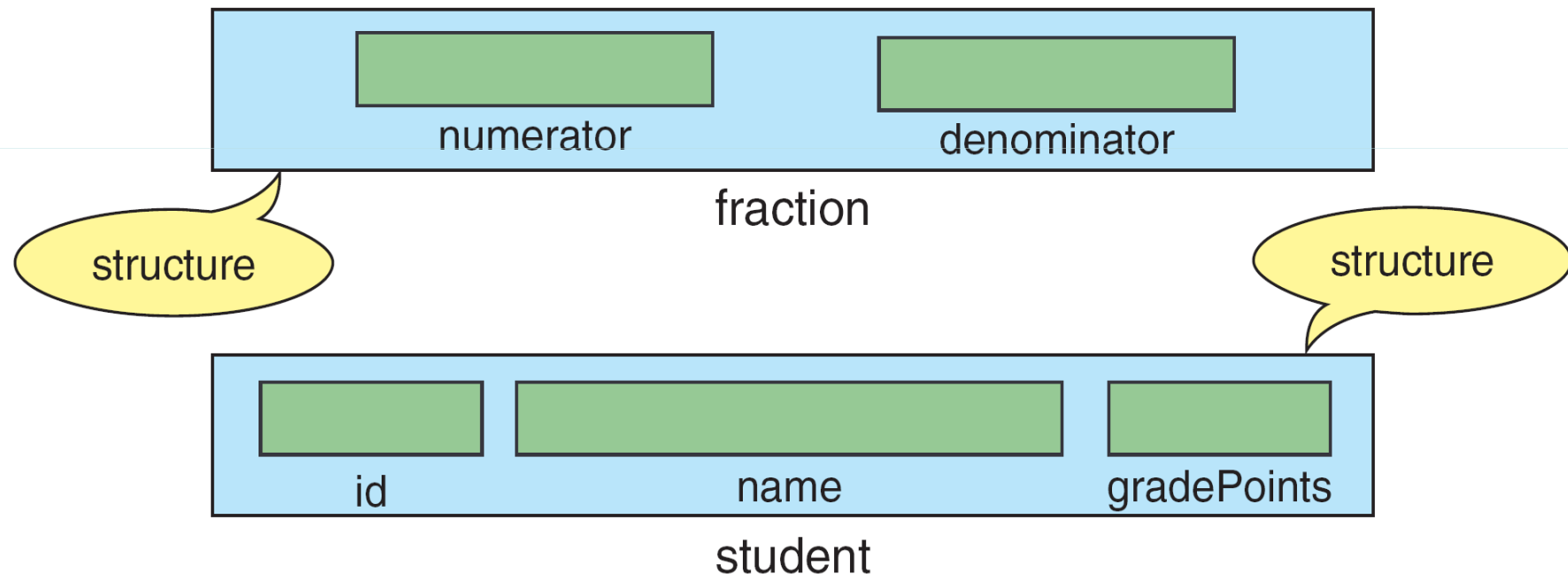


Structure

- ▶ A structure is a collection of related elements, possibly of different types, having a single name.



Defining a Structure

Syntax

```
struct <name>
{
    <type> <member1>
    <type> <member2>
    . . . . .
    . . . . .
    <type> <membern>
} <struct variables>;
```

Example

```
struct employee
{
    int emp_no;
    char name[30];
    char designation[20];
    char dept[20];
} emp;
```

OR

```
struct employee
{
    int emp_no;
    char name[30];
    char designation[20];
    char dept[20];
};
struct employee emp;
```

Referencing Structure Elements

Syntax

<structure variable name>.<element name>

Ex.

- emp.emp_no=4644;
- scanf("%d",&emp.emp_no);
- printf("%d",emp.emp_no);
- struct employee emp =
 {4545,"Ram","System Administrator","IT"};

Structure Assignments

```
struct employee
{
    int emp_no;
    char name[30];
    char designation[20];
    char dept[20];
} emp1, emp2;
emp2 = emp1;
```

Type Mismatch Error

```
struct first
```

```
{
```

```
    int x;
```

```
    float y;
```

```
}f;
```

```
struct second
```

```
{
```

```
    int x;
```

```
    float y;
```

```
}s;
```

```
f=s;
```

//type mismatching

Nested Structures

```
struct address
{
    int houseno;
    char area[20];
    char city[20];
    char state[20];
};
struct employee
{
    int emp_no;
    char name[30];
    char designation[20];
    char dept[20];
    struct address addr;
    float basic_pay;
}emp;
```

Accessing nested structure members

emp.addr.houseno

User defined Structure Type

Syntax

```
typedef struct
{
    <type> <member1>
    <type> <member2>
    . . . . .
    . . . . .
}<new_type>;
```

Example

```
typedef struct
{
    int houseno;
    char area[20];
    char city[20];
    char state[20];
}addr;
addr emp1,emp2;
```


Structures and Arrays

Arrays of Structures

```
struct employee
{
    int emp_no;
    char name[30];
    char designation[20];
    char dept[20];
}emp[10];
```

Example:

```
for(i=0;i<n;i++)
    gets(emp[i].name);
```

Arrays within Structures

Example

```
struct student
{
    int rollno;
    char name[10];
    int marks[5];
}stud;
```