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Struktur Data

POSTTEST 2

```
#include <iostream>
#include <string>
#include <conio.h>
#include <windows.h>
using namespace std;

struct tim_liga{
	string nama_tim;
	string kota_asal;
	string nama_stadion;
	string suporter;
	int jumlah_pemain;
};

tim_liga tl;

struct Node{
  tim_liga data;
  Node *next = NULL;
};

bool isEmpty(Node *head){
  if (head == NULL){
    return true;
  }
  return false;
```

```
}

int length(Node *head){
  int jumlah = 0;
  while (head != NULL){
    jumlah++;
    head = head->next;
  }
  return jumlah;
}

Node *newNode(){
       Node *nodeBaru = new Node;
       cout<<"\n=============== MASUKKAN DATA ================"<<endl;
       cout<<"Nama TIM : ";
       cin>>nodeBaru->data.nama_tim;
       cout<<"Kota Asal : ";
       cin>>nodeBaru->data.kota_asal;
       cout<<"Nama Stadion : ";
       cin>>nodeBaru->data.nama_stadion;
       cout<<"Nama Suporter : ";
       cin>>nodeBaru->data.suporter;
       cout<<"Jumlah Pemain : ";
       cin>>nodeBaru->data.jumlah_pemain;
       system("CLS");
       return nodeBaru;
}

void addFirst(Node **head){
  Node *nodeBaru = newNode();
  nodeBaru->next = *head;
```

```
  *head = nodeBaru;
}

void addLast(Node **head){
  Node *nodeBaru = newNode();
  if (isEmpty(*head)){
    *head = nodeBaru;
  }
  else{
    Node *temp = *head;
    while (temp->next != NULL){
      temp = temp->next;
    }
    temp->next = nodeBaru;
  }
}

void addMiddle(Node **head) {
    if (isEmpty(*head)) {
        cout << "\n================= DATA KOSONG =================" << endl;
        getch();
             system("CLS");
        return;
    }

    Node *nodeBaru = *head;

    int i = 1;
    while (nodeBaru != NULL) {
    cout <<"\n=============== Data Ke-"<<i<<" ================"<<endl
              <<"Nama TIM : "<<nodeBaru->data.nama_tim<<endl
```

```
            <<"Kota Asal : "<<nodeBaru->data.kota_asal<<endl
            <<"Nama Stadion : "<<nodeBaru->data.nama_stadion<<endl
            <<"Nama Suporter : "<<nodeBaru->data.suporter<<endl
            <<"Jumlah Pemain : "<<nodeBaru->data.jumlah_pemain<<endl;
        i += 1;
        nodeBaru = nodeBaru->next;
    }

    int index;
    cout << "\n- Masukkan Data Sebelum Node Ke-";
    cin >> index;

    if (index > 0 && index <= length(*head)){
        Node *nodeBaru = newNode();

        int nomor = 1;
        Node *temp = (*head);
        while(nomor < index-1){
            temp = temp->next;
            nomor++;
        }

        nodeBaru->next = temp->next;
        temp->next = nodeBaru;
    }
    else{
        cout << "\n=============== DATA TIDAK TERSEDIA ===============" << endl;
    }
}

void addMenu(Node*& HEAD){
```

```
	int pilih = 1;
	cout << "\n================= TAMBAH MENU ================" << endl
		<< "\n1. Add First" << endl
		<< "2. Add Middle" << endl
		<< "3. Add Last" << endl
		<< "Pilih : ";
	cin>>pilih;
	system("CLS");
	if(pilih == 1){
		addFirst(&HEAD);
	}
	else if(pilih == 2){
		addMiddle(&HEAD);
	}
	else{
		addLast(&HEAD);
	}
}

void deleteFirst(Node **head){
  if (isEmpty(*head)){
    cout << "\nLinked List Kosong" << endl;
    return;
  }
  *head = (*head)->next;
  cout << "\nDelete Node Berhasil" << endl;
}

void deleteLast(Node **head){
  if (isEmpty(*head)){
    cout << "\nLinked List Kosong" << endl;
```

