



STRUCTURES

Keyword: struct



STRUCTURE SPECIFICATIONS

```
struct tag
{
    variable declarations;
};
```

- Structure syntax
 - The “struct” keyword
 - A structure tag or name
 - A list of variable declarations
 - Each declaration is called a member or field
- Creates a new type specifier (i.e., a new data type)

STRUCTURE SPECIFICATIONS AND DEFINITIONS

SPECIFICATION

```
struct student
{
    int      id;
    string   name;
    double   gpa;
};
```

DEFINITIONS

```
student  s1;
student  s2;
student  s3;

student* s4 = new student;
student* s5 = new student;
student* s6 = new student;
```

STRUCTURE INITIALIZATIONS PART I

```
student  s1 = { 123, "dilbert", 3.0 };  
student  s2 = { 456, "alice", 4.0 };  
student  s3;  
s3 = { 789, "wally", 2.0 };
```

s1

id	<input type="text" value="123"/>
name	<input type="text" value="dilbert"/>
gpa	<input type="text" value="3.0"/>

s2

id	<input type="text" value="456"/>
name	<input type="text" value="alice"/>
gpa	<input type="text" value="4.0"/>

s3

id	<input type="text" value="789"/>
name	<input type="text" value="wally"/>
gpa	<input type="text" value="2.0"/>

STRUCTURE INITIALIZATIONS

PART 2

DEFAULT INITIALIZATION

```
struct student
{
    int    id = 789;
    string name = "wally";
    double gpa = 2.0;
};
```

DESIGNATED INITIALIZERS

```
student s3 = { .id = 789,
               .name = "wally",
               .gpa = 2.0 };
```

```
student s3;
s3 = { .id = 789,
       .name = "wally",
       .gpa = 2.0 };
```



MEMBER SELECTION

```
struct student
{
    int      id;
    string   name;
    double   gpa;
};
```

	id	name	gpa
s1	123	dilbert	3.0
s2	456	alice	4.0
s3	789	wally	2.0

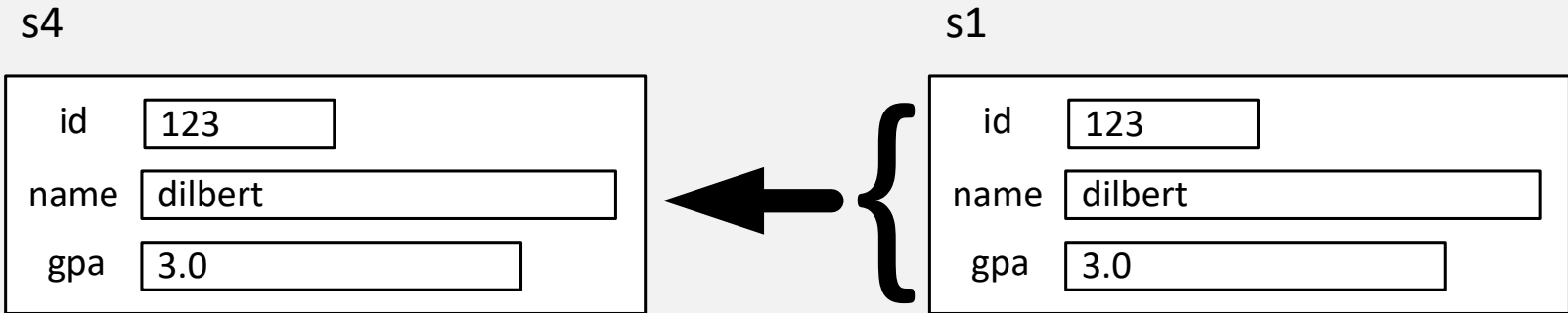
```
student s1 = { 123, "dilbert", 3.0 };
student s2 = { 456, "alice", 4.0 };
student s3 = { 789, "wally", 2.0 };
```

s2.name



STRUCTURE ASSIGNMENT

```
student s4;  
s4 = s1;
```





STRUCTURE FUNCTION ARGUMENTS

```
void print(student temp) { . . . }  
    . . .  
print(s2);
```

```
void print(student temp)  
{  
    temp
```

