

# 8.1

```
program modul8no1;
uses crt;
type rec_mhs = record
    nobp,nama,indeks : string;
    uts,uas,tugas,na : real;
end;
var mahasiswa : array [1..10] of rec_mhs;
    n,i,a,b,c,d,e : integer;
function na(uts,uas,tugas:real):real;
begin
na:=0.45*uts+0.35*uas+0.2*tugas;
end;
function indeks(na:real):string;
begin
    if na<41 then indeks := 'E'
        else if na<56 then indeks := 'D'
        else if na<66 then indeks := 'C'
        else if na<81 then indeks := 'B'
        else indeks := 'A';
end;
begin
clrscr;
writeln('Program Penghitung Indeks Nilai Akhir');
writeln;
writeln('Silakan isi data berikut :');
write('Jumlah mahasiswa : '); readln(n);
for i := 1 to n do
begin
    with mahasiswa[i] do
    begin
writeln('Mahasiswa ke-',i);
write('Nama   :'); readln(nama);
write('No BP   :'); readln(nobp);
write('Nilai UTS :'); readln(uts);
write('Nilai UAS :'); readln(uas);
write('Nilai Tugas:'); readln(tugas);
writeln;
end;
mahasiswa[i].na := na(mahasiswa[i].uts,mahasiswa[i].uas,mahasiswa[i].tugas);
mahasiswa[i].indeks := indeks(mahasiswa[i].na);
end;
clrscr;
gotoxy(15,1); writeln('<<<<< Daftar Nilai Mahasiswa >>>>>');
gotoxy(15,2);writeln('-----');
writeln('-----');
gotoxy(1,4); writeln('No');
gotoxy(4,4); writeln('NoBP');
gotoxy(16,4); writeln('Nama');
gotoxy(33,4); writeln('UTS');
gotoxy(40,4); writeln('UAS');
gotoxy(47,4); writeln('Tugas');
gotoxy(54,4); writeln('NA');
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gotoxy(61,4); writeln('Indeks');
writeln('-----');
for i := 1 to n do
begin
  with mahasiswa[i] do
  begin
gotoxy(1,5+i); writeln(i);
gotoxy(4,5+i); writeln(nobp);
gotoxy(16,5+i); writeln(nama);
gotoxy(33,5+i); writeln(uts:0:2);
gotoxy(40,5+i); writeln(uas:0:2);
gotoxy(47,5+i); writeln(tugas:0:2);
gotoxy(54,5+i); writeln(na:0:2);
gotoxy(63,5+i); writeln(indeks);
  end;
end;
a:=0; b:=0; c:=0; d:=0; e:=0;
for i:=1 to n do
begin
  if mahasiswa[i].indeks='A' then a:=a+1
  else if mahasiswa[i].indeks='B' then b:=b+1
  else if mahasiswa[i].indeks='C' then c:=c+1
    else if mahasiswa[i].indeks='D' then d:=d+1
    else e:=e+1;
end;
gotoxy(60,19); write('Nilai A = ',a,' orang');
gotoxy(60,20); write('Nilai B = ',b,' orang');
gotoxy(60,21); write('Nilai C = ',c,' orang');
gotoxy(60,22); write('Nilai D = ',d,' orang');
gotoxy(60,23); write('Nilai E = ',e,' orang');
readln;
end.

