Bahan Ajar

Chapter 14

Materi Pembelajaran

Matakuliah :

PEMROGRAMAN TERSTRUKTUR

Kode Matakuliah : SKO 21411

Prodi : SISTEM KOMPUTER

Dosen Pengampu Matakuliah:

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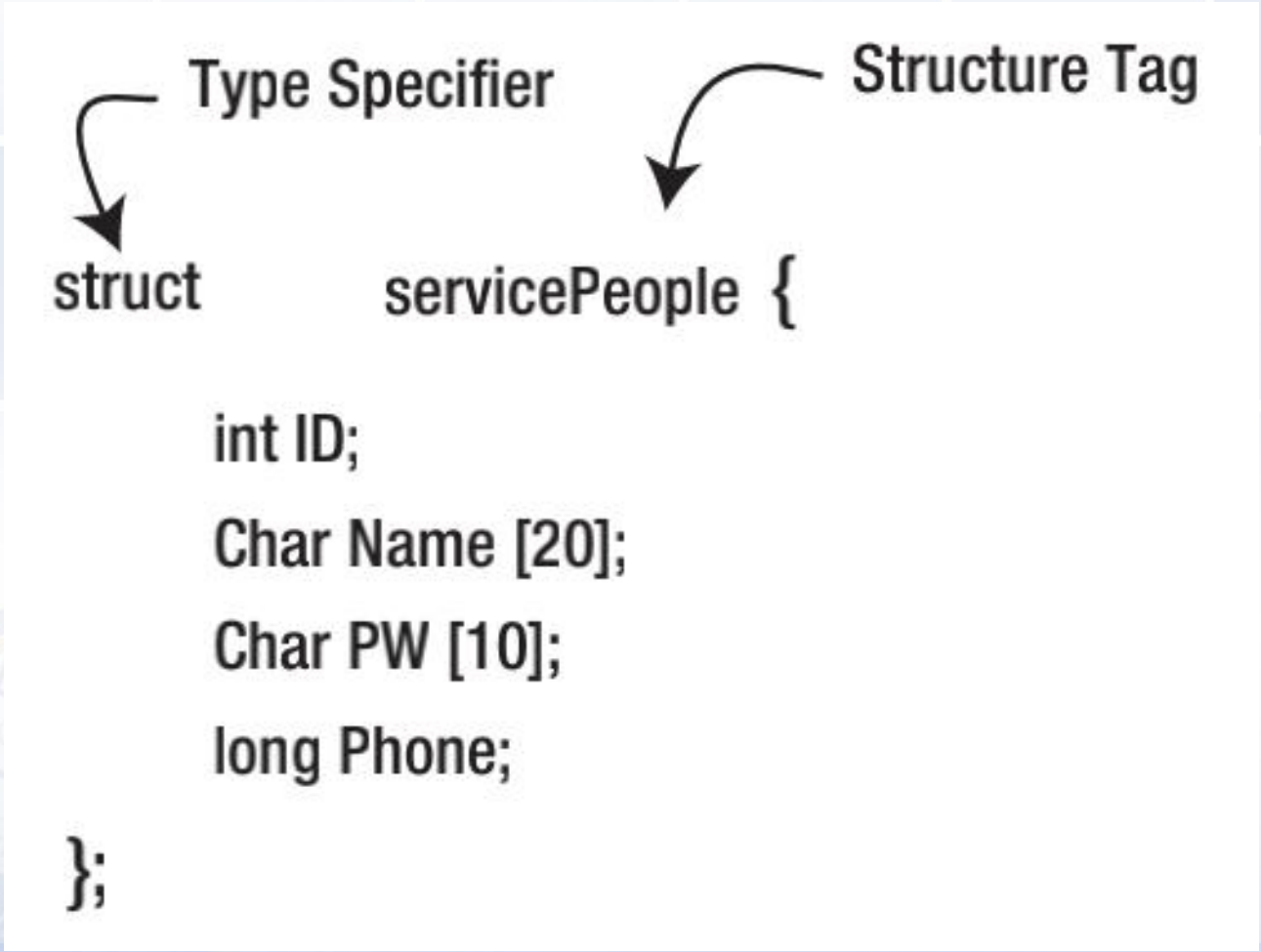
Structures, Unions, and Data Storage

