Penugasan Struktur Data Praktikum 4

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1. Buatlah fungsi untuk menghitung jumlah node dalam sebuah linked list! (looping sama seperti pada saat menampilkan nilai dari linked list)

```c
#include <stdio.h>
#include <stdlib.h>

struct node{
    int value;
    struct node *next;
};

typedef struct node *ptrnode;

ptrnode createnode(int nilai){
    ptrnode p;
    p=(ptrnode)malloc(sizeof(struct node));
    p->value=nilai;
    p->next=NULL;
    return(p);
}


void countnode(ptrnode head){
    int count = 0;
    ptrnode temp=head;
    while(temp != NULL){
        count=count+1;
        temp=temp->next;
    }
    printf("Jumlah node adalah = %d",count);
}

int main(){
    ptrnode head = createnode(10);

    ptrnode dua = createnode(20);
    head->next=dua;
```

```
    ptrnode tiga = createnode(30);
    dua->next=tiga;

    ptrnode empat = createnode(40);
    tiga->next=empat;

    ptrnode lima = createnode(50);
    empat->next=lima;
    lima->next=NULL;

    countnode(head);
    return 0;
}
```

2. Buatlah fungsi untuk membalik nilai dari head ke tail! Contoh: 5->4->3->2->1 menjadi 1->2->3->4->5

```
void reverse(mynode *head){
    mynode prev = NULL;
    mynode current = *head;
    mynode next = NULL;

    while (current != NULL)
    {
        next = current->next;
        current->next = prev;
        prev = current;
        current = next;
    }
    *head = prev;
}
```

3. Buat program untuk menyimpan data students berisi int nim, char nama[50] secara dinamis!

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

struct student{
    int nim;
    char nama[50];
    struct student *next;
};

typedef struct student *mhs;
void addstudent(mhs *head, int mhs_nim, char mhs_nama[]){
    mhs newstudent;
    newstudent=(mhs)malloc(sizeof(struct student));
    newstudent->nim=mhs_nim;
    strcpy(newstudent->nama, mhs_nama);
    newstudent->next=NULL;

    if (*head == NULL)
    {
        *head = newstudent;
    }
    else{
        mhs tail = *head;
        while(tail->next != NULL)
        {
            tail = tail->next;
        }
        tail->next=newstudent;
    }
}

void display(mhs head){
    int i=1;
    printf("\n-Daftar Mahasiswa-\n");
    mhs temp=head;
    while (temp != NULL){
        printf("Mahasiswa ke-[%i]\n",i++);
        printf("NIM  = %d\n",temp->nim);
        printf("Nama = %s\n\n",temp->nama);
        temp=temp->next;
    }
```

```
}

int main(){
    int n =0;
    printf("Jumlah Mahasiswa = ");scanf("%d",&n);

    int nim;
    char nama[50];
    mhs liststudent = NULL;
    for (int i =0;i<n;i++){
        printf("[%i]",i+1);
        printf("\nNIM  = ");scanf("%d",&nim);
        printf("Nama = ");scanf("%s",nama);
        addstudent(&liststudent,nim,nama);
    }

    display(liststudent);
    return 0;
}
```