

# Dasar Pemrograman: Record

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# Record

- Record merupakan salah satu tipe data terstruktur yang terdiri atas sekumpulan variabel data
- Record memungkinkan untuk memanipulasi sekumpulan elemen data dengan tipe yang tidak sama, yang seolah-olah merupakan satu obyek
- Variabel data penyusun record disebut field

# Record

- Record sering digunakan dalam program terutama yang berhubungan dengan file. Misalnya, sebuah record tentang data seseorang, yang terdiri dari nama, alamat, umur dan pekerjaan.
- Semua data tersebut dihimpun dalam satu record dengan nama, alamat, umur dan pekerjaan sebagai field- fieldnya

# Deklarasi Record (1)

## Format:

```
Type Name_of_record = record
    name_of_field (1) : type_of_field (1);
    name_of_field (2) : type_of_field (2);
    name_of_field (3) : type_of_field (3);
        :           :
        :           :
    name_of_field (n) : type_of_field (n);
end;
```

# Declaring Records (2)

Example:

```
Type Person = record
    name      : string;
    age       : integer;
    height    : real;
    weight    : real;
end;
```

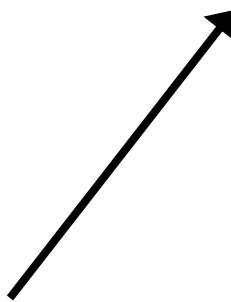
# Declaring Variables That Are Records: What You Get

## Format:

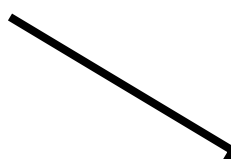
*name\_of\_variable : name of record;*

## Example:

```
var michaelMoore : Person;  
var bartSimpson   : Person;
```



```
michaelMoore  
name  
age  
height  
weight
```



```
bartSimpson  
name  
age  
height  
weight
```

# Using Record Variables (1)

**Example:** Declaring the record and instances of the record

```
type
  Person = record
    name      : string;
    age       : integer;
    height    : real;
    weight    : real;
  end; (* Declaration of a Person *)

var michaelMoore : Person;
var bartSimpson   : Person;

begin
  :           :           :
end.
```

# Using Record Variables (2)

Assignment (field basis):

e.g.,

```
bartSimpson.name := 'Bart';  
bartSimpson.age := 10;  
bartSimpson.height := 48;  
bartSimpson.weight := 80;
```

Assignment (all fields are copied – if the records are declared to be the same type)

e.g.,

```
michaelMoore := bartSimpson;
```



# Assignment Between Different Record Types Cannot Be Performed

Example:

```
Type  
Cat = record  
    name : string [NAME_LENGTH];  
end; (* Declaration of a Cat *)
```

```
Dog = record  
    name : string [NAME_LENGTH];  
end; (* Declaration of a Dog *)
```

```
var aCat : Cat;  
var aDog : Dog;  
begin  
    aCat := aDog;  
end.
```



**Problem:**

- Cat <> Dog
- Each has been declared to be a different type of variable.

# Assignment Between The Same Type Of Record Can Be Performed

Example:

```
type
  Pet = record
    name : string;
  end; (* Declaration of a Pet *)
```

```
var aCat : Pet;
var aDog : Pet;
begin
  aCat := aDog;
end.
```



**OK:**

- Cat and Dog are of the same type

# Contoh Lain

- Mahasiswa memiliki nama, NIM, dan nilai. dapat disimpan dalam satu variabel.
- Contoh

```
Type mahasiswa = record
    nama: string;
    NIM : integer;
    nilai: char;
end;
```

# Mengakses Record

- Cara pengaksesan

- Jika `mhs1` adalah variabel yang bertipe `mahasiswa` maka elemennya diakses dengan :

```
mhs1.nama
```

```
mhs1.NIM
```

```
mhs1.nilai
```

# Contoh Program

```
program kuadranpoint;
type point = record
    x : integer; {absis}
    y : integer; {ordinat}
end;
var
    p : point;
    kuadran : integer;
begin
    writeln ('Masukkan absis p');
    readln (p.x);
    writeln ('Masukkan ordinat p');
    readln (p.y);
```

# Contoh Program (lanjutan)

```
if (p.x > 0) and (p.y > 0) then
    kuadran := 1
else if (p.x < 0) and (p.y > 0) then
    kuadran := 2
else if (p.x < 0) and (p.y < 0) then
    kuadran := 3
else if (p.x > 0) and (p.y < 0) then
    kuadran := 4
else
    kuadran := 0;

writeln ('Point (' , p.x, ', ' , p.y, ') berada di
    kuadran ', kuadran);
end.
```

# A Shortcut For Referencing All The Fields Of A Record: With-Do

Allows you to refer to the fields of a record without having to constantly refer to the name of the record variable.

## Format:

```
with name of record variable do  
  body
```

## Example:

```
with bartSimpson do  
  begin  
    writeln('Personal information:');  
    writeln('Name: ':8, name);  
    writeln('Age: ':8, age);  
    writeln('Height: ':8, height);  
    writeln('Weight: ':8, weight);  
  end; (* With do for Bart Simpson *)
```

# Review

1. Dengan array dan record simpan dan tampilkan data barang berikut:
  - Nama: sari apel, kualitas: A, harga: 550
  - Nama: jenang apel, kualitas B, harga: 750
  - Nama: buah apel, kualitas C, harga: 950