

## Tugas Pendahuluan Modul 2

### Struktur Data

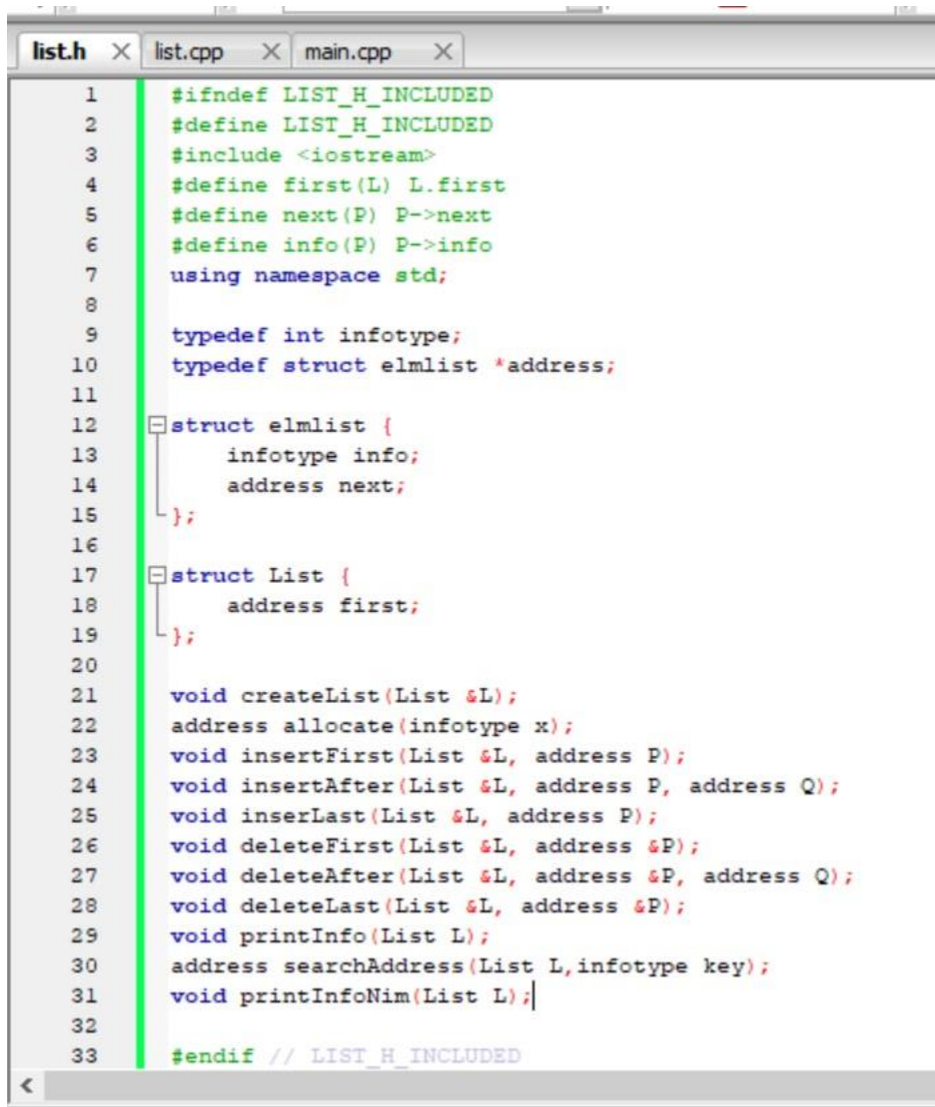
Nama : Bagas Tri Wibowo

NIM : 1301194051

Kelas : IF-43-04

Coding :

Header :



```
1  #ifndef LIST_H_INCLUDED
2  #define LIST_H_INCLUDED
3  #include <iostream>
4  #define first(L) L.first
5  #define next(P) P->next
6  #define info(P) P->info
7  using namespace std;
8
9  typedef int infotype;
10 typedef struct elmlist *address;
11
12 struct elmlist {
13     infotype info;
14     address next;
15 };
16
17 struct List {
18     address first;
19 };
20
21 void createList(List &L);
22 address allocate(infotype x);
23 void insertFirst(List &L, address P);
24 void insertAfter(List &L, address P, address Q);
25 void insertLast(List &L, address P);
26 void deleteFirst(List &L, address &P);
27 void deleteAfter(List &L, address &P, address Q);
28 void deleteLast(List &L, address &P);
29 void printInfo(List L);
30 address searchAddress(List L, infotype key);
31 void printInfoNim(List L);
32
33 #endif // LIST_H_INCLUDED
```

