostream>
2  #include "cdll.cpp"
3
4  using namespace std;
5
6  int main()
7  {
8      /**
9          Nama      : Bagas Tri Wibowo
10         NIM       : 1301194051
11         Kelas    : IF-43-04
12         */
13     List L;
14     address P;
15     createList(L);
16     printInfo(L);
17     createNewElmt('a', P);
18     insertFirst(L, P);
19     createNewElmt('t', P);
20     insertFirst(L, P);
21     createNewElmt('t', P);
22     insertAfter(Next(First(L)), P);
23     createNewElmt('c', P);
24     insertAfter(First(L), P);
25     createNewElmt('a', P);
26     insertAfter(Prev(First(L)), P);
27     createNewElmt('s', P);
28     insertAfter(Prev(First(L)), P);
29     createNewElmt('c', P);

```

```

30     insertAfter(Prev(First(L)), P);
31     createNewElmt('a', P);
32     insertAfter(Prev(First(L)), P);
33     printInfo(L);
34     char data[] = {'c', 'a', 't'};
35     int sizeArray = sizeof(data)/sizeof(data[0]);
36     cout<<countWord(data, L, sizeArray);
37

```

Running Program :

```

List Kosong
tcatasca
2
Process returned 0 (0x0)   execution time : 0.051 s
Press any key to continue.

```