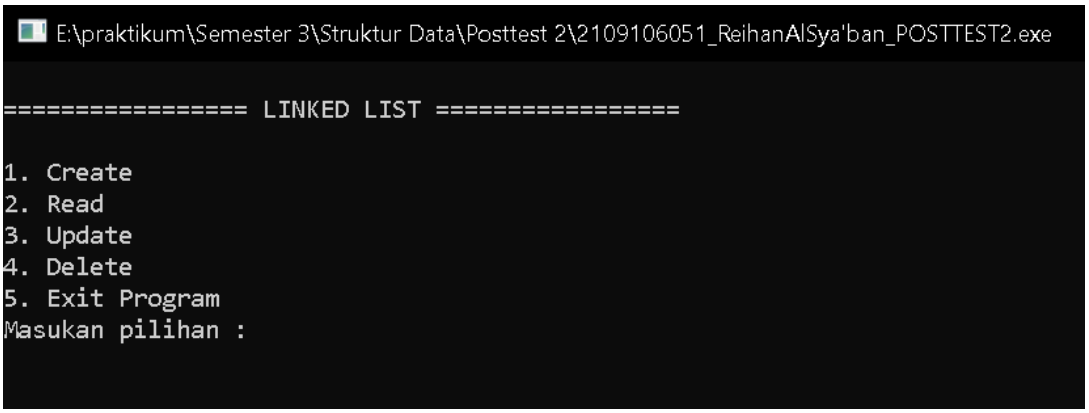
```
    return;
  }
  if ((*head)->next == NULL){
    *head = NULL;
    cout << "\nDelete Node Berhasil" << endl;
    return;
  }
  Node *temp = *head;
  while (temp->next->next != NULL){
    temp = temp->next;
  }
  Node *varDelete = temp->next;
  temp->next = NULL;
  delete varDelete;
  cout << "\nDelete Node Berhasil" << endl;
}

void deleteMiddle(Node*& head) {
    if (head == NULL)
        return;
    if (head->next == NULL) {
        delete head;
        return;
    }
    struct Node* copyHead = head;
    int count = length(head);
    int mid = count / 2;
    while (mid-- > 1)
        head = head->next;
    head->next = head->next->next;
}
```

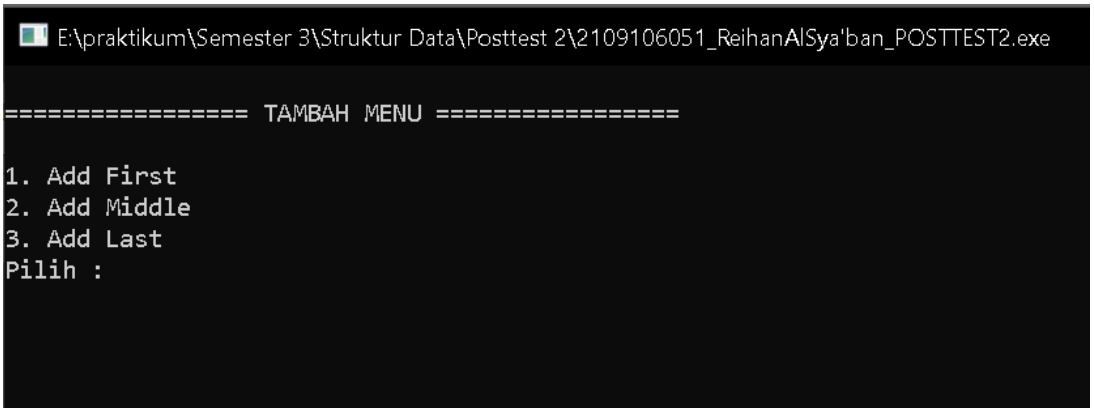
```
void deleteMenu(Node*& HEAD){
	int pilih = 1;
	cout << "\n================= DELETE MENU =================" << endl
		<< "\n1. Delete First" << endl
		<< "2. Delete Middle" << endl
		<< "3. Delete Last" << endl;
	cout<<"Pilih : ";
	cin>>pilih;
	system("CLS");
	if(pilih == 1){
		deleteFirst(&HEAD);
	}
	else if(pilih == 2){
		deleteMiddle(HEAD);
	}
	else{
		deleteLast(&HEAD);
	}
}

void display(Node *head){
  if (isEmpty(head)){
    cout << "Linked List Kosong" << endl;
    return;
  }
  cout << "\n=================== DATA TIM ==================" << endl;
  Node *temp = head;
  while (temp != NULL){
    cout<<"\nNama TIM : "<< temp->data.nama_tim <<endl;
	cout<<"Kota Asal : "<< temp->data.kota_asal <<endl;
```

```
      cout<<"Nama Stadion : "<< temp->data.nama_stadion <<endl;
      cout<<"Nama Suporter : "<< temp->data.suporter <<endl;
      cout<<"Jumlah Pemain : "<< temp->data.jumlah_pemain <<endl;
    cout << "\n==============================================" << endl;
    temp = temp->next;
  }
  getch();
  system("CLS");
  cout << endl;
}

void update(Node **head){
  if (isEmpty(*head)){
    cout << "\nLinked List Kosong" << endl;
    getch();
      system("CLS");
    return;
  }
  int pilihan = 0;
  cout << "Banyak node ada : " << length(*head) << endl;
  cout << "Pilih node yang ingin diupdate : ";
  cin >> pilihan;
  Node *temp = *head;
  if (pilihan > 0 && pilihan <= length(*head)){
    for (int i = 1; i < pilihan; i++){
      temp = temp->next;
    }
      cout<<"\nNama TIM : ";
      cin>>temp->data.nama_tim;
      cout<<"Kota Asal : ";
      cin>>temp->data.kota_asal;
```