```

```

#include <iostream>
#include <iomanip>
using namespace std;

struct rec_mhs {
    string nobp;
    string nama;
    string indeks;
    float uts;
    float uas;
    float tugas;
    float na;
};

int n,i,a,b,c,d,e;

float na(float uts,float uas,float tugas){
    return (0.45*uts+0.35*uas+0.2*tugas);
}

string indeks(float na){
    if(na < 41) return("E");
    else if(na<56) return("D");
    else if(na<66) return("C");
}

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        else if(na<81) return("B");
        else return("A");
    }

//fungsi gotoxy
void gotoxy(int x,int y)
{
    printf("%c[%d;%df",0x1B,y,x);
}

int main(){
    system("cls");
    cout <<"Program Penghitung Indeks Nilai Akhir \n\n";
    cout <<"Silahkan isi data berikut : \n";
    cout <<"Jumlah mahasiswa : "; cin >>n;
    cout <<endl;
    //array record
    struct rec_mhs mhs[n];

    for(i=0; i < n; i++){
        cout <<"Nama                : "; getline(cin >> ws,mhs[i].nama);
        cout <<"No BP                : "; cin>>mhs[i].nobp;
        cout <<"Nilai UTS            : "; cin >> (mhs[i].uts);
        cout <<"Nilai UAS            : "; cin >> (mhs[i].uas);
        cout <<"Nilai Tugas        : "; cin >> (mhs[i].tugas);
        cout <<endl;
        mhs[i].na = na(mhs[i].uts,mhs[i].uas,mhs[i].tugas);
        mhs[i].indeks = indeks(mhs[i].na);
    }
    system("cls");
    gotoxy(15,1);cout<< "<<<<< Daftar Nilai Mahasiswa >>>>>";
    gotoxy(15,2);cout << "-----\n";
    cout << "-----\n";
    gotoxy(1,4);cout <<"No\n";
    gotoxy(4,4);cout <<"NoBP\n";
    gotoxy(16,4);cout <<"Nama\n";
    gotoxy(33,4);cout <<"UTS\n";
    gotoxy(40,4);cout <<"UAS\n";
    gotoxy(47,4);cout <<"Tugas\n";
    gotoxy(54,4);cout <<"Na\n";
    gotoxy(61,4);cout <<"Indeks\n";
    cout << "-----\n";
    for(int i =0;i < n; i++){
        gotoxy(1,6+i);cout<<i+1<<endl;
        gotoxy(4,6+i);cout<<mhs[i].nobp<<endl;
        gotoxy(16,6+i);cout<<mhs[i].nama<<endl;
        gotoxy(33,6+i);cout<<setprecision(2)<< mhs[i].uts<<endl;
        gotoxy(40,6+i);cout<<setprecision(2)<< mhs[i].uas<<endl;
        gotoxy(47,6+i);cout<<setprecision(2)<< mhs[i].tugas<<endl;
        gotoxy(54,6+i);cout<<setprecision(2)<< mhs[i].na<<endl;
        gotoxy(63,6+i);cout<<mhs[i].indeks<<endl;
    }
    a = 0; b=0; c=0; d=0; e=0;
    for(i=0;i < n;i++){
        if (mhs[i].indeks == "A") a+=1;
        else if (mhs[i].indeks=="B") b+=1;
        else if (mhs[i].indeks=="C") c+=1;
    }
}

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        else if (mhs[i].indeks=="D") d+=1;
        else e+=1;
    }
    gotoxy(60,19); cout<<"Nilai A = "<< a <<" orang\n";
    gotoxy(60,20); cout<<"Nilai B = "<< b <<" orang\n";
    gotoxy(60,21); cout<<"Nilai C = "<< c <<" orang\n";
    gotoxy(60,22); cout<<"Nilai D = "<< d <<" orang\n";
    gotoxy(60,23); cout<<"Nilai E = "<< e <<" orang\n";

    return 0;
}

