LAPORAN PRAKTIKUM PEMROGRAMAN KOMPUTER

MODUL 6 – RECORD

Pelaksanaan Praktikum

Hari: Selasa   Tanggal: 26 Maret 2019   Jam: 07.00
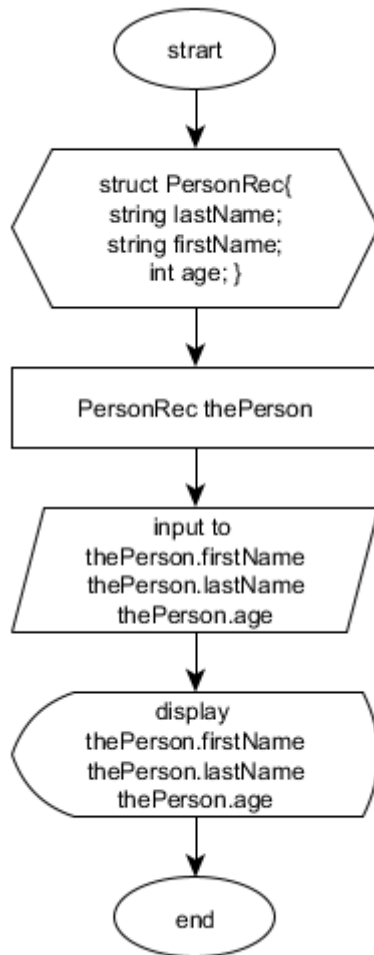

Oleh:

M. Thoriqul Aziz E

081711733002

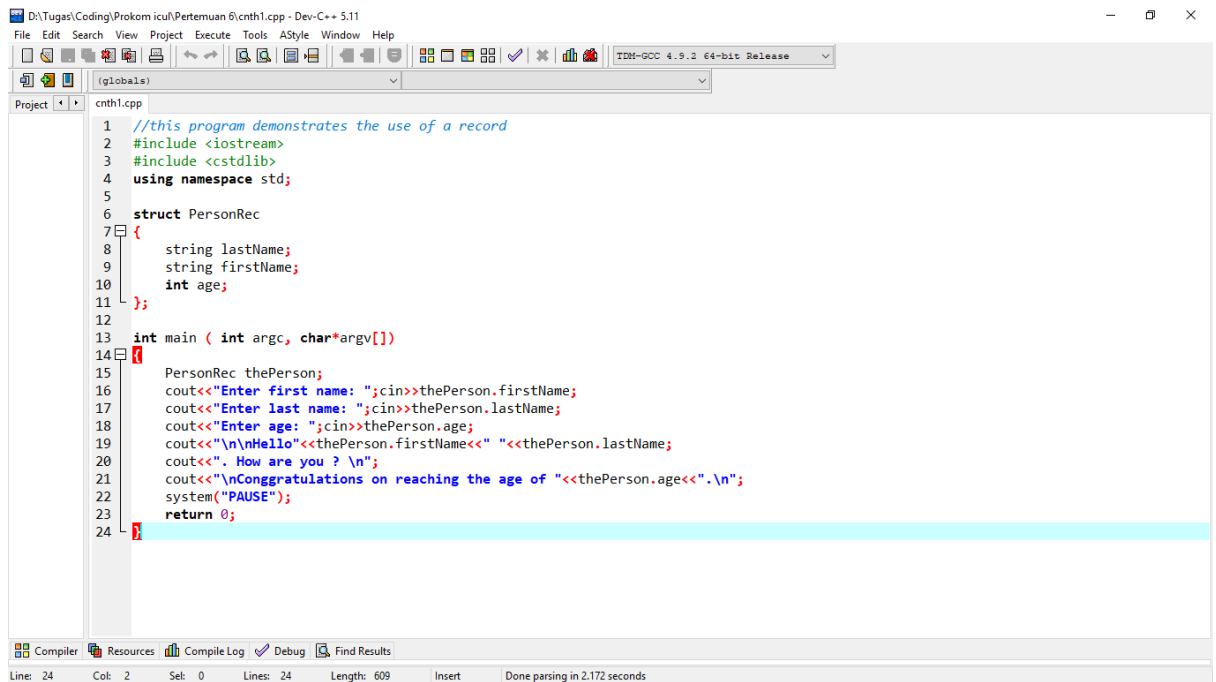Dosen Pembimbing   : Franky Chandra Satria Arisgraha S.T., M.T.

TEKNIK BIOMEDIS

FAKULTAS SAINS DAN TEKNOLOGI

UNIVERSITAS AIRLANGGA

2019

Program 1

I. Flowchart

```
              ┌─────────┐
             (  strart  )
              └────┬────┘
                   ↓
        ╱────────────────────╲
       ╱   struct PersonRec{   ╲
      ⟨    string lastName;     ⟩
       ╲   string firstName;   ╱
        ╲     int age; }      ╱
         ╲──────────┬────────╱
                    ↓
        ┌───────────────────────┐
        │  PersonRec thePerson  │
        └───────────┬───────────┘
                    ↓
         ╱────────────────────╲
        ╱      input to         ╲
       ╱   thePerson.firstName   ╲
      ╱    thePerson.lastName      ╲
      ╲       thePerson.age        ╱
       ╲──────────┬───────────────╱
                  ↓
        ╱────────────────────╲
       ╱       display         ╲
      │   thePerson.firstName   │
      │   thePerson.lastName    │
       ╲     thePerson.age     ╱
        ╲─────────┬───────────╱
                  ↓
            ┌─────────┐
           (    end    )
            └─────────┘
```
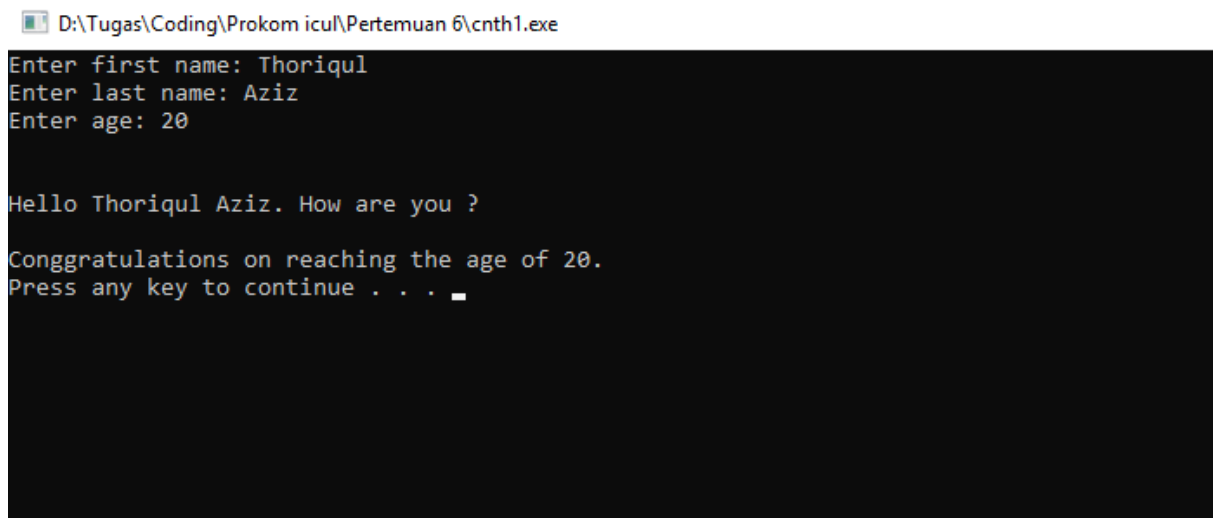
II. Listing Program


```cpp
//this program demonstrates the use of a record
#include <iostream>
#include <cstdlib>
using namespace std;

struct PersonRec
{
    string lastName;
    string firstName;
    int age;
};

int main ( int argc, char*argv[])
{
    PersonRec thePerson;
    cout<<"Enter first name: ";cin>>thePerson.firstName;
    cout<<"Enter last name: ";cin>>thePerson.lastName;
    cout<<"Enter age: ";cin>>thePerson.age;
    cout<<"\n\nHello"<<thePerson.firstName<<" "<<thePerson.lastName;
    cout<<". How are you ? \n";
    cout<<"\nConggratulations on reaching the age of "<<thePerson.age<<".\n";
    system("PAUSE");
    return 0;
}
```

III. Hasil Display


```
Enter first name: Thoriqul
Enter last name: Aziz
Enter age: 20


Hello Thoriqul Aziz. How are you ?

Conggratulations on reaching the age of 20.
Press any key to continue . . .
```
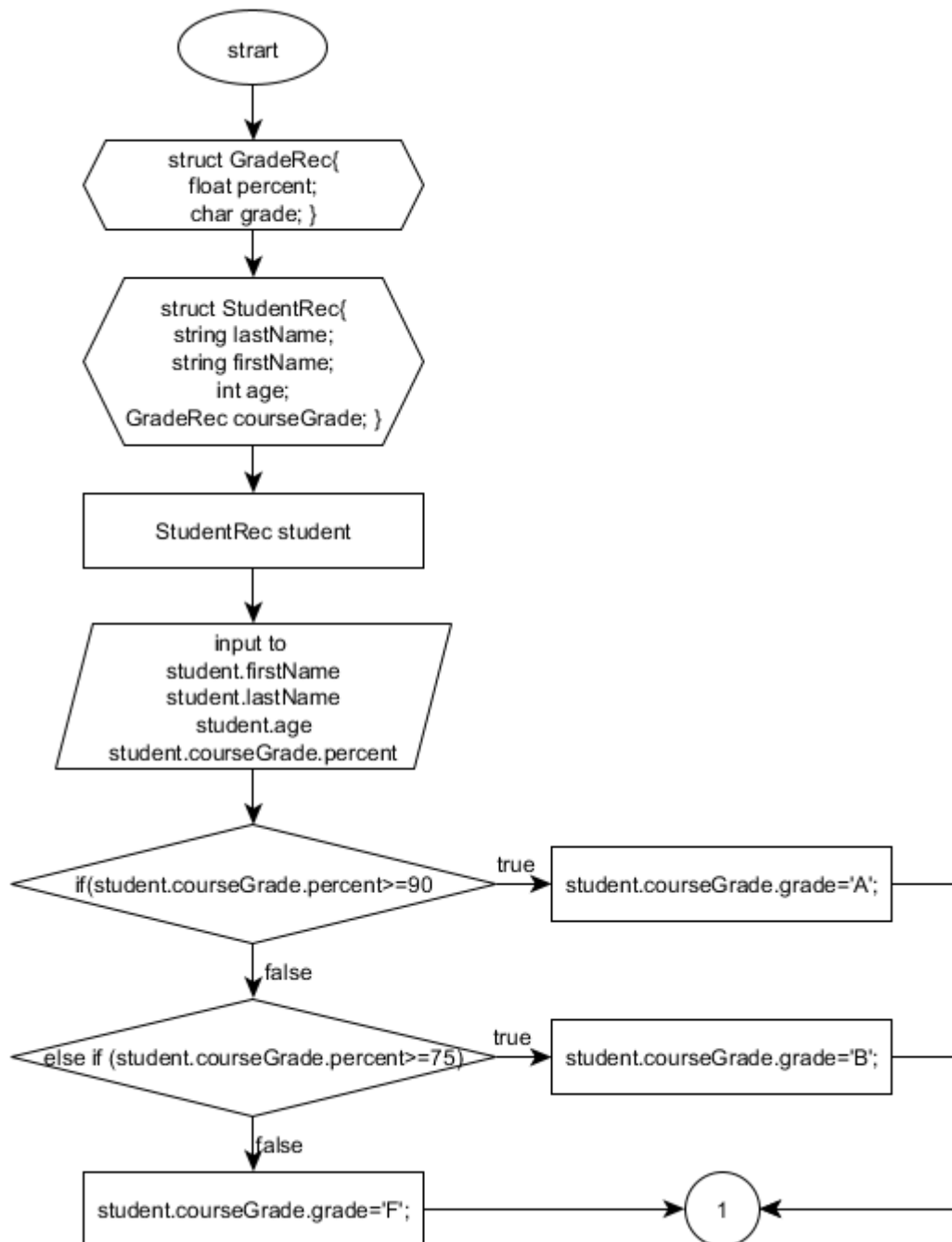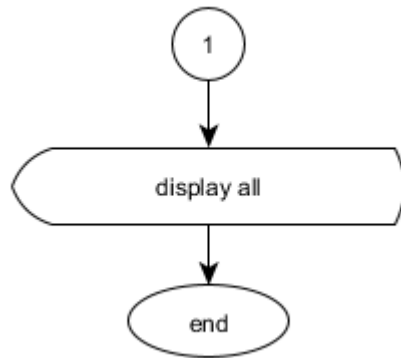
IV. Pembahasan

