

Structures in C++

C++ Programming



Why Structure?

```
string name = "Carolyn";
```

```
int age = 34;
```

```
float height = 5.6f;
```

```
float weight = 65.2f;
```

```
double salary = 80000;
```

person

```
string name = "Carolyn";
```

```
int age = 34;
```

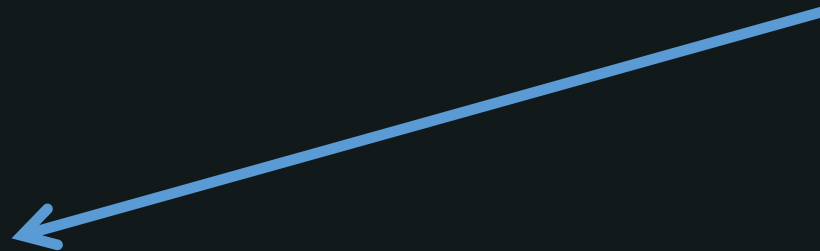
```
float height = 5.6f;
```

```
float weight = 62.2f;
```

```
double salary = 80000;
```



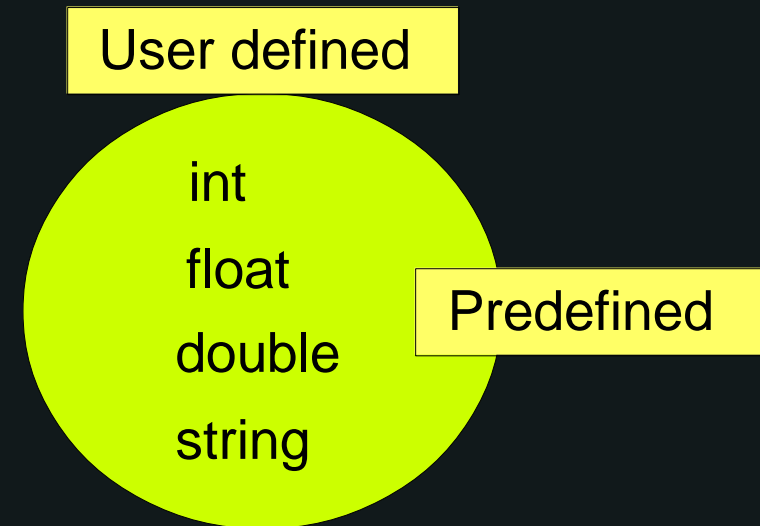
Person



What is Structure ?

A structure is a **collection of predefined datatypes** (int, float, double etc.)

Structures help in creating user **defined data type** .



Define Structure

keyword

tag

```
struct person  
{  
    string name;  
    int age;  
    float height;  
    float weight;  
    double salary;  
};
```

*Structure
Members*

*Semicolon
(terminate
defination)*

```
int pVar;           ( data type  variable_name )
```

```
person pVar;        ( data type  variable_name )
```

```
pVar.name = "Carolyn";    pVar.age= 34;
```

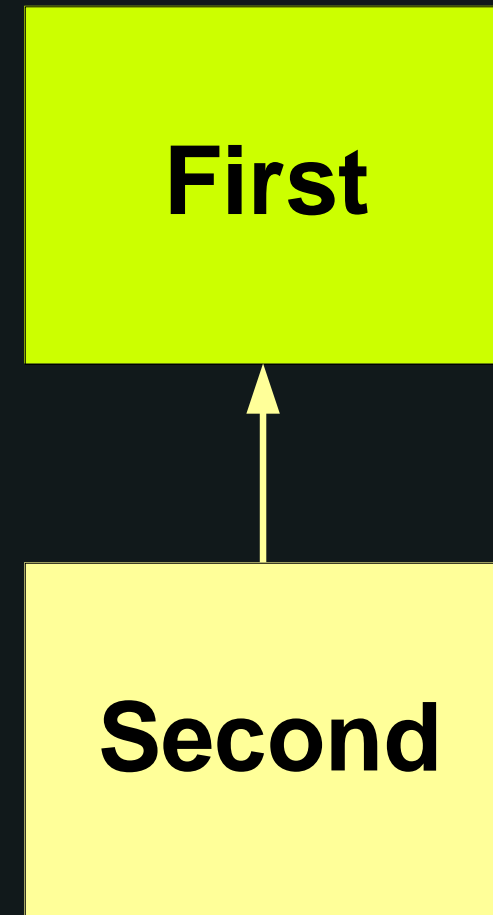
Program

Write a program, to create user defined data type *phone* which contain *members* (Name, Processor, RAM, ROM, Camera, Price) using *Structures*.

Nested Structure

```
struct first  
{  
    int x;  
};
```

```
struct second  
{  
    first y;  
};
```



Program

Write a program, to create user defined variable *phone* which contain *members* (Name, Processor, RAM, ROM, Camera (F/R), Price) using *Nested Structures*.

Other Key Concepts

> Structure Initialization

```
struct person
{
    string name;
    int age;
    float height;
    float weight;
    double salary;
};
```

```
person p1;
p1 = { "Carolin", 34, 5.6, 65, 80000 };
```


Other Key Concepts

> Structure Variable Assignment

```
struct person
{
    string name;
    int age;
    float height;
    float weight;
    double salary;
};
```

```
person p1, p2;
p1 = { "Carolyn", 34, 5.6, 65, 80000 };
p2 = p1;
```

What/Why of Padding

struct padding

```
{  
  int age;           // 4 bytes  
  double salary;     // 8 bytes  
  short int ID;      // 2 bytes  
};
```

int age;		8	32 bits
double salary;		8	
short int id;		8	64 bits

What/Why of Padding

struct padding

{

double salary; // 8 bytes

int age; // 4 bytes

short int ID; // 2 bytes

};

double salary;

8

32 bits

int age;

short int id;

8

64 bits

What/Why of Padding

struct padding

```
{  
    double salary;           // 8 bytes  
    short int ID;            // 2 bytes  
    int age;                 // 4 bytes  
};
```

double salary;		
Short int id;		int age;

8

8

32 bits

64 bits