Implementation:

```
list.h  X  list.cpp  X  main.cpp  X
1      #include <iostream>
2      #include "list.h"
3
4      using namespace std;
5
6      void createList(List &L) {
7          /** this procedure will initialase
8              the list L*/
9          first(L) = NULL;
10     }
11
12     address allocate(infotype x) {
13
14         address p = new elmlist;
15         info(p) = x;
16         next(p) = NULL;
17
18         return p;
19     }
20
21     void insertFirst(List &L, address P) {
22         next(P) = first(L);
23         first(L) = P;
24     }
25
26     void insertAfter(List &L, address P, address Q) {
27         next(P) = next(Q);
28         next(Q) = P;
29     }
```

```
list.h X list.cpp X main.cpp X
28     next(Q) = P;
29 }
30 void inserLast(List &L, address P) {
31     address last = first(L);
32     while (next(last) != NULL) {
33         last = next(last);
34     }
35     next(last) = P;
36 }
37 void deleteFirst(List &L, address &P) {
38     if (first(L) != NULL) {
39         P = first(L);
40         first(L) = next(P);
41         next(P) = NULL;
42     }
43 }
44 void deleteAfter(List &L, address &P, address Q) {
45     P = next(Q);
46     next(Q) = next(P);
47     next(P) = NULL;
48 }
49 void deleteLast(List &L, address &P) {
50     address last = first(L);
51     while (next(next(last)) != NULL) {
52         last = next(last);
53     }
54     P = next(last);
55     next(last) = NULL;
56 }
```

```
list.h X list.cpp X main.cpp X
57
58 address searchAddress(List L, infotype key) {
59     address look = first(L);
60
61     while (look != NULL) {
62         if (key == info(look)) {
63             return look;
64         }
65         look = next(look);
66     }
67     return NULL;
68 }
69
70 void printInfo(List L) {
71     address p = first(L);
72     while(p != NULL) {
73         cout<<info(p)<<" ";
74         p = next(p);
75     }
76     cout<<endl;
77 }
78
79 void printInfoNim(List L) {
80     address p = first(L);
81     while(p != NULL) {
82         cout<<info(p);
83         p = next(p);
84     }
85     cout<<endl;
86 }
87
88 }
```

Main program :

```
list.h × list.cpp × main.cpp ×
1  #include <iostream>
2  #include "list.cpp"
3
4
5  using namespace std;
6
7  int main()
8  {
9      List L;
10     address P;
11
12     createList(L);
13     cout<<"Ketik 3 digit NIM terakhir"<<endl;
14
15     cout<<"Masukan Angka Pertama : ";
16     intotype x;
17     cin>>x;
18     P = allocate(x);
19     insertFirst(L,P);
20     printInfo(L);
21
22     cout<<"Masukan Angka Kedua : ";
23     cin>>x;
24     P = allocate(x);
25     insertFirst(L,P);
26     printInfo(L);
27
28     cout<<"Masukan Angka Ketiga : ";
29     cin>>x;
30     P = allocate(x);
31     insertFirst(L,P);
32     printInfo(L);
33 }
```

```
list.h x list.cpp x main.cpp x
33
34     cout<<"Syntax Delete Fisrt"<<endl;
35     deleteFirst(L,P);
36     printInfo(L);
37
38     cout<<endl<<"==>Sesi Have Fun!!!<=="<<endl<<endl;
39
40     cout<<"Insert Last :";
41     cin >>x;
42     P = allocate(x);
43     inserLast(L,P);
44     printInfo(L);
45
46     cout<<"Insert After || Angka yang ingin dimasukan :";
47     cin >>x;
48     P = allocate(x);
49
50     cout<<"Insert After || Setelah angka :";
51     cin >>x;
52     address Q = searchAddress(L,x);
53     insertAfter(L,P,Q);
54     printInfo(L);
55
56     cout<<"Delete Last"<<endl;
57     deleteLast(L,P);
58     printInfo(L);
59
60     cout<<"Delete After || Setelah angka :";
61     cin >>x;
62     Q = searchAddress(L,x);
63     deleteAfter(L,P,Q);
64     printInfo(L);
65
66     cout<<endl<<"INPUT NIM 10 Digit"<<endl;
67     List L1;
68     createList(L1);
69     for(int i = 1; i <= 10; i++) {
70         cout<<"Digit "<<i<<" : ";
71         cin >> x;
72         P = allocate(x);
73         if (first(L1)==NULL) {
74             insertFirst(L1,P);
75         } else {
76             inserLast(L1,P);
77         }
78     }
79     cout<<"Isi List : ";
80     printInfoNim(L1);
81
82     /**
83         Nama      : Bagas Tri Wibowo
84         NIM       : 1301194051
85     */
86
87
88     return 0;
89 }
90
```

## Running Program :

C:\Users\bagas\OneDrive\Documents\tugas kuliah\SI INFORMATIKA\Semester 2\Struktur Data

```
Ketik 3 digit NIM terakhir
Masukan Angka Pertama : 0
0,
Masukan Angka Kedua : 5
5, 0,
Masukan Angka Ketiga : 1
1, 5, 0,
Syntax Delete Fisrt
5, 0,

==>Sesi Have Fun!!!<==

Insert Last :999
5, 0, 999,
Insert After || Angka yang ingin dimasukan :777
Insert After || Setelah angka :5
5, 777, 0, 999,
Delete Last
5, 777, 0,
Delete After || Setelah angka :777
5, 777,

INPUT NIM 10 Digit
Digit 1 : 1
Digit 2 : 3
Digit 3 : 0
Digit 4 : 1
Digit 5 : 1
Digit 6 : 9
Digit 7 : 4
Digit 8 : 0
Digit 9 : 5
Digit 10 : 1
Isi List : 1301194051

Process returned 0 (0x0)   execution time : 26.683 s
Press any key to continue.
```