Program record yang pertama adalah progam record yang masih sederhana, yaitu dengan konsep membuat struct yang didalam struct tersebut didefinisikan variable dan tipe data dari variable tersebut. Dan pada fungsi main, nama struct bis didefinisikan dengan fungsi lain. Dan untuk memanggil variable didalm struct cukup dengan memanggil nama struct dan variable dengan format sesuai dengan listing program. Sehingga dengan ini dapat memperpendek penggunaan variable dan lebih memudahkan untuk penyusunan program.
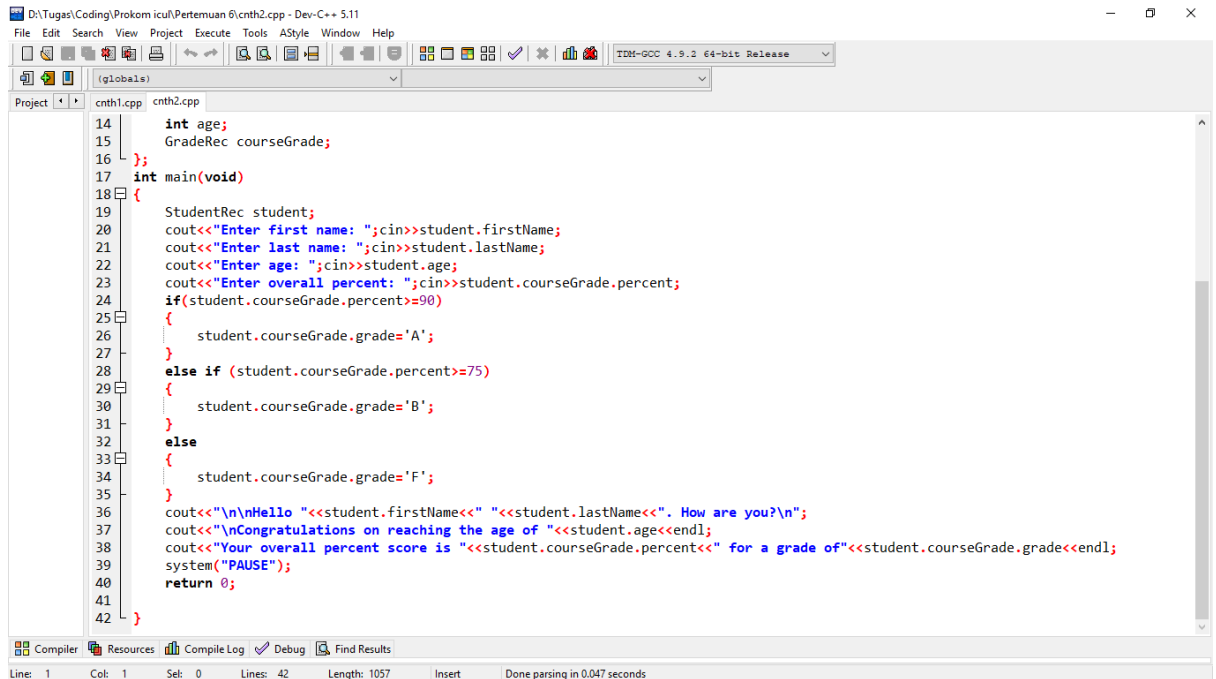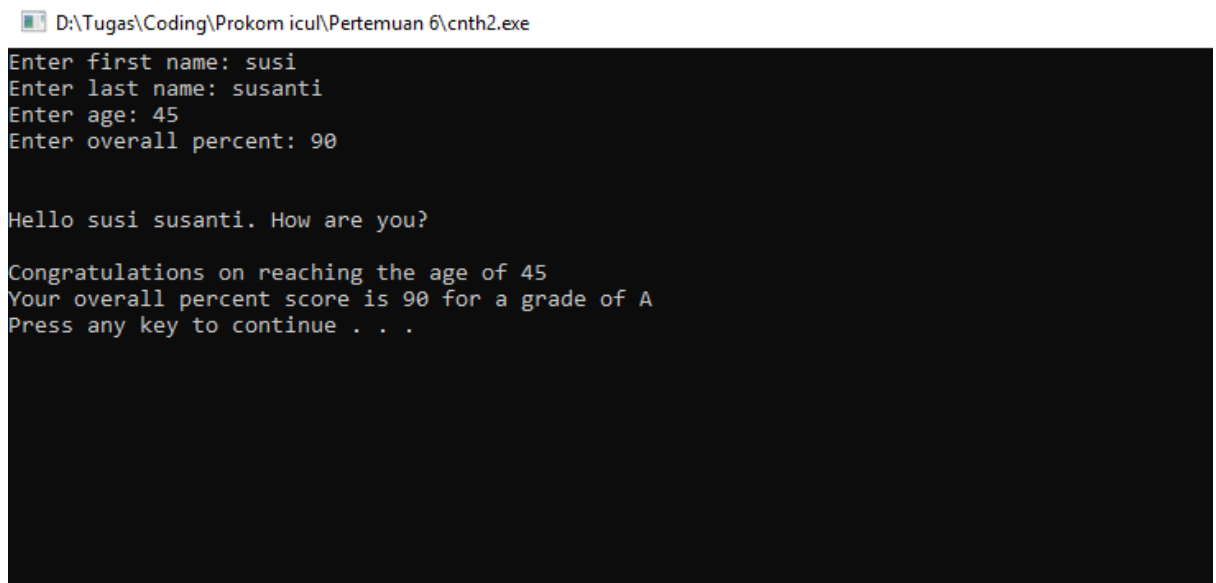
Program 2