```

## 8.2\_1

```

uses crt;
type rec_mhs = record
    nobp,nama,indeks : string;
    uts,uas,tugas,na : real;
end;
var
    MHS:text;
    mahasiswa : array [1..10] of rec_mhs;
    n,i,a,b,c,d,e : integer;
function na(uts,uas,tugas:real):real;
begin
    na:=0.45*uts+0.35*uas+0.2*tugas;
end;
function indeks(na:real):string;
begin
    if na < 41 then indeks := 'E'
    else if na < 56 then indeks := 'D'
    else if na < 66 then indeks := 'C'
    else if na < 81 then indeks := 'B'
    else indeks := 'A';
end;
procedure input;
begin
    writeln('Program Penghitung Indeks Nilai Akhir'); writeln;
    writeln('Silahkan isi data berikut :');
    write('Jumlah mahasiswa : '); readln(n);
    for i := 1 to n do
        begin
            with mahasiswa[i] do
                begin
                    writeln('Mahasiswa ke-',i);
                    write('Nama :'); readln(nama);
                    write('No BP :'); readln(nobp);
                    write('Nilai UTS :'); readln(uts);
                    write('Nilai UAS :'); readln(uas);
                    write('Nilai Tugas :'); readln(tugas);
                    writeln;
                end;
            mahasiswa[i].na:= na(mahasiswa[i].uts, mahasiswa[i].uas,
            mahasiswa[i].tugas);
        end;
    end;
end;

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        mahasiswa[i].indeks := indeks(mahasiswa[i].na);
    end;
end;
procedure tulis;
begin
    assign(MHS,'MHS.txt'); rewrite(MHS);
    for i:=1 to n do
        begin
            writeln(MHS,mahasiswa[i].nama);
            writeln(MHS,mahasiswa[i].nobp);
            writeln(MHS,mahasiswa[i].uts:4:2);
            writeln(MHS,mahasiswa[i].uas:4:2);
            writeln(MHS,mahasiswa[i].tugas:4:2);
        end;
    close(MHS);
end;
procedure output;
begin
    clrscr;
    gotoxy(15,1); writeln('<<<< Daftar Nilai Mahasiswa >>>>');
    gotoxy(15,2);writeln('-----');
    writeln('-----');
    gotoxy(1,4); writeln('No'); gotoxy(4,4); writeln('NoBP');
    gotoxy(16,4); writeln('Nama'); gotoxy(33,4); writeln('UTS');
    gotoxy(40,4); writeln('UAS'); gotoxy(47,4); writeln('Tugas');
    gotoxy(54,4); writeln('Na'); gotoxy(61,4); writeln('Indeks');
    writeln('-----');
    for i := 1 to n do
        begin
            with mahasiswa[i] do
                begin
                    gotoxy(1,5+i); writeln(i);
                    gotoxy(4,5+i); writeln(nobp);
                    gotoxy(16,5+i); writeln(nama);
                    gotoxy(33,5+i); writeln(uts:0:2);
                    gotoxy(40,5+i); writeln(uas:0:2);
                    gotoxy(47,5+i); writeln(tugas:0:2);
                    gotoxy(54,5+i); writeln(na:0:2);
                    gotoxy(63,5+i); writeln(indeks);
                end;
            end;
        end;
end;
procedure hitung;
begin
    a:=0; b:=0; c:=0; d:=0; e:=0;
    for i:=1 to n do
        begin
            if mahasiswa[i].indeks='A' then a:=a+1
            else if mahasiswa[i].indeks='B' then b:=b+1
            else if mahasiswa[i].indeks='C' then c:=c+1
            else if mahasiswa[i].indeks='D' then d:=d+1
            else e:=e+1;
        end;
    gotoxy(60,19); write('Nilai A = ',a,' orang');
    gotoxy(60,20); write('Nilai B = ',b,' orang');
    gotoxy(60,21); write('Nilai C = ',c,' orang');
    gotoxy(60,22); write('Nilai D = ',d,' orang');

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    gotoxy(60,23); write('Nilai E = ',e,' orang');
end;
begin
    clrscr; input; tulis; output; hitung; readln;
end.