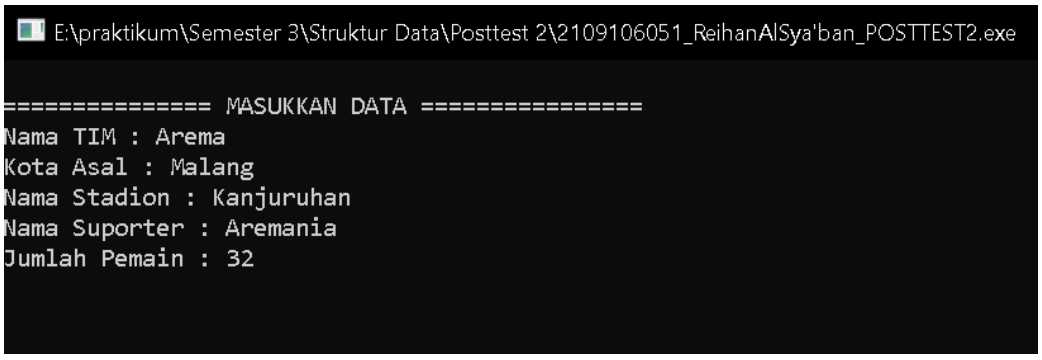
```
        cout<<"Nama Stadion : ";
        cin>>temp->data.nama_stadion;
        cout<<"Nama Suporter : ";
        cin>>temp->data.suporter;
        cout<<"Jumlah Pemain : ";
        cin>>temp->data.jumlah_pemain;
        getch();
        system("CLS");
    }
    else{
      cout << "\nInputan melebihi jumlah node" << endl;
      getch();
         system("CLS");
    }
}

int main()
{
  Node *HEAD = NULL;
  int pilihan = 0;
  while (pilihan != 5)
  {
    cout << "\n================= LINKED LIST =================" << endl;
    cout << "\n1. Create" << endl;
    cout << "2. Read" << endl;
    cout << "3. Update" << endl;
    cout << "4. Delete" << endl;
    cout << "5. Exit Program" << endl;
    cout << "Masukan pilihan : ";
    cin >> pilihan;
       system("CLS");
```

```
    switch (pilihan)
    {
    case 1:
      addMenu(HEAD);
      break;
    case 2:
      display(HEAD);
      break;
    case 3:
      update(&HEAD);
      break;
    case 4:
      deleteMenu(HEAD);
      break;
    case 5:
      break;
    default:
      break;
    }
  }
  return 0;
}
```