I.   Flowchart

```
                    ┌─────────────┐
                   (    strart     )
                    └──────┬──────┘
                           │
                           ▼
              ╱─────────────────────────╲
             ⟨    struct GradeRec{        ⟩
             ⟨      float percent;        ⟩
              ╲     char grade; }        ╱
                           │
                           ▼
              ╱─────────────────────────╲
             ⟨    struct StudentRec{      ⟩
             ⟨      string lastName;      ⟩
             ⟨      string firstName;     ⟩
             ⟨         int age;           ⟩
              ╲ GradeRec courseGrade; }  ╱
                           │
                           ▼
              ┌─────────────────────────┐
              │    StudentRec student    │
              └─────────────────────────┘
                           │
                           ▼
              ╱─────────────────────────╲
             ╱        input to            ╲
            ╱      student.firstName       ╲
            ╲      student.lastName        ╱
             ╲        student.age         ╱
              ╲ student.courseGrade.percent
                           │
                           ▼
        ◇─────────────────────────────────◇          true    ┌────────────────────────────────┐
        ◇ if(student.courseGrade.percent>=90 ◇────────────────▶│ student.courseGrade.grade='A';  │
        ◇─────────────────────────────────◇                  └────────────────────────────────┘
                           │ false                                            │
                           ▼                                                  │
        ◇─────────────────────────────────────◇      true    ┌────────────────────────────────┐
        ◇ else if (student.courseGrade.percent>=75) ◇─────────▶│ student.courseGrade.grade='B';  │
        ◇─────────────────────────────────────◇              └────────────────────────────────┘
                           │ false                                            │
                           ▼                                                  │
   ┌────────────────────────────────┐                        ┌───┐           │
   │ student.courseGrade.grade='F';  │───────────────────────▶│ 1 │◀──────────┘
   └────────────────────────────────┘                        └───┘
```

