Nama : Ahmad Ruslandia Papua

NIM : 13020200002

Tugas :

Membuat program linked list. File berisi source code program linked list dengan bahasa pemograman C++ serta output program linked list.

Note :
Software yang digunakan visual studio 2019.

Source code program:

```
#include <stdio.h>
#include <iostream>
#include <conio.h>
#include <stdlib.h>

using namespace std;

struct Node {
    int data;
    Node* next;
};

Node* head, * tail, * acuan;

void init() {
    head = NULL;
    tail = NULL;
}

int isEmpty() {
    if (tail == NULL)return 1;
    else return 0;
}

void buatNodeBaru(int databaru) {
    Node* baru;
    baru = new Node;
    baru->data = databaru;
    tail = baru;
    head = baru;
    tail->next = NULL;

    cout << "\n Node baru telah di buat";
}

void tambahDepan(int databaru)
{
    Node* depan;
    depan = new Node;
    depan->data = databaru;
    depan->next = NULL;
    tail->next = NULL;
    depan->next = head;
    head = depan;
```

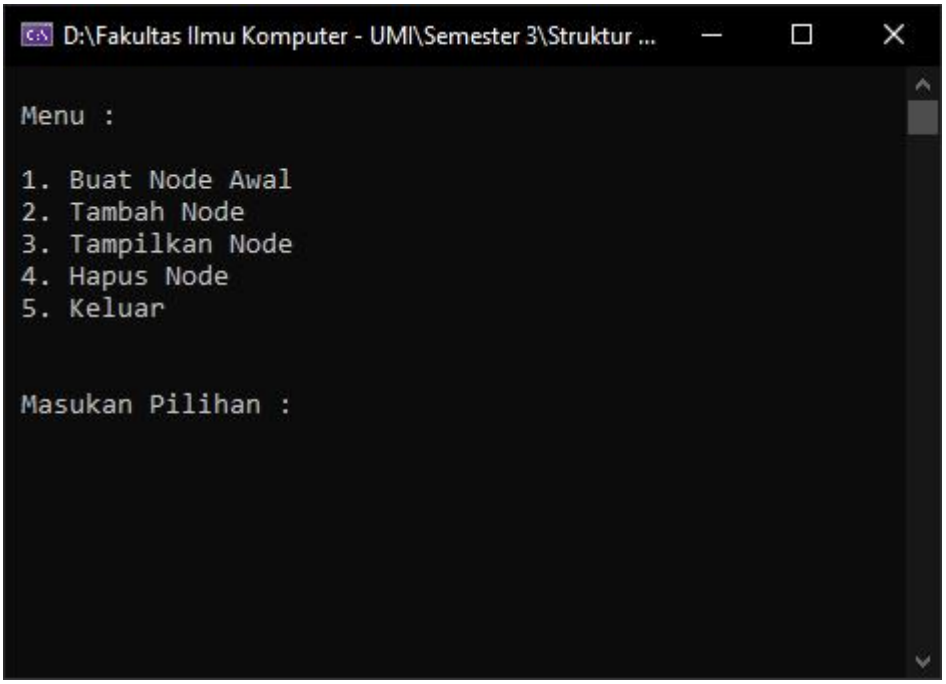
```
    cout << "\n Angka telah di input pada node depan";
}

int posisi;
void tambahTengah(int databaru, int posisi) {
    Node* tengah;
    tengah = new Node;
    tengah->data = databaru;
    acuan = head;
    int nomor = 1;
    while (nomor < posisi - 1) {
        acuan = acuan->next;
        nomor++;
    }
    tengah->next = acuan->next;
    acuan->next = tengah;

    cout << "\n Angka telah di input pada node tengah";

}

void tambahBelakang(int databaru)
{
    Node* belakang;
    belakang = new Node;
    belakang->data = databaru;
    tail->next = belakang;
    tail = belakang;
    tail->next = NULL;

    cout << "\n Angka telah di input pada node belakang";
}

void tampil() {
    Node* bantu;
    bantu = head;
    if (isEmpty() == 0)
    {
        while (bantu != NULL)
        {
            cout << " " << bantu->data << " ";
            bantu = bantu->next;
        }
    }
    else cout << "\n Masih kosong \n";
}

void hapusDepan()
{
    Node* hapus;
    if (isEmpty() == 0)
    {
        if (head != tail)
        {
            hapus = head;
            head = head->next;
            delete hapus;

            cout << "\n Node telah dihapus" << endl;
        }
        else {
```

```
            head = tail = NULL;
        }
    }
    else {
        cout << " Masih kosong\n";
    }
}

void hapusBelakang()
{
    Node* hapus;
    if (isEmpty() == 0)
    {
        if (head != tail)
        {
            hapus = head;
            while (hapus->next != tail) hapus = hapus->next;
            tail = hapus;
            delete(hapus->next);


            cout << "\n Node belakang telah di hapus" << endl;
            tail->next = NULL;
        }
    }
    else {
        cout << " Masih kosong\n";
    }
}

void clear()
{
    Node* bantu, * hapus;
    bantu = head;
    while (bantu != NULL)
    {
        hapus = bantu;
        bantu = bantu->next;
        delete hapus;
    }
    head = NULL;
    printf(" Telah di bersihkan ");
}

int main()
{
    int pilihan, databaru, pil;
    do
    {
        system("cls");
        cout << "\n Menu : \n" << endl;

        cout << " 1. Buat Node Awal                " << endl;
        cout << " 2. Tambah Node                   " << endl;
        cout << " 3. Tampilkan Node                " << endl;
        cout << " 4. Hapus Node                    " << endl;
        cout << " 5. Keluar                        " << endl;
        cout << "\n" << endl;
        cout << " Masukan Pilihan : ";
        cin >> pilihan;
        switch (pilihan)
        {
```

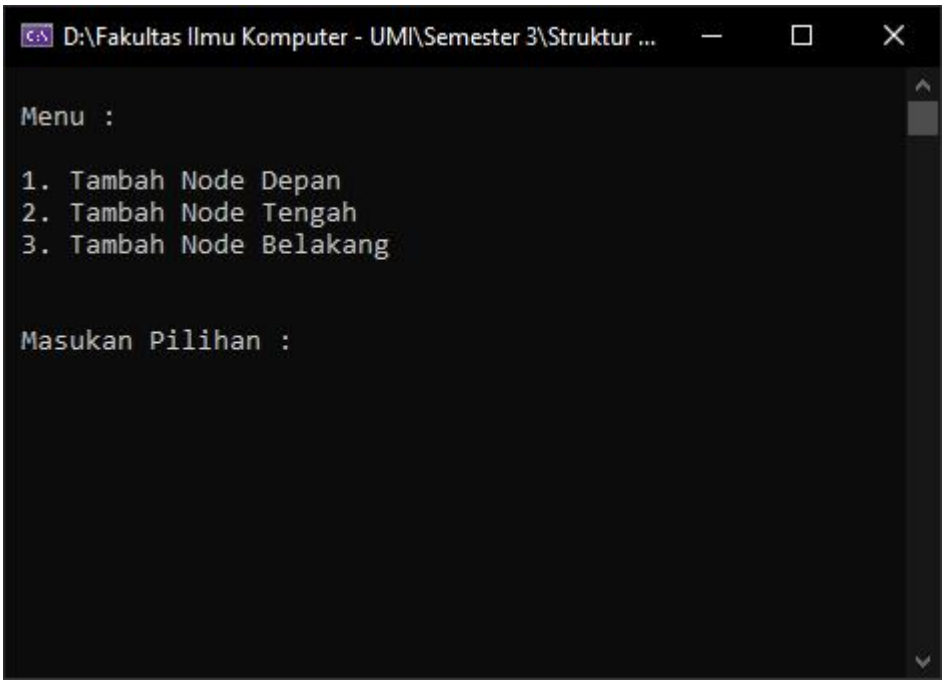
```
        case 1: system("cls"); {
            cout << "\n Masukkan angka untuk mengisi node baru : ";
            cin >> databaru;
            buatNodeBaru(databaru);
            break;
        }
        case 2: system("cls"); {
            int pil;
            cout << "\n Menu : \n" << endl;
            cout << " 1. Tambah Node Depan                " << endl;
            cout << " 2. Tambah Node Tengah               " << endl;
            cout << " 3. Tambah Node Belakang             " << endl;
            cout << "\n" << endl;
            cout << " Masukan Pilihan : ";
            cin >> pil;
            if (pil == 1) {
                if (head == NULL) {
                    cout << "\n Buat node awal terlebih dahulu" << endl;
                    break;
                }
                cout << "\n Masukkan angka untuk mengisi node depan : ";
                cin >> databaru;
                tambahDepan(databaru);
            }
            else if (pil == 2) {
                if (head == NULL) {
                    cout << "\n Buat node awal terlebih dahulu" << endl;
                    break;
                }
                cout << "\n Masukkan angka untuk mengisi node tengah : ";
                cin >> databaru;
                tambahTengah(databaru, posisi);

            }
            else if (pil == 3) {
                if (head == NULL) {
                    cout << "\n Buat node awal terlebih dahulu" << endl;
                    break;
                }
                cout << "\n Masukkan angka untuk mengisi node belakang : ";
                cin >> databaru;
                tambahBelakang(databaru);
            }
            else
            {
                cout << "\n Pilhan anda tidak tersedia" << endl;
            }
            break;
        }
        case 3: system("cls"); {
            tampil();
            break;
        }
        case 4: system("cls"); {
            int pil;
            cout << "\n Menu : \n" << endl;
            cout << " 1. Hapus Node Dari Depan              " << endl;
            cout << " 2. Hapus Node Dari Belakang           " << endl;
            cout << "\n" << endl;
            cout << " Masukan Pilihan : ";
            cin >> pil;
            if (pil == 1) {
```

```
                hapusDepan();
                break;
            }
            else if (pil == 2) {
                hapusBelakang();
                break;
            }
            else
            {
                cout << "\n Pilhan anda tidak tersedia" << endl;
            }
            break;
        }
        case 5: system("cls"); {
            return 0;
            break;
        }
        default: system("cls");
        {
            cout << " Maaf, Pilihan yang anda pilih tidak tersedia! \n ";
        }
        }
        _getch();
    } while (pilihan != 7);
}
```

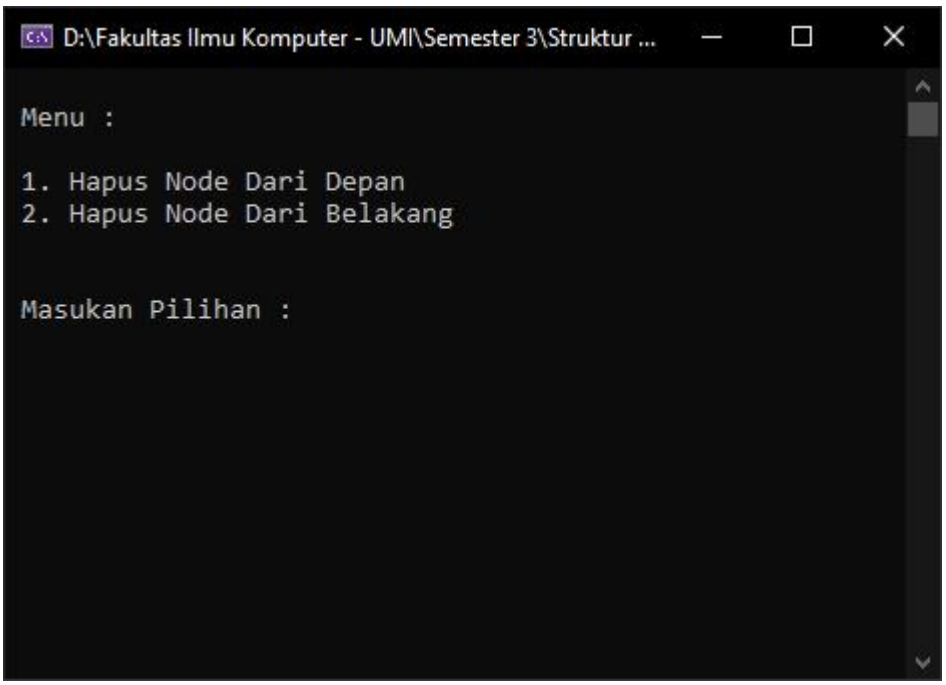
Output Program :



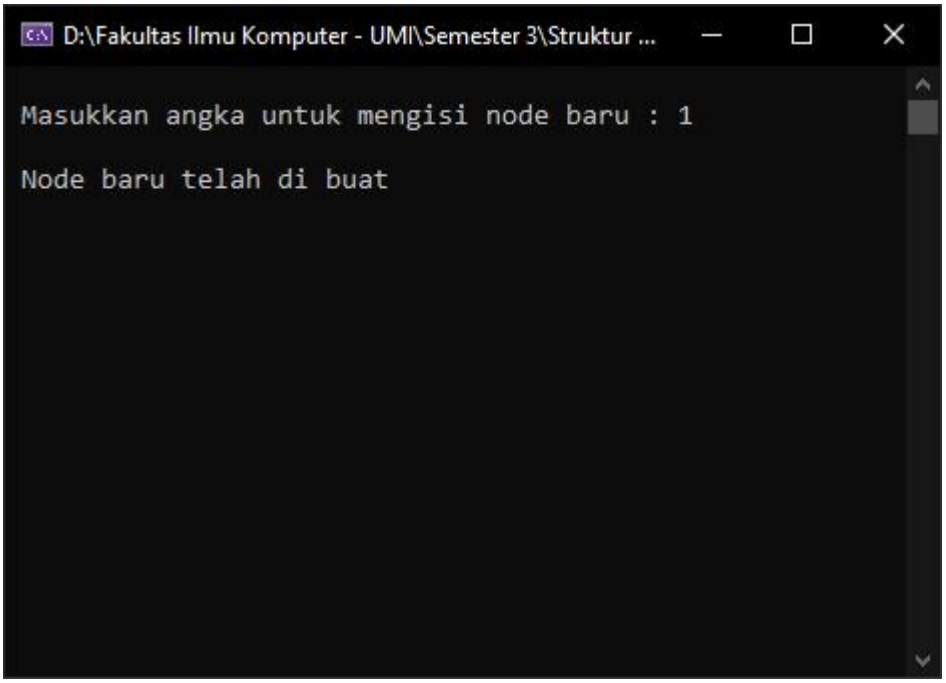
Gambar 1. 1 *Tampilan Menu*



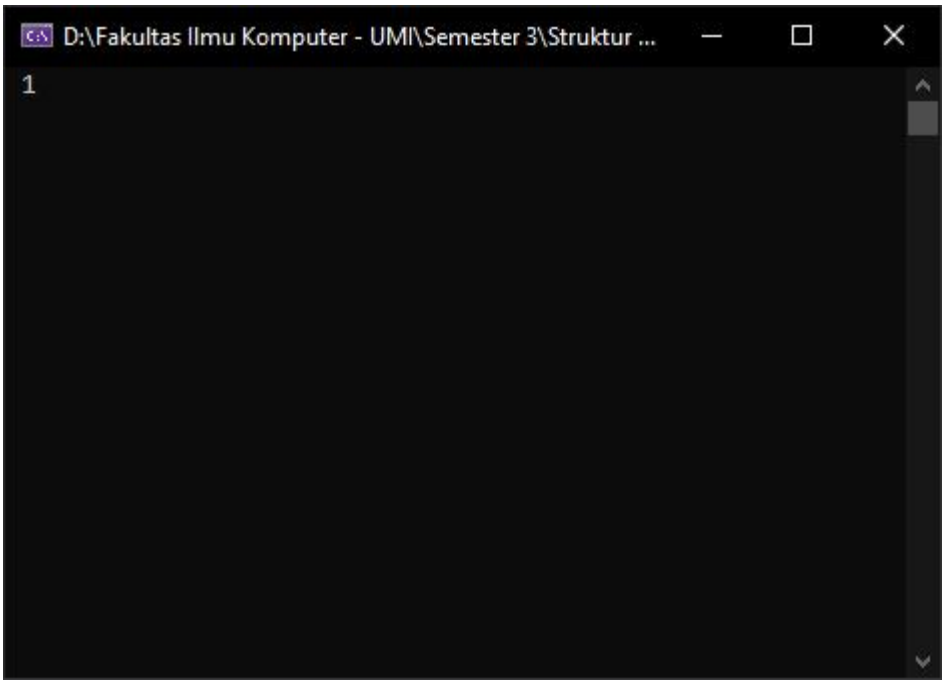
Gambar 1. 2 *Menu Tambah Node*



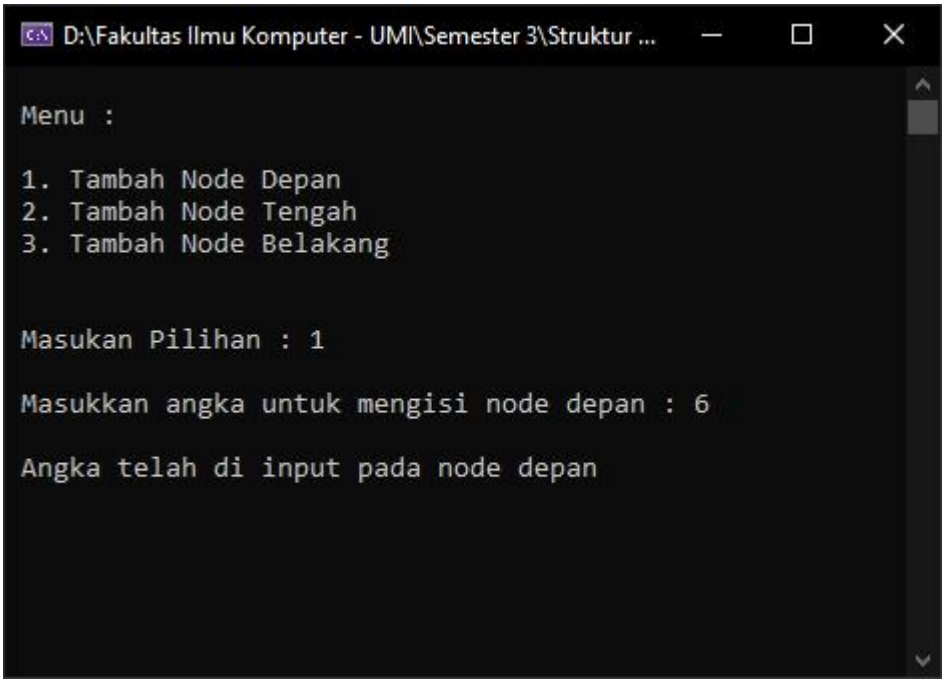
Gambar 1. 3 *Menu Hapus Node*



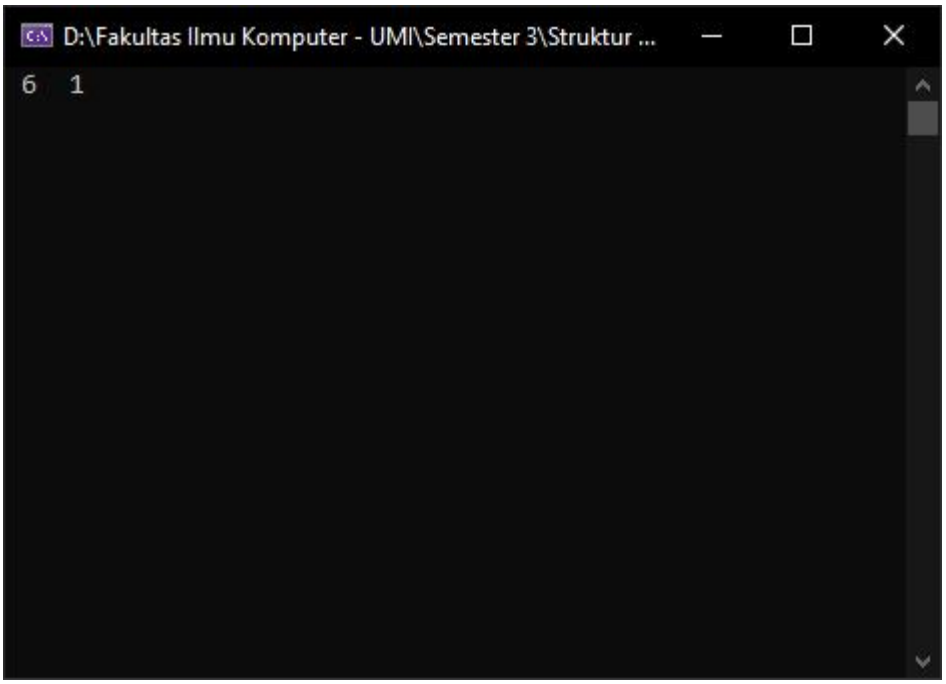
Gambar 1. 4 *Node Baru*



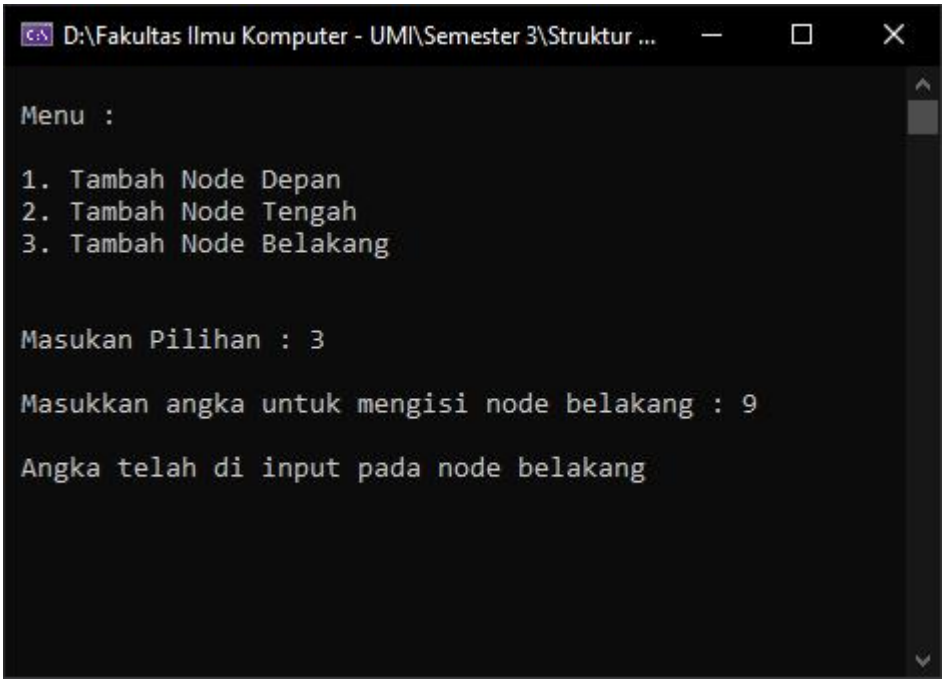
Gambar 1. 5 *Tampilan Node*



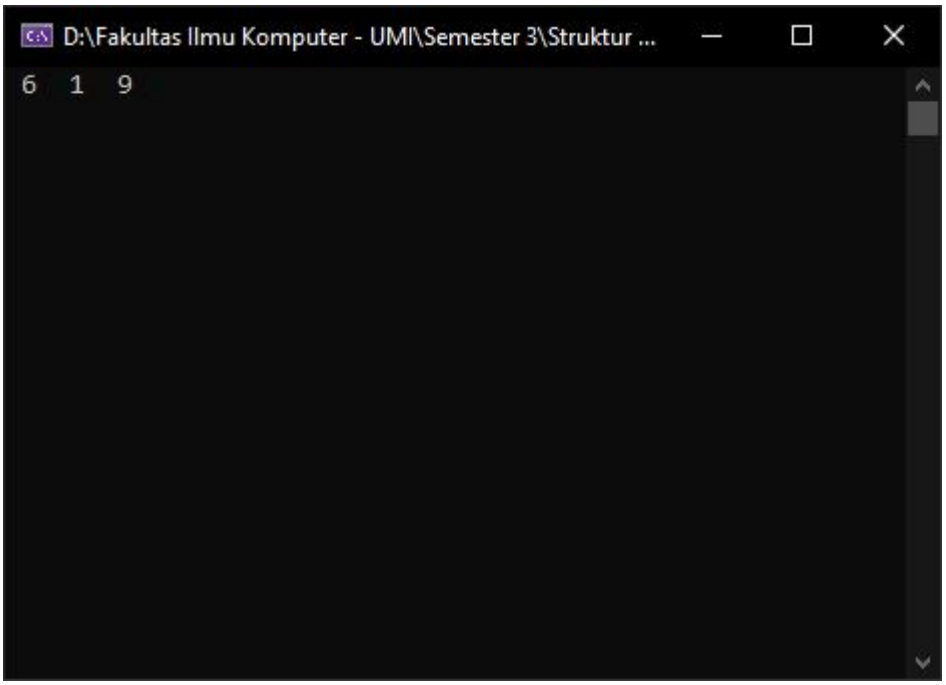
Gambar 1. 6 *Tambah Node Depan*



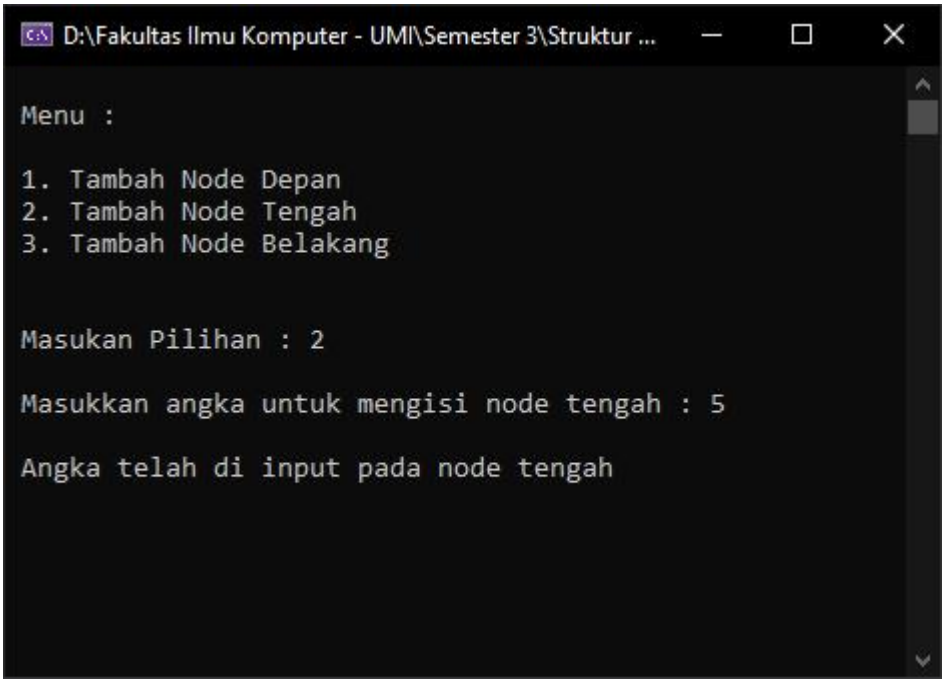
Gambar 1. 7 *Tampilan Node*



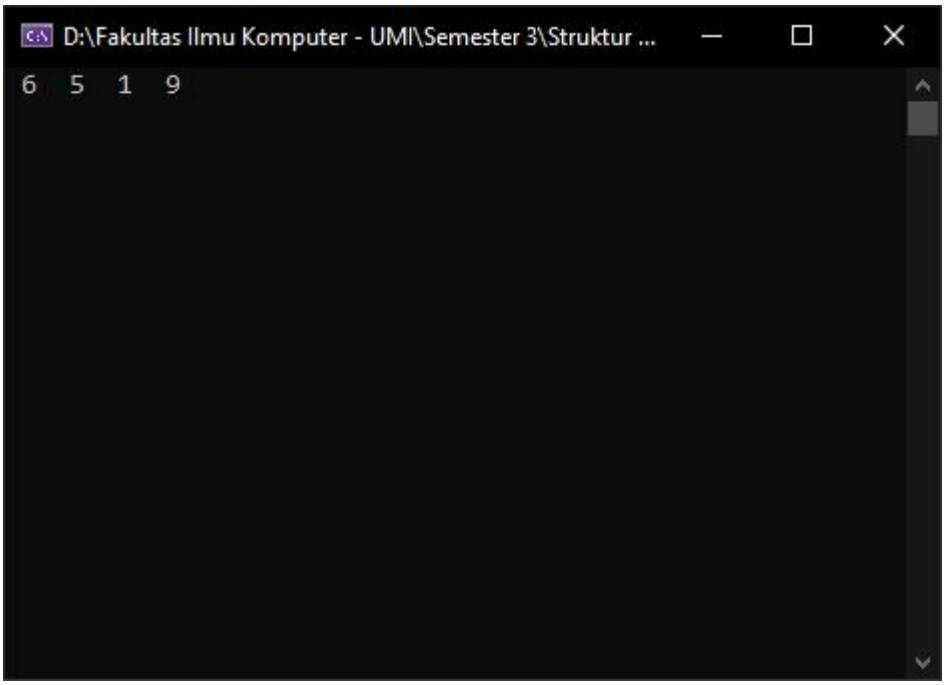
Gambar 1. 8 *Tambah Node Belakang*



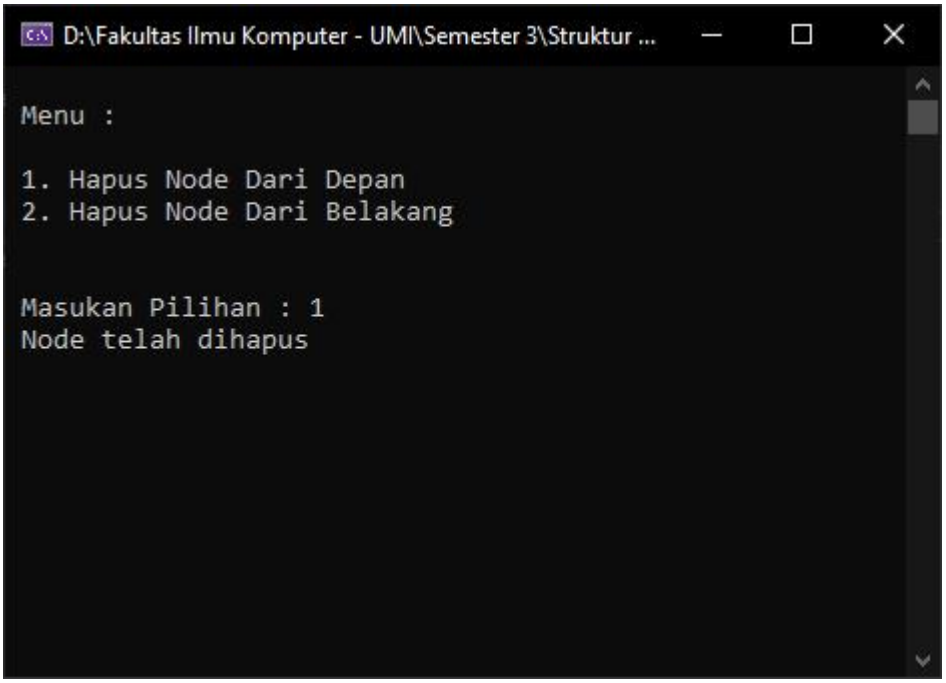
Gambar 1. 9 *Tampilan Node*



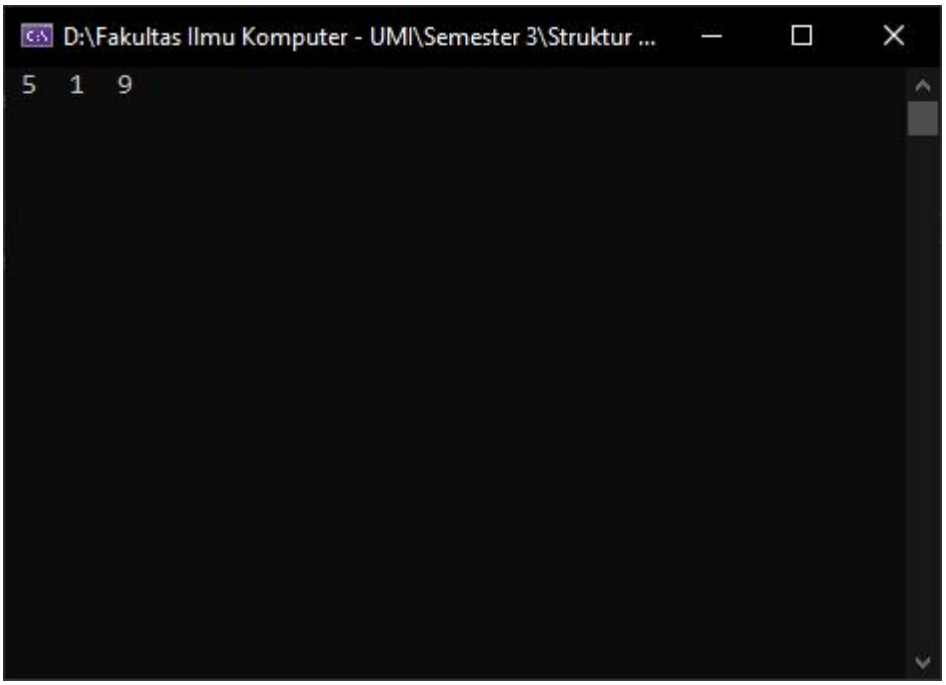
Gambar 1. 10 *Tambah Node Tengah*



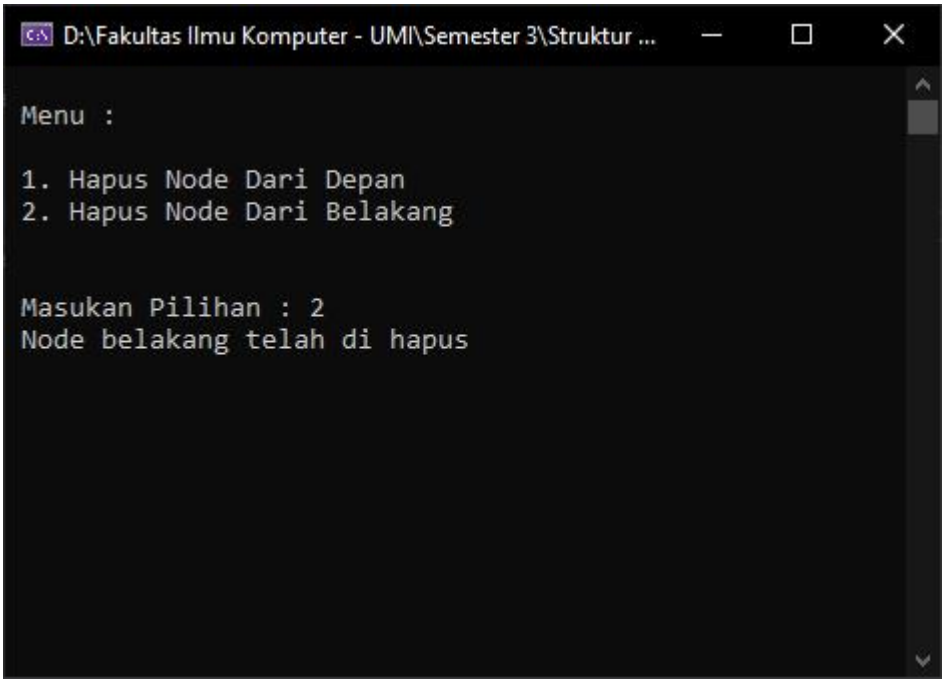
Gambar 1. 11 *Tampilan Node*



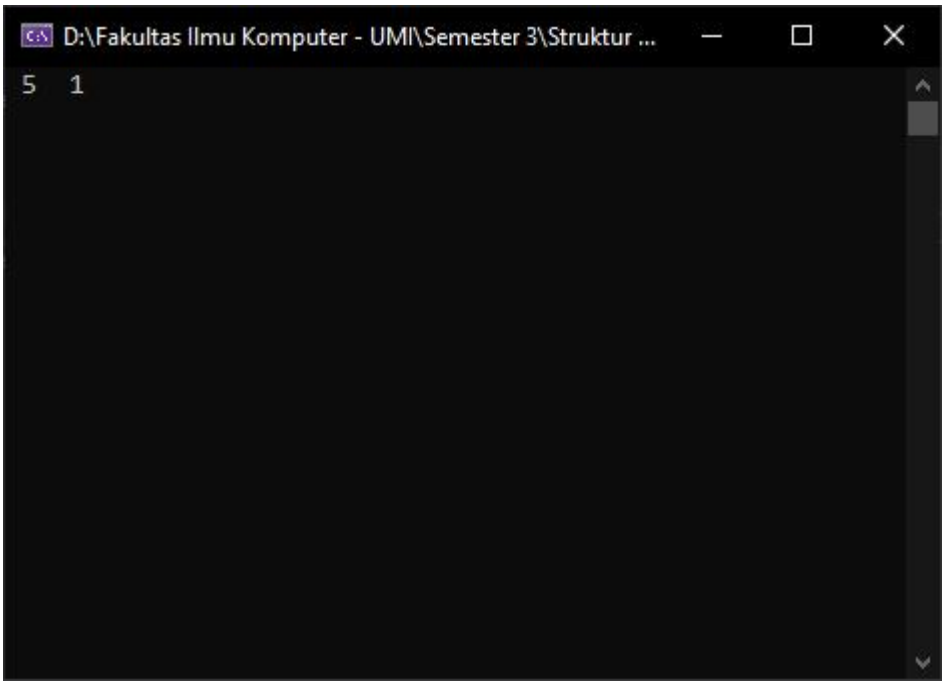
Gambar 1. 12 *Hapus Node Depan*



Gambar 1. 13 *Tampilan Node*



Gambar 1. 14 *Hapus Node Belakang*



Gambar 1. 15 *Tampilan Node*