```

```

#include <iostream>
#include <iomanip>
#include <fstream>
using namespace std;

//fungsi gotoxy
void gotoxy(int x,int y)
{
    printf("%c[%d;%df",0x1B,y,x);
}

struct rec_mhs {
    string nobp;
    string nama;
    string indeks;
    float uts;
    float uas;
    float tugas;
    float na;
};

int n,i,a,b,c,d,e;
//array record
struct rec_mhs mhs[10];

float na(float uts,float uas,float tugas){
    return (0.45*uts+0.35*uas+0.2*tugas);
}

string indeks(float na){
    if(na < 41) return("E");
    else if(na<56) return("D");
    else if(na<66) return("C");
    else if(na<81) return("B");
    else return("A");
}

void _input(){
    cout <<"Program Penghitung Indeks Nilai Akhir \n\n";
    cout <<"Silahkan isi data berikut : \n";
    cout <<"Jumlah mahasiswa : "; cin >>n;
    cout <<endl;
    for(i=0; i < n; i++){
        cout <<"Nama                : "; getline(cin >> ws,mhs[i].nama);
        cout <<"No BP                    : "; cin>>mhs[i].nobp;
        cout <<"Nilai UTS                : "; cin >> (mhs[i].uts);
        cout <<"Nilai UAS                : "; cin >> (mhs[i].uas);
        cout <<"Nilai Tugas            : "; cin >> (mhs[i].tugas);
        cout <<endl;
        mhs[i].na = na(mhs[i].uts,mhs[i].uas,mhs[i].tugas);
        mhs[i].indeks = indeks(mhs[i].na);
    }
}

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    }
}
void tulis(){
    ofstream MyFile("MHS.txt");
    for (int i=0; i < n; i++){
        MyFile << mhs[i].nama <<endl;
        MyFile << mhs[i].nobp <<endl;
        MyFile << setprecision(2)<< mhs[i].uts <<endl;
        MyFile << setprecision(2)<< mhs[i].uas <<endl;
        MyFile << setprecision(2)<< mhs[i].tugas <<endl;
    }
    MyFile.close();
}
void _output(){
    system("cls");
    gotoxy(15,1);cout<< "<<<< Daftar Nilai Mahasiswa >>>>";
    gotoxy(15,2);cout << "-----\n";
    cout << "-----\n";
    gotoxy(1,4);cout <<"No\n";
    gotoxy(4,4);cout <<"NoBP\n";
    gotoxy(16,4);cout <<"Nama\n";
    gotoxy(33,4);cout <<"UTS\n";
    gotoxy(40,4);cout <<"UAS\n";
    gotoxy(47,4);cout <<"Tugas\n";
    gotoxy(54,4);cout <<"Na\n";
    gotoxy(61,4);cout <<"Indeks\n";
    cout << "-----\n";
    for(int i =0;i < n; i++){
        gotoxy(1,6+i);cout<<i+1<<endl;
        gotoxy(4,6+i);cout<<mhs[i].nobp<<endl;
        gotoxy(16,6+i);cout<<mhs[i].nama<<endl;
        gotoxy(33,6+i);cout<<setprecision(2)<< mhs[i].uts<<endl;
        gotoxy(40,6+i);cout<<setprecision(2)<< mhs[i].uas<<endl;
        gotoxy(47,6+i);cout<<setprecision(2)<< mhs[i].tugas<<endl;
        gotoxy(54,6+i);cout<<setprecision(2)<< mhs[i].na<<endl;
        gotoxy(63,6+i);cout<<mhs[i].indeks<<endl;
    }
}

void hitung(){
    a = 0; b=0; c=0; d=0; e=0;
    for(i=0;i < n;i++){
        if (mhs[i].indeks == "A") a+=1;
        else if (mhs[i].indeks=="B") b+=1;
        else if (mhs[i].indeks=="C") c+=1;
        else if (mhs[i].indeks=="D") d+=1;
        else e+=1;
    }
    gotoxy(60,19); cout<<"Nilai A = "<< a <<" orang\n";
    gotoxy(60,20); cout<<"Nilai B = "<< b <<" orang\n";
    gotoxy(60,21); cout<<"Nilai C = "<< c <<" orang\n";
    gotoxy(60,22); cout<<"Nilai D = "<< d <<" orang\n";
    gotoxy(60,23); cout<<"Nilai E = "<< e <<" orang\n";
}