II. Listing Program


```cpp
//This program demonstrans the use of a nested struct
#include <cstdlib>
#include <iostream>
using namespace std;
struct GradeRec
{
    float percent;
    char grade;
};
struct StudentRec
{
    string lastName;
    string firstName;
    int age;
    GradeRec courseGrade;
};
int main(void)
{
    StudentRec student;
    cout<<"Enter first name: ";cin>>student.firstName;
    cout<<"Enter last name: ";cin>>student.lastName;
    cout<<"Enter age: ";cin>>student.age;
    cout<<"Enter overall percent: ";cin>>student.courseGrade.percent;
    if(student.courseGrade.percent>=90)
    {
        student.courseGrade.grade='A';
    }
    else if (student.courseGrade.percent>=75)
    {
```

```
        int age;
        GradeRec courseGrade;
};
int main(void)
{
        StudentRec student;
        cout<<"Enter first name: ";cin>>student.firstName;
        cout<<"Enter last name: ";cin>>student.lastName;
        cout<<"Enter age: ";cin>>student.age;
        cout<<"Enter overall percent: ";cin>>student.courseGrade.percent;
        if(student.courseGrade.percent>=90)
        {
            student.courseGrade.grade='A';
        }
        else if (student.courseGrade.percent>=75)
        {
            student.courseGrade.grade='B';
        }
        else
        {
            student.courseGrade.grade='F';
        }
        cout<<"\n\nHello "<<student.firstName<<" "<<student.lastName<<". How are you?\n";
        cout<<"\nCongratulations on reaching the age of "<<student.age<<endl;
        cout<<"Your overall percent score is "<<student.courseGrade.percent<<" for a grade of"<<student.courseGrade.grade<<endl;
        system("PAUSE");
        return 0;

}
```
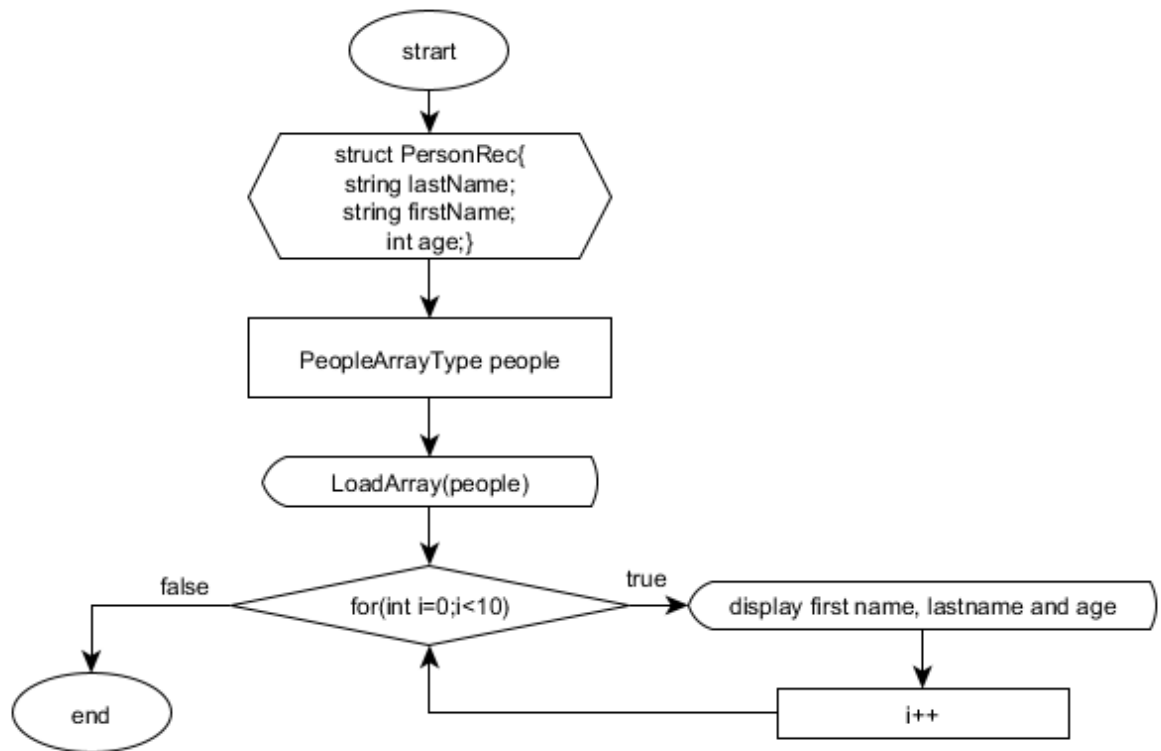
III.   Hasil Display


```
Enter first name: susi
Enter last name: susanti
Enter age: 45
Enter overall percent: 90


Hello susi susanti. How are you?

Congratulations on reaching the age of 45
Your overall percent score is 90 for a grade of A
Press any key to continue . . .
```
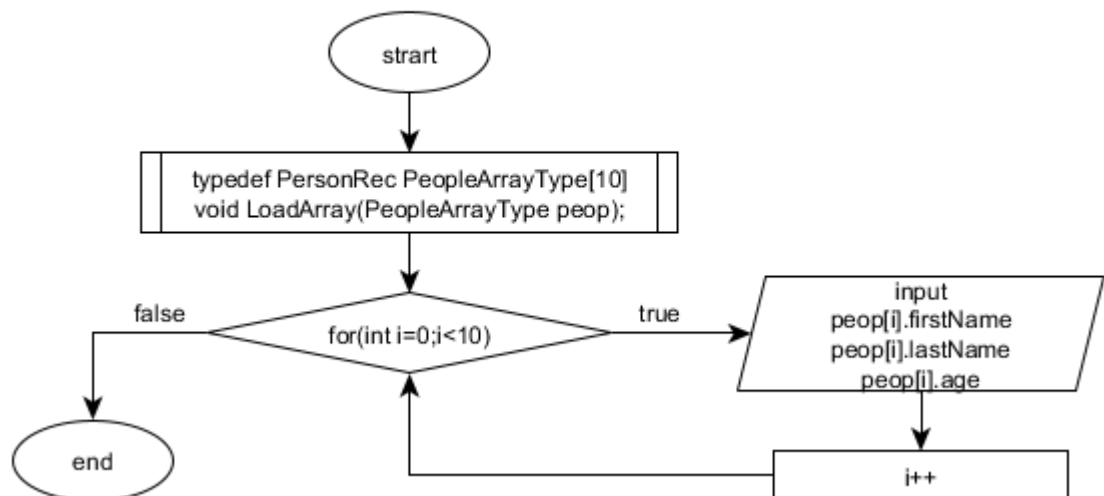
IV.   Pembahasan