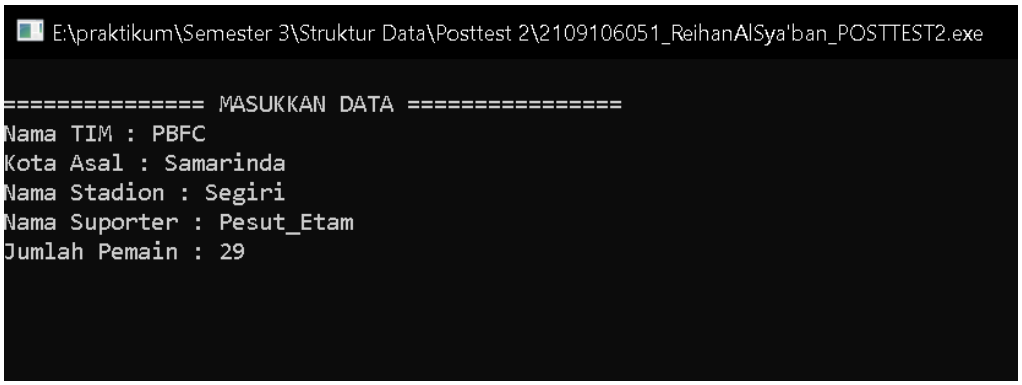




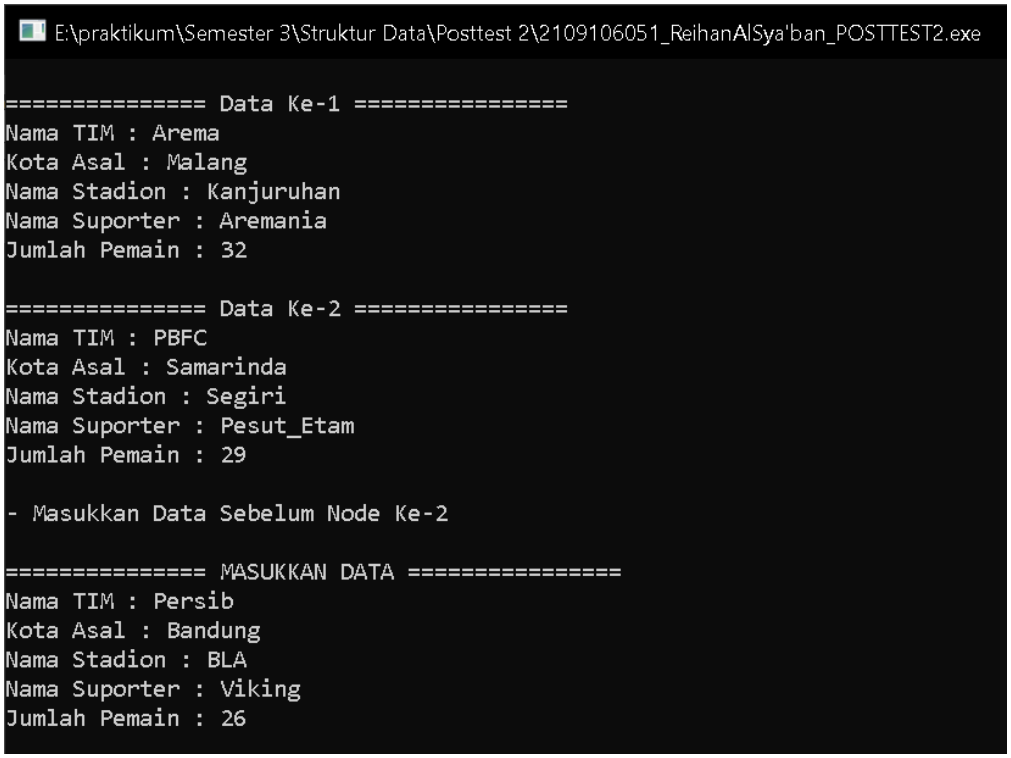
1. Add First

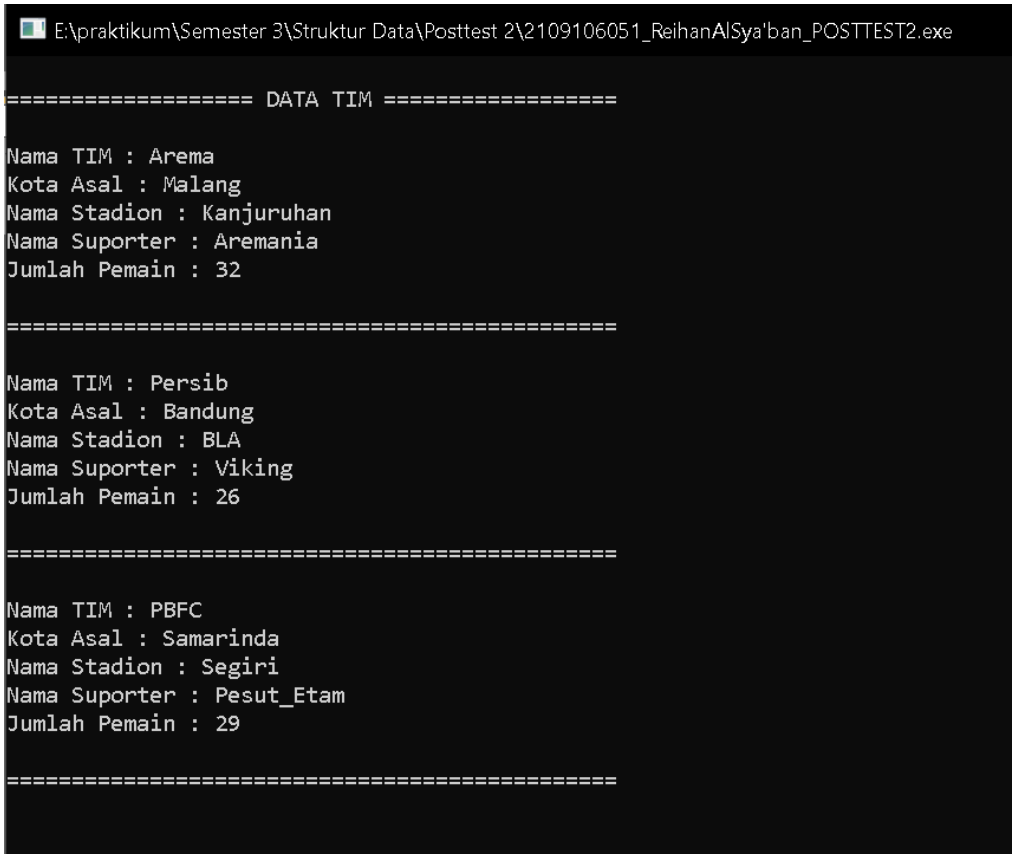


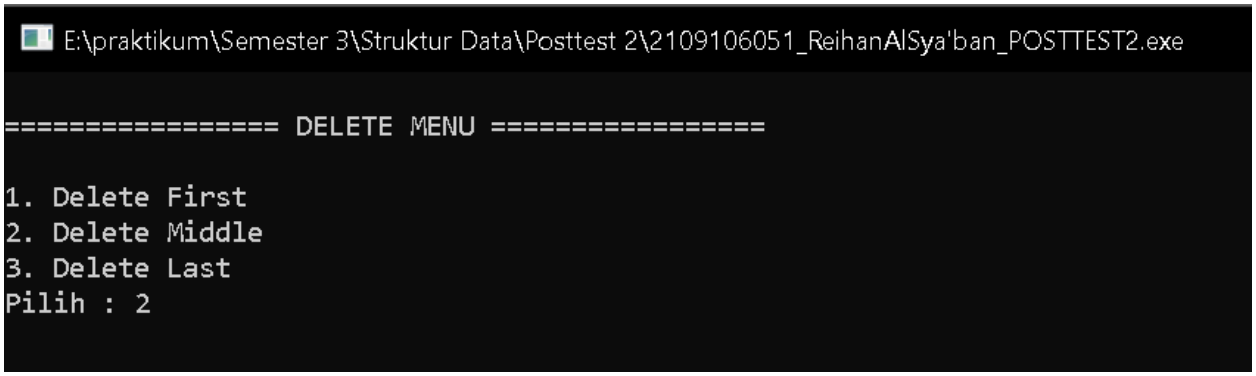
2. Add Last

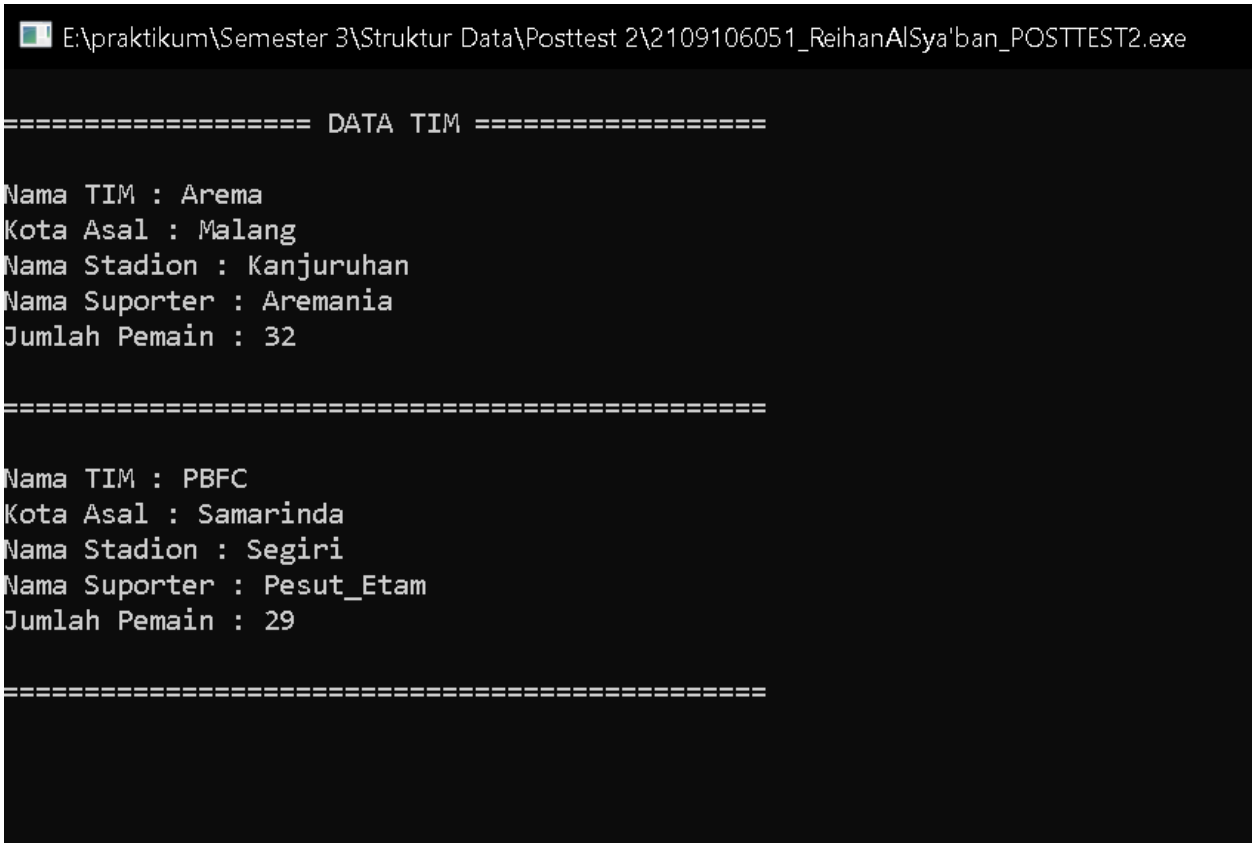


3. Add Middle


E:\praktikum\Semester 3\Struktur Data\Posttest 2\2109106051_ReihanAlSya'ban_POSTTEST2.exe
========== Data Ke-1 ==========
Nama TIM : Arema
Kota Asal : Malang
Nama Stadion : Kanjuruhan
Nama Suporter : Aremania
Jumlah Pemain : 32
========== Data Ke-2 ==========
Nama TIM : PBFC
Kota Asal : Samarinda
Nama Stadion : Segiri
Nama Suporter : Pesut_Etam
Jumlah Pemain : 29
- Masukkan Data Sebelum Node Ke-2
========== MASUKKAN DATA ==========
Nama TIM : Persib
Kota Asal : Bandung
Nama Stadion : BLA
Nama Suporter : Viking
Jumlah Pemain : 26


E:\praktikum\Semester 3\Struktur Data\Posttest 2\2109106051_ReihanAlSya'ban_POSTTEST2.exe
========== DATA TIM ==========
Nama TIM : Arema
Kota Asal : Malang
Nama Stadion : Kanjuruhan
Nama Suporter : Aremania
Jumlah Pemain : 32
==========
Nama TIM : Persib
Kota Asal : Bandung
Nama Stadion : BLA
Nama Suporter : Viking
Jumlah Pemain : 26
==========
Nama TIM : PBFC
Kota Asal : Samarinda
Nama Stadion : Segiri
Nama Suporter : Pesut_Etam
Jumlah Pemain : 29
==========


E:\praktikum\Semester 3\Struktur Data\Posttest 2\2109106051_ReihanAlSya'ban_POSTTEST2.exe
================ DELETE MENU ================
1. Delete First
2. Delete Middle
3. Delete Last
Pilih : 2


E:\praktikum\Semester 3\Struktur Data\Posttest 2\2109106051_ReihanAlSya'ban_POSTTEST2.exe
================== DATA TIM ==================
Nama TIM : Arema
Kota Asal : Malang
Nama Stadion : Kanjuruhan
Nama Suporter : Aremania
Jumlah Pemain : 32
==
Nama TIM : PBFC
Kota Asal : Samarinda
Nama Stadion : Segiri
Nama Suporter : Pesut_Etam
Jumlah Pemain : 29
==