



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.

An Autonomous Institution

COURSE NAME : 23CST101 PROBLEM SOLVING AND C PROGRAMMING
I YEAR/ V SEMESTER

UNIT – V STRUCTURES UNIONS AND FILES

UNIONS

Department of Computer Science and Engineering



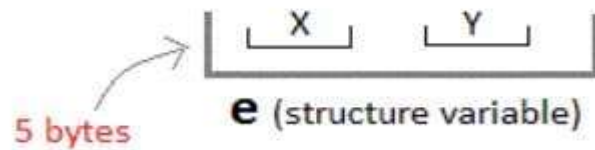
C Unions



Unions are conceptually similar to structures. The syntax to declare/define a union is also similar to that of a structure. The only difference is in terms of storage. In **structure** each member has its own storage location, whereas all members of **union** use a single shared memory location which is equal to the size of its largest data member.

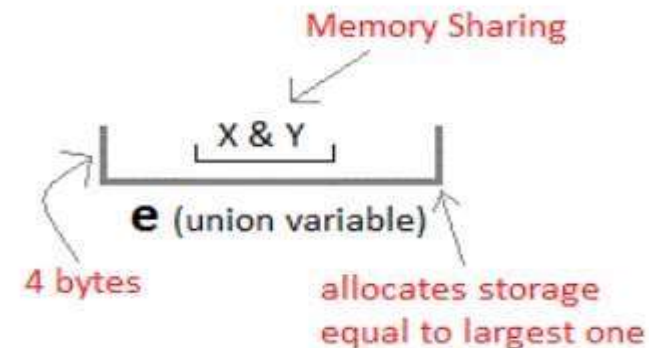
Structure

```
struct Emp
{
  char X; // size 1 byte
  float Y; // size 4 byte
}e;
```



Unions

```
union Emp
{
  char X;
  float Y;
}e;
```





C Unions

This implies that although a **union** may contain many members of different types, **it cannot handle all the members at the same time**. A **union** is declared using the **union** [keyword](#).

```
union item
{
    int m;
    float x;
    char c;
}It1;
```

This declares a variable `It1` of type `union item`. This `union` contains three members each with a different [data type](#). However only one of them can be used at a time. This is due to the fact that only one location is allocated for all the `union` variables, irrespective of their size. The compiler allocates the storage that is large enough to hold the largest variable type in the union.

In the union declared above the member `x` requires **4 bytes** which is largest amongst the members for a 16-bit machine. Other members of union will share the same memory address.



C Unions

Accessing a Union Member in C

Syntax for accessing any **union** member is similar to accessing structure members,

```
union test
{
    int a;
    float b;
    char c;
}t;

t.a;    //to access members of union t
t.b;
t.c;
```



Time for an Example



```
#include <stdio.h>

union item
{
    int a;
    float b;
    char ch;
};

int main( )
{
    union item it;
    it.a = 12;
    it.b = 20.2;
    it.ch = 'z';

    printf("%d\n", it.a);
    printf("%f\n", it.b);
    printf("%c\n", it.ch);

    return 0;
}
```

OUTPUT:

-26426

20.1999

z

- As you can see here, the values of **a** and **b** get corrupted and only variable **c** prints the expected result.
- This is because in union, the memory is shared among different data types.
- Hence, the only member whose value is currently stored will have the memory.
- In the above example, value of the variable **c** was stored at last, hence the value of other variables is lost.



Thank You!