```

```

int main(){
    system("cls"); _input(); tulis(); _output(); hitung();
    return 0;
}

```

## 8.2\_2

```

uses crt;
type rec_mhs = record
    nobp,nama,indeks : string;
    uts,uas,tugas,na : real;
end;
var
    MHS:text;
    mahasiswa : array [1..10] of rec_mhs;
    n,i,a,b,c,d,e : integer;
function na(uts,uas,tugas:real):real;
begin
    na:=0.45*uts+0.35*uas+0.2*tugas;
end;
function indeks(na:real):string;
begin
    if na < 41 then indeks := 'E'
    else if na < 56 then indeks := 'D'
    else if na < 66 then indeks := 'C'
    else if na < 81 then indeks := 'B'
    else indeks := 'A';
end;
procedure baca;
begin
    assign(MHS,'MHS.txt'); reset(MHS);
    i:=1;
    while not eof(MHS) do
        begin
            with mahasiswa[i] do
                begin
                    readln(MHS,nama); readln(MHS,nobp);
                    readln(MHS,uts); readln(MHS,uas);
                    readln(MHS,tugas);
                end;
            mahasiswa[i].na:=na(mahasiswa[i].uts,mahasiswa[i].uas,mahasiswa[i].tugas);
            mahasiswa[i].indeks:=indeks(mahasiswa[i].na);
            inc(i);
        end;
        n:=i-1;
        close(MHS);
    end;
procedure output;

```



```

begin
  clrscr;
  gotoxy(15,1); writeln('<<<<< Daftar Nilai Mahasiswa >>>>>');
  gotoxy(15,2);writeln('-----');writeln('-----');
  gotoxy(1,4); writeln('No'); gotoxy(4,4); writeln('NoBP');
  gotoxy(16,4); writeln('Nama'); gotoxy(33,4); writeln('UTS');
  gotoxy(40,4); writeln('UAS'); gotoxy(47,4); writeln('Tugas');
  gotoxy(54,4); writeln('Na'); gotoxy(61,4); writeln('Indeks');
  writeln('-----');
  for i := 1 to n do
    begin
      with mahasiswa[i] do
        begin
          gotoxy(1,5+i); writeln(i);
          gotoxy(4,5+i); writeln(nobp);
          gotoxy(16,5+i); writeln(nama);
          gotoxy(33,5+i); writeln(uts:0:2);
          gotoxy(40,5+i); writeln(uas:0:2);
          gotoxy(47,5+i); writeln(tugas:0:2);
          gotoxy(54,5+i); writeln(na:0:2);
          gotoxy(63,5+i); writeln(indeks);
        end;
      end;
    end;
  procedure hitung;
  begin
    a:=0; b:=0; c:=0; d:=0; e:=0;
    for i:=1 to n do
      begin
        if mahasiswa[i].indeks='A' then a:=a+1
        else if mahasiswa[i].indeks='B' then b:=b+1
        else if mahasiswa[i].indeks='C' then c:=c+1
        else if mahasiswa[i].indeks='D' then d:=d+1
        else e:=e+1;
      end;
    gotoxy(60,19); write('Nilai A = ',a,' orang');
    gotoxy(60,20); write('Nilai B = ',b,' orang');
    gotoxy(60,21); write('Nilai C = ',c,' orang');
    gotoxy(60,22); write('Nilai D = ',d,' orang');
    gotoxy(60,23); write('Nilai E = ',e,' orang');
  end;
begin
  clrscr; baca; output; hitung; readln;
end.

```

```

#include <iostream>
#include <iomanip>
#include <fstream>
#include <conio.h>
using namespace std;

//fungsi gotoxy
void gotoxy(int x,int y)
{
  printf("%c[%d;%df",0x1B,y,x);
}

```

```

struct rec_mhs {
    string nobp;
    string nama;
    string indeks;
    float uts;
    float uas;
    float tugas;
    float na;
};

int n,i,a,b,c,d,e;
string nama,nobp;
string uts,uas,tugas;
//array record
struct rec_mhs mhs[10];

float na(float uts,float uas,float tugas){
    return (0.45*uts+0.35*uas+0.2*tugas);
}

string indeks(float na){
    if(na < 41) return("E");
    else if(na<56) return("D");
    else if(na<66) return("C");
    else if(na<81) return("B");
    else return("A");
}

void _input(){
    cout <<"Program Penghitung Indeks Nilai Akhir \n\n";
    cout <<"Silahkan isi data berikut : \n";
    cout <<"Jumlah mahasiswa : "; cin >>n;
    cout <<endl;
    for(i=0; i < n; i++){
        cout <<"Nama                : "; getline(cin >> ws,mhs[i].nama);
        cout <<"No BP                : "; cin>>mhs[i].nobp;
        cout <<"Nilai UTS            : "; cin >> (mhs[i].uts);
        cout <<"Nilai UAS            : "; cin >> (mhs[i].uas);
        cout <<"Nilai Tugas        : "; cin >> (mhs[i].tugas);
        cout <<endl;
        mhs[i].na = na(mhs[i].uts,mhs[i].uas,mhs[i].tugas);
        mhs[i].indeks = indeks(mhs[i].na);
    }
}

void baca(){
    ifstream MyFile;
    MyFile.open("MHS.txt");
    i = 0;
    while(!MyFile.eof()){
        getline(MyFile,nama); mhs[i].nama = nama;
        getline(MyFile,nobp); mhs[i].nobp = nobp;
        getline(MyFile,uts); mhs[i].uts = stof(uts);
        getline(MyFile,uas); mhs[i].uas = stof(uas);
        getline(MyFile,tugas);mhs[i].tugas = stof(tugas);
        mhs[i].na = na(mhs[i].uts,mhs[i].uas,mhs[i].tugas);
        mhs[i].indeks = indeks(mhs[i].na);
    }
}

```

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    i++;
}
MyFile.close();
n = i-1;
cout << mhs[0].nama << endl;
cout << mhs[0].nobp << endl;
}

void _output(){
system("cls");
gotoxy(15,1);cout<< "<<<<< Daftar Nilai Mahasiswa >>>>>";
gotoxy(15,2);cout << "-----\n";
cout << "-----\n";
gotoxy(1,4);cout <<"No\n";
gotoxy(4,4);cout <<"NoBP\n";
gotoxy(16,4);cout <<"Nama\n";
gotoxy(33,4);cout <<"UTS\n";
gotoxy(40,4);cout <<"UAS\n";
gotoxy(47,4);cout <<"Tugas\n";
gotoxy(54,4);cout <<"Na\n";
gotoxy(61,4);cout <<"Indeks\n";
cout << "-----\n";
for(int i =0;i < n; i++){
    gotoxy(1,6+i);cout<<i+1<<endl;
    gotoxy(4,6+i);cout<<mhs[i].nobp<<endl;
    gotoxy(16,6+i);cout<<mhs[i].nama<<endl;
    gotoxy(33,6+i);cout<<setprecision(2)<< mhs[i].uts<<endl;
    gotoxy(40,6+i);cout<<setprecision(2)<< mhs[i].uas<<endl;
    gotoxy(47,6+i);cout<<setprecision(2)<< mhs[i].tugas<<endl;
    gotoxy(54,6+i);cout<<setprecision(2)<< mhs[i].na<<endl;
    gotoxy(63,6+i);cout<<mhs[i].indeks<<endl;
}
}