Pada program ini. Menggunakan struct dengan tambahan program seleksi pada fungsi main. Pada program ini juga, antar struct dapat dilakukan pengaitan,yang kemudian akan dipanggil dengan variable pendefinisi terakhir. Dengan skema yang sama dengan program 1 dengan tambahan program seleksi maka didapatkan hasil display seperti diatas.
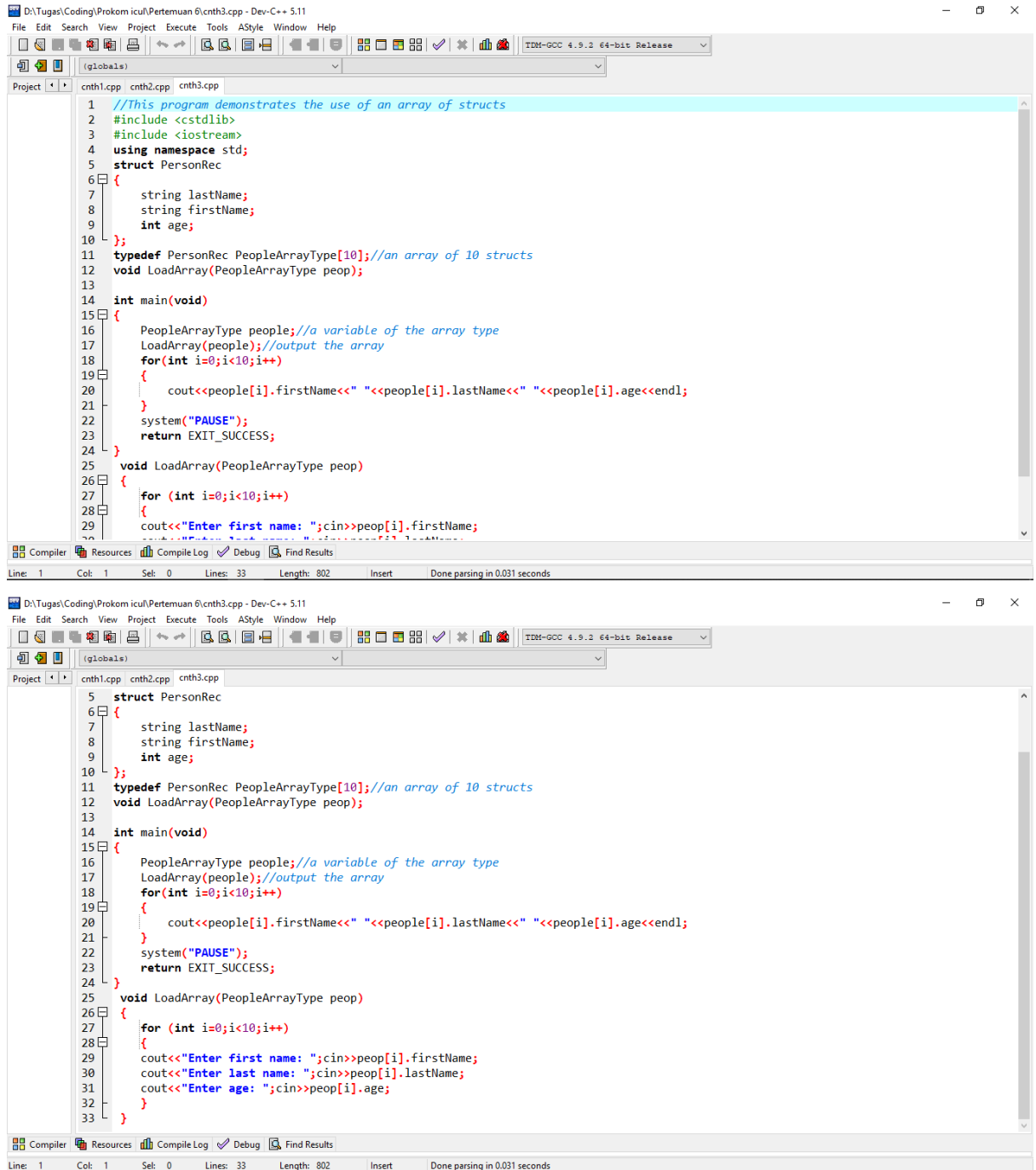
Program 3

I. Flowchart

```
                    ┌─────────┐
                    │  strart │
                    └────┬────┘
                         │
                         ▼
              ╱─────────────────────╲
             ╱  struct PersonRec{     ╲
            │   string lastName;       │
            │   string firstName;      │
             ╲  int age;}             ╱
              ╲─────────────────────╱
                         │
                         ▼
              ┌─────────────────────┐
              │ PeopleArrayType people│
              └──────────┬──────────┘
                         │
                         ▼
              ╭─────────────────────╮
              │  LoadArray(people)   │
              ╰──────────┬──────────╯
                         │
                         ▼
   false        ◇─────────────────◇    true    ╭──────────────────────────────╮
  ◄────────────  for(int i=0;i<10)   ──────────►│ display first name, lastname  │
                 ◇─────────────────◇            │         and age               │
       │                  ▲                      ╰──────────────┬───────────────┘
       ▼                  │                                     │
  ┌─────────┐             │                                     ▼
  │   end   │             │                      ┌──────────────────────────────┐
  └─────────┘             └──────────────────────│            i++               │
                                                 └──────────────────────────────┘
```

function LoadArray(PeopleArrayType peop)

```
                    ┌─────────┐
                    │  strart │
                    └────┬────┘
                         │
                         ▼
         ┌�┤─────────────────────────────────────┤�┐
         │ typedef PersonRec PeopleArrayType[10]  │
         │ void LoadArray(PeopleArrayType peop);   │
         └�┤─────────────────────────────────────┤�┘
                         │
                         ▼
   false        ◇─────────────────◇    true       ╱──────────────────╲
  ◄────────────  for(int i=0;i<10)   ──────────►  ╱   input            ╲
                 ◇─────────────────◇             │   peop[i].firstName  │
       │                  ▲                       │   peop[i].lastName   │
       ▼                  │                        ╲  peop[i].age       ╱
  ┌─────────┐             │                         ╲──────────┬───────╱
  │   end   │             │                                    │
  └─────────┘             │                                    ▼
                          │                      ┌──────────────────────────────┐
                          └──────────────────────│            i++               │
                                                 └──────────────────────────────┘
```

II. Listing Program


```cpp
//This program demonstrates the use of an array of structs
#include <cstdlib>
#include <iostream>
using namespace std;
struct PersonRec
{
    string lastName;
    string firstName;
    int age;
};
typedef PersonRec PeopleArrayType[10];//an array of 10 structs
void LoadArray(PeopleArrayType peop);

int main(void)
{
    PeopleArrayType people;//a variable of the array type
    LoadArray(people);//output the array
    for(int i=0;i<10;i++)
    {
        cout<<people[i].firstName<<" "<<people[i].lastName<<" "<<people[i].age<<endl;
    }
    system("PAUSE");
    return EXIT_SUCCESS;
}
 void LoadArray(PeopleArrayType peop)
{
    for (int i=0;i<10;i++)
    {
    cout<<"Enter first name: ";cin>>peop[i].firstName;
```



```cpp
struct PersonRec
{
    string lastName;
    string firstName;
    int age;
};
typedef PersonRec PeopleArrayType[10];//an array of 10 structs
void LoadArray(PeopleArrayType peop);

int main(void)
{
    PeopleArrayType people;//a variable of the array type
    LoadArray(people);//output the array
    for(int i=0;i<10;i++)
    {
        cout<<people[i].firstName<<" "<<people[i].lastName<<" "<<people[i].age<<endl;
    }
    system("PAUSE");
    return EXIT_SUCCESS;
}
 void LoadArray(PeopleArrayType peop)
{
    for (int i=0;i<10;i++)
    {
    cout<<"Enter first name: ";cin>>peop[i].firstName;
    cout<<"Enter last name: ";cin>>peop[i].lastName;
    cout<<"Enter age: ";cin>>peop[i].age;
    }
}
```

III.   Hasil Display

```
D:\Tugas\Coding\Prokom icul\Pertemuan 6\cnth3.exe
Enter first name: susi
Enter last name: susanti
Enter age: 56
Enter first name: budi
Enter last name: santoso
Enter age: 45
Enter first name: james
Enter last name: bond
Enter age: 34
Enter first name: dani
Enter last name: sudigbyo
Enter age: 43
Enter first name: susi
Enter last name: susanti
Enter age: 46
Enter first name: icul
Enter last name: aziz
Enter age: 20
Enter first name: aziz
Enter last name: icul
Enter age: 21
Enter first name: culicul
Enter last name: aziz
Enter age: 23
Enter first name: aziz
Enter last name: culicul
Enter age: 24
Enter first name: aku
Enter last name: ganteng
Enter age: 21
susi susanti 56
budi santoso 45
james bond 34
dani sudigbyo 43
susi susanti 46
icul aziz 20
aziz icul 21
culicul aziz 23
aziz culicul 24
aku ganteng 21
Press any key to continue . . . _
```

IV.   Pembahasan

Program ini sama dengan program pgrogram sebelmnya, akan tetapi program ini
ditambahkan function, looping, dan array. Program ini mula mula menggunakan struct,
yang kemudian strcut tersebut didefinisiakan lagi menjadi sebuah array satu dimensi
dengan panjang 10. Function dingunakan untuk memberi masukan kepada program
yang nantinya akan dikeluarkan pada fungsi main. Karena menggunakan aaray, baik
pada fungsi main dan function sama sam menggunakan looping untuk memasukan/
mengeluarkan nilai variable array sehingga didapatkan outpis display seperti diatas.