Declaring a Structure

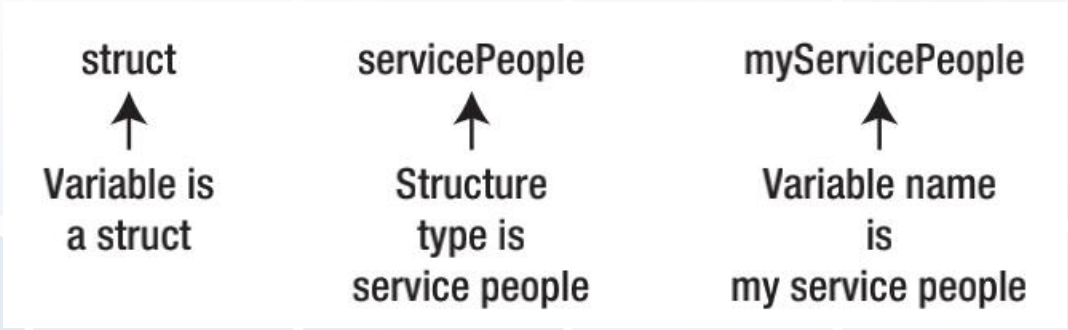
An example will help you to see how a structure is declared in C. Sticking with our service people example, you might declare the associated structure as follows:

```
struct servicePeople {
int ID;
char Name[20];
char PW[10];
long Phone;
};
```

Declaring a Structure



Defining a Structure



An alternative way to define a structure is:

```
struct servicePeople {
int ID;
char Name[20];
char PW[10];
long Phone;
} myServicePeople;
```

Defining a Structure

You can, however, also define a structure variable without a structure tag, as in:

```
struct {
        int ID;
        char Name[20];
        char PW[10];
        long Phone;
} myServicePeople, yourServicePeople;
```

Initializing a Structure

If you wish, you can initialize a structure at its point of definition, as in:

```
servicePeople myServicePeople = {
 101, // ID number
 "Kack's Lawn Service", // Company name
 "Clowder", // Password
 2345678, // Phone number
},
```

Unions

You could define temporary working variables, such as:

```
char tempChar;
int tempInt;
float tempFloat;
```

And then assign the sensor readings into the appropriate variable.

Unions

You could also use the following union:

```
union {
 char tempChar;
 int tempInt;
 float tempFloat;
} sensorReading;
```

Unions

The union defined as sensorReading is big enough to hold any one of the three sensor types, but only one at a time. In other words, you can place a float into the union and then read it back using the code:

```
float currentFloatSensorReading = 51.25;
sensorReading.tempFloat = currentFloatSensorReading;
        //move data into the union
        // some more code...
currentFloatSensorReading = sensorReading.tempFloat; //
get the data back from the union
```

Tugas Mandiri (teori):

1. Apa Fungsi ARRAY dalam pemrograman?
2. Jelaskan kapan fungsi ARRAY efektif digunakan dalam pemrograman?

Tugas Mandiri (prakt):

```
// Inisialisasi Pin LED
const int pinLED1 = 10;
const int pinLED2 = 11;
const int pinLED3 = 12;
const int pinLED4 = 13;
void setup() {
// pin LED sebagai output
  pinMode(pinLED1,OUTPUT);
  pinMode(pinLED2,OUTPUT);
  pinMode(pinLED3,OUTPUT);
  pinMode(pinLED4,OUTPUT);
}
void loop() {
  digitalWrite(pinLED1,LOW);
  digitalWrite(pinLED2,LOW);
  digitalWrite(pinLED3,LOW);
  digitalWrite(pinLED4,LOW);
  delay(1000);
  digitalWrite(pinLED1,HIGH);
  delay(1000);
  digitalWrite(pinLED2,HIGH);
  delay(1000);
  digitalWrite(pinLED3,HIGH);
  delay(1000);
  digitalWrite(pinLED4,HIGH);
  delay(1000);
}.
```

```
// Inisialisasi Jumlah LED
const int numLED = 4;
// LED 1,2,3,&4 jadi 1 varibel
// dengaan alamat index 0,1,2,3
const int pinLED[numLED] = {10,11,12,13};
void setup() {
  // Inisialisasi semua pin LED sebagai OUTPUT
  for(int i=0; i<4; i++){
  pinMode(pinLED[i],OUTPUT);
  }
}
void loop() {
  // Matikan semua LED
  for(int i=0; i<4; i++){
  digitalWrite(pinLED[i],LOW);
  }
  delay(1000);
  // Hidupkan semua LED bertahap dg jeda 1
detik
  for(int i=0; i<4; i++){
  digitalWrite(pinLED[i],HIGH);
  delay(1000);
  }
}
```

Tugas Mandiri (prakt):

1. Apa perbedaan metode kedua Sketch Program di atas?
2. Bagaimana kondisi Led saat Sketch Program tersebut di jalankan?

end