void hitung(){
a = 0; b=0; c=0; d=0; e=0;
for(i=0;i < n;i++){
    if (mhs[i].indeks == "A") a+=1;
    else if (mhs[i].indeks=="B") b+=1;
    else if (mhs[i].indeks=="C") c+=1;
    else if (mhs[i].indeks=="D") d+=1;
    else e+=1;
}
gotoxy(60,19); cout<<"Nilai A = "<< a <<" orang\n";
gotoxy(60,20); cout<<"Nilai B = "<< b <<" orang\n";
gotoxy(60,21); cout<<"Nilai C = "<< c <<" orang\n";
gotoxy(60,22); cout<<"Nilai D = "<< d <<" orang\n";
gotoxy(60,23); cout<<"Nilai E = "<< e <<" orang\n";
}

int main(){
    system("cls"); baca(); _output(); hitung();
    return 0;
}

```

# 8.2.3

```
uses crt;
type rec_mhs = record
    nobp,nama,indeks : string;
    uts,uas,tugas,na : real;
end;
var
    MHS:text;
    mahasiswa : array [1..10] of rec_mhs;
    n,i,a,b,c,d,e : integer;
    ch:char;
function na(uts,uas,tugas:real):real;
begin
    na:=0.45*uts+0.35*uas+0.2*tugas;
end;
function indeks(na:real):string;
begin
    if na < 41 then indeks := 'E'
    else if na < 56 then indeks := 'D'
    else if na < 66 then indeks := 'C'
    else if na < 81 then indeks := 'B'
    else indeks := 'A';
end;
procedure input;
begin
    writeln('Program Penghitung Indeks Nilai Akhir'); writeln;
    writeln('Silahkan isi data berikut :');
    write('jumlah mahasiswa : '); readln(n);
    for i := 1 to n do
        begin
            with mahasiswa[i] do
                begin
                    writeln('Mahasiswa ke-',i);
                    write('Nama :'); readln(nama);
                    write('No BP :'); readln(nobp);
                    write('Nilai UTS :'); readln(uts);
                    write('Nilai UAS :'); readln(uas);
                    write('Nilai Tugas :'); readln(tugas);
                    writeln;
                end;
            mahasiswa[i].na:= na (mahasiswa[i].uts, mahasiswa[i].uas,
            mahasiswa[i].tugas);
            mahasiswa[i].indeks := indeks(mahasiswa[i].na);
        end;
    end;
procedure tulis;
begin
    assign(MHS,'MHS.txt');
```

```

{$I-}
reset(MHS);
{$I+}
if IOResult=0 then
begin
    write('File MHS.txt sudah ada di drive, hapus dan buat file baru?[Y,T]');
    repeat ch:=readkey; until upcase(ch) in ['Y','T'];
    if upcase(ch)='T' then halt;
end;
rewrite(MHS);
for i:=1 to n do
begin
    writeln(MHS,mahasiswa[i].nama);
    writeln(MHS,mahasiswa[i].nobp);
    writeln(MHS,mahasiswa[i].uts:4:2);
    writeln(MHS,mahasiswa[i].uas:4:2);
    writeln(MHS,mahasiswa[i].tugas:4:2);
end;
close(MHS);
end;
begin
    clrscr; input; tulis; readln;
end.

```

```

#include <iostream>
#include <iomanip>
#include <fstream>
using namespace std;

//fungsi gotoxy
void gotoxy(int x,int y)
{
    printf("%c[%d;%df",0x1B,y,x);
}

struct rec_mhs {
    string nobp;
    string nama;
    string indeks;
    float uts;
    float uas;
    float tugas;
    float na;
};

int n,i,a,b,c,d,e;
char ch;
//array record
struct rec_mhs mhs[10];

float na(float uts,float uas,float tugas){
    return (0.45*uts+0.35*uas+0.2*tugas);
}

string indeks(float na){
    if(na < 41) return("E");
}

```

```

        else if(na<56) return("D");
        else if(na<66) return("C");
        else if(na<81) return("B");
        else return("A");
    }
}

void _input(){
    cout <<"Program Penghitung Indeks Nilai Akhir \n\n";
    cout <<"Silahkan isi data berikut : \n";
    cout <<"Jumlah mahasiswa : "; cin >>n;
    cout <<endl;
    for(i=0; i < n; i++){
        cout <<"Nama                : "; getline(cin >> ws,mhs[i].nama);
        cout <<"No BP                : "; cin>>mhs[i].nobp;
        cout <<"Nilai UTS            : "; cin >> (mhs[i].uts);
        cout <<"Nilai UAS            : "; cin >> (mhs[i].uas);
        cout <<"Nilai Tugas        : "; cin >> (mhs[i].tugas);
        cout <<endl;
        mhs[i].na = na(mhs[i].uts,mhs[i].uas,mhs[i].tugas);
        mhs[i].indeks = indeks(mhs[i].na);
    }
}

void tulis(){
    fstream MyFile;
    MyFile.open("MHS.txt");
    if(MyFile){
        cout << "File MHS.txt sudah ada di drive, hapus dan buat baru ? [Y,T] ";
        cin >> ch;
        if (toupper(ch)=='T') exit(0);
    }
    MyFile.close();

    MyFile.open("MHS.txt",ios::out);
    for (int i=0; i < n; i++){
        MyFile << mhs[i].nama <<endl;
        MyFile << mhs[i].nobp <<endl;
        MyFile << setprecision(2)<< mhs[i].uts <<endl;
        MyFile << setprecision(2)<< mhs[i].uas <<endl;
        MyFile << setprecision(2)<< mhs[i].tugas <<endl;
    }
    // }
    MyFile.close();
}

void _output(){
    system("cls");
    gotoxy(15,1);cout<< "<<<<< Daftar Nilai Mahasiswa >>>>>";
    gotoxy(15,2);cout << "-----\n";
    cout << "-----\n";
    gotoxy(1,4);cout <<"No\n";
    gotoxy(4,4);cout <<"NoBP\n";
    gotoxy(16,4);cout <<"Nama\n";
    gotoxy(33,4);cout <<"UTS\n";
    gotoxy(40,4);cout <<"UAS\n";
    gotoxy(47,4);cout <<"Tugas\n";
    gotoxy(54,4);cout <<"Na\n";
    gotoxy(61,4);cout <<"Indeks\n";
    cout << "-----\n";
}

```

```

for(int i =0;i < n; i++){
    gotoxy(1,6+i);cout<<i+1<<endl;
    gotoxy(4,6+i);cout<<mhs[i].nobbp<<endl;
    gotoxy(16,6+i);cout<<mhs[i].nama<<endl;
    gotoxy(33,6+i);cout<<setprecision(2)<< mhs[i].uts<<endl;
    gotoxy(40,6+i);cout<<setprecision(2)<< mhs[i].uas<<endl;
    gotoxy(47,6+i);cout<<setprecision(2)<< mhs[i].tugas<<endl;
    gotoxy(54,6+i);cout<<setprecision(2)<< mhs[i].na<<endl;
    gotoxy(63,6+i);cout<<mhs[i].indeks<<endl;
}
}

void hitung(){
a = 0; b=0; c=0; d=0; e=0;
for(i=0;i < n;i++){
    if (mhs[i].indeks == "A") a+=1;
    else if (mhs[i].indeks=="B") b+=1;
    else if (mhs[i].indeks=="C") c+=1;
    else if (mhs[i].indeks=="D") d+=1;
    else e+=1;
}
gotoxy(60,19); cout<<"Nilai A = "<< a <<" orang\n";
gotoxy(60,20); cout<<"Nilai B = "<< b <<" orang\n";
gotoxy(60,21); cout<<"Nilai C = "<< c <<" orang\n";
gotoxy(60,22); cout<<"Nilai D = "<< d <<" orang\n";
gotoxy(60,23); cout<<"Nilai E = "<< e <<" orang\n";
}

int main(){
    system("cls"); _input(); tulis(); _output(); hitung();
    return 0;
}

```