

# Typedef and Union in C

**Talk to a Teacher**

**<http://spoken-tutorial.org>**

**National Mission on Education through ICT**

**<http://sakshat.ac.in>**

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# Learning Objectives



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**We will learn about**



# Learning Objectives

**We will learn about**

- ▶ **typedef keyword**



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**We will learn about**

- ▶ **typedef keyword**
- ▶ **union keyword**



# System Requirements



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- ▶ **Ubuntu Operating System version 11.10**



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- ▶ **Ubuntu Operating System version 11.10**
- ▶ **gcc Compiler version 4.6.1 on Ubuntu**





# Prerequisites



# Prerequisites

**You should be familiