TP Module 4
Nama : Muhamad Fachri Haikal
NIM : 1301202398
Kelas : IF-44-01

SLL.h

main.cpp | SLL.cpp | *SLL.h

```
1  #ifndef SLL_H_INCLUDED
2  #define SLL_H_INCLUDED
3
4  #include <iostream>
5  using namespace std;
6
7  #define info(P) (P)->info
8  #define next(P) (P)->next
9  #define first(MH) ((MH).first)
10
11 //NIM : 1301202398
12 typedef char infotype;
13 typedef struct element *adr;
14
15 struct element {            //adr == Node, head == MH
16     infotype info;
17     adr next;
18 };
19
20 struct List{
21     adr first;
22 };
23
24 // 1301202398 % 4 = 2
25 // Muhamad Fachri Haikal = MH
26 void createList(List &MH); //Procedure Create_list(in/out L : List)
27 adr newElement(infotype x); // Procedure newElement(in x : infotype, out p : adr)
28 void insertFirst(List &MH, adr p); // Procedure insertFirst(in/out L : List, in p : adr)
29 void show(List MH); // Procedure show(in L : List)
30 adr deleteLast(List &MH); //Procedure DeleteLast(In/Out L : List)
31 adr deleteFirst(List &MH); //TUGAS TP (1301202398 % 4 = 2)
32 #endif // SLL_H_INCLUDED
33
```

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SLL.cpp

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```cpp
#include "SLL.h"

void createList(List &MH){
    first(MH) = NULL;
}

adr newElement(infotype x){
    adr p = new element;

    info(p) = x;
    next(p) = NULL;
    return p;
}

void insertFirst(List &MH, adr p){
    if (first(MH) == NULL){
        first(MH) = p;
    } else{
        next(p) = first(MH);
        first(MH) = p;
    }
}

void show(List MH){
    adr p;

    if (first(MH) != NULL){
        p = first(MH);
        while (p != NULL){
            cout << info(p)<< " ";
            p = next(p);
        }
        cout << endl;
    } else{
        cout << "List Kosong" << endl;
    }
}

adr deleteLast(List &MH){
    adr p, q;

    if (first(MH) == NULL){
        p = NULL;
        cout << "List Kosong";
    } else if (next(first(MH)) == NULL){
        p = first(MH);
        first(MH) = NULL;
    } else{
        q = first(MH);
        p = first(MH);
        while (next(p) != NULL){
            q = p;
            p = next(p);
        }
        next(q) = NULL;
    }
    return p;
}

adr deleteFirst(List &MH){
    adr p, temp;

   temp = next(first(MH));
   p = first(MH);
   first(MH) = NULL;
   first(MH) = temp;
   return p;
}

```

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main.cpp

main.cpp SLL.cpp *SLL.h

```cpp
#include "SLL.h"
using namespace std;

int main()
{
    List MH;
    //test createList
    cout << "first(MH) sebelum createList: " << first(MH) << endl;
    createList(MH);
    cout << "first(MH) setelah createList: " << first(MH) << endl;
    cout << endl;

    //test newElement
    adr p;
    p = newElement('C');
    cout << "Info p: " << info(p) << endl;
    cout << "Next p: " << next(p) << endl;
    cout << endl;

    //test insertFirst
    cout << "first(MH) sebelum insertFirst: " << first(MH) << endl;
    insertFirst(MH, p);
    cout << "first(MH) setelah insertFirst: " << first(MH) << endl;
    cout << "info first(MH): " << info(first(MH)) << endl;

    p = newElement('T');
    insertFirst(MH, p);
    cout << "info first(MH): " << info(first(MH)) << endl;

    p = newElement('X');
    insertFirst(MH, p);
    cout << "info first(MH): " << info(first(MH)) << endl;

    p = newElement('S');
    insertFirst(MH, p);
    cout << "info first(MH): " << info(first(MH)) << endl;

    p = newElement('A');
    insertFirst(MH, p);
    cout << "info first(MH): " << info(first(MH)) << endl;

    p = newElement('B');
    insertFirst(MH, p);
    cout << "info first(MH): " << info(first(MH)) << endl;
    cout << endl;

    //test show
    cout << "Output list: " << endl;
    show(MH);
    cout << endl;

    //deleteLast
    p = deleteLast(MH);
    show(MH);
    cout << "Last element yang terhapus: " << info(p) << endl;
    cout << endl;

    p = deleteLast(MH);
    show(MH);
    cout << "Last element yang terhapus: " << info(p) << endl;
    cout << endl;

    p = deleteLast(MH);
    show(MH);
    cout << "Last element yang terhapus: " << info(p) << endl;
    cout << endl;

    //deleteFirst
    p = deleteFirst(MH);
    show(MH);
    cout << "First element yang terhapus: " << info(p) << endl;
    return 0;
}
```

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Hasil output: