LAPORAN PRAKTIKUM
Tugas Pendahuluan Modul 04
“Single Linked List”

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1. Berikut ini adalah code single list dari langkah 1-6

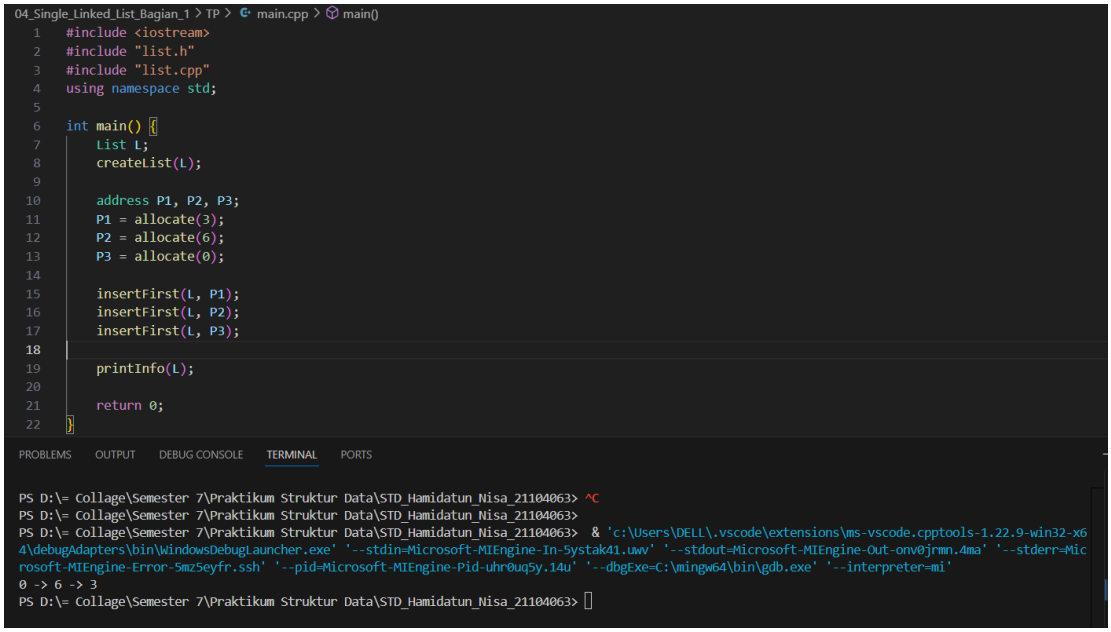
File list.h

```h
#ifndef LIST_H_INCLUDED
#define LIST_H_INCLUDED

#include <iostream>
#define first(L) L.first
#define next(P) P->next
#define info(P) P->info

using namespace std;

typedef int infotype;
typedef struct elmlist *address;

struct elmlist {
    infotype info;
    address next;
};

struct List {
    address first;
};

void createList(List &L);

address allocate(infotype x);

void insertFirst(List &L, address P);

void printInfo(List L);

#endif
```

File list.cpp

```cpp
#include <iostream>
#include "list.h"
using namespace std;

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

address allocate(infotype x) {
    address p = new elmlist;
    info(p) = x;
    next(p) = NULL;
    return p;
}

void insertFirst(List &L, address P) {
    next(P) = first(L);
    first(L) = P;
}

void printInfo(List L) {
    address p = first(L);
    while (p != NULL) {
        cout << info(p) << ", ";
        p = next(p);
    }
    cout << endl;
}
```

File main.cpp dan output



```
04_Single_Linked_List_Bagian_1 > TP > main.cpp > main()
1  #include <iostream>
2  #include "list.h"
3  #include "list.cpp"
4  using namespace std;
5
6  int main() {
7      List L;
8      createList(L);
9
10     address P1, P2, P3;
11     P1 = allocate(3);
12     P2 = allocate(6);
13     P3 = allocate(0);
14
15     insertFirst(L, P1);
16     insertFirst(L, P2);
17     insertFirst(L, P3);
18
19     printInfo(L);
20
21     return 0;
22 }
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS D:\= Collage\Semester 7\Praktikum Struktur Data\STD_Hamidatun_Nisa_21104063> ^C
PS D:\= Collage\Semester 7\Praktikum Struktur Data\STD_Hamidatun_Nisa_21104063>
PS D:\= Collage\Semester 7\Praktikum Struktur Data\STD_Hamidatun_Nisa_21104063>  & 'c:\Users\DELL\.vscode\extensions\ms-vscode.cpptools-1.22.9-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-5ystak41.uwv' '--stdout=Microsoft-MIEngine-Out-onv0jrmn.4ma' '--stderr=Microsoft-MIEngine-Error-5mz5eyfr.ssh' '--pid=Microsoft-MIEngine-Pid-uhr0uq5y.14u' '--dbgExe=C:\mingw64\bin\gdb.exe' '--interpreter=mi'
0 -> 6 -> 3
PS D:\= Collage\Semester 7\Praktikum Struktur Data\STD_Hamidatun_Nisa_21104063>
```

2. Berikut ini adalah hasil untuk langkah no 7

File list.h

```h
#ifndef LIST_H_INCLUDED
#define LIST_H_INCLUDED

#include <iostream>
#define first(L) L.first
#define next(P) P->next
#define info(P) P->info

using namespace std;

typedef int infotype;
typedef struct elmlist *address;

struct elmlist {
    infotype info;
    address next;
};

struct List {
    address first;
};

void createList(List &L);

address allocate(infotype x);

void insertFirst(List &L, address P);

void insertLast(List &L, address P);

void insertAfter(List &L, address P, address Prec);

void deleteLast(List &L, address &P);

void deleteAfter(List &L, address &P, address Prec);

address searchInfo(List L, infotype x);

void printInfo(List L);

#endif
```

File list.cpp

```cpp
#include "list.h"
#include <iostream>
using namespace std;

void createList(List &L) {
    L.first = nullptr;
}

address allocate(infotype x) {
    address P = new elmlist;
    info(P) = x;
    next(P) = nullptr;
    return P;
}

void insertFirst(List &L, address P) {
    next(P) = first(L);
    first(L) = P;
}

void insertLast(List &L, address P) {
    if (first(L) == nullptr) {
        first(L) = P;
    } else {
        address last = first(L);
        while (next(last) != nullptr) {
            last = next(last);
        }
        next(last) = P;
    }
}

void insertAfter(List &L, address P, address Prec) {
    if (Prec != nullptr) {
        next(P) = next(Prec);
        next(Prec) = P;
    }
}

void deleteLast(List &L, address &P) {
    if (first(L) == nullptr) {
        P = nullptr;
    } else if (next(first(L)) == nullptr) {
        P = first(L);
        first(L) = nullptr;
    } else {
        address prev = nullptr;
        P = first(L);
        while (next(P) != nullptr) {
            prev = P;
            P = next(P);
        }
        next(prev) = nullptr;
    }
}

void deleteAfter(List &L, address &P, address Prec) {
    if (Prec != nullptr) {
        P = next(Prec);
        if (P != nullptr) {
            next(Prec) = next(P);
            next(P) = nullptr;
        }
    }
}

address searchInfo(List L, infotype x) {
    address P = first(L);
    while (P != nullptr) {
        if (info(P) == x) {
            return P;
        }
        P = next(P);
    }
    return nullptr;
}

void printInfo(List L) {
    address P = first(L);
    while (P != nullptr) {
        cout << info(P);
        if (next(P) != nullptr) cout << " -> ";
        P = next(P);
    }
    cout << endl;
}
```

File main.cpp dan output

04_Single_Linked_List_Bagian_1 > TP > main_2.cpp > ...

```cpp
#include <iostream>
#include "list.h"
#include "list.cpp"
using namespace std;

int main() {
    List L;
    createList(L);

    int digit;

    for (int i = 1; i <= 10; i++) {
        cout << "Digit " << i << ": ";
        cin >> digit;
        address P = allocate(digit);
        insertLast(L, P);
    }

    cout << "Isi list: ";
    printInfo(L);

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
rosoft-MIEngine-Error-h4inkbbc.tjy' '--pid=Microsoft-MIEngine-Pid-erc5nelq.pi3' '--dbgExe=C:\mingw64\bin\gdb.exe' '--interpreter=mi'
Digit 1: 0
Digit 2: 0
Digit 3: 2
Digit 4: 1
Digit 5: 1
Digit 6: 0
Digit 7: 4
Digit 8: 0
Digit 9: 6
Digit 10: 3
Isi list: 0 -> 0 -> 2 -> 1 -> 1 -> 0 -> 4 -> 0 -> 6 -> 3
PS D:\= Collage\Semester 7\Praktikum Struktur Data\STD_Hamidatun_Nisa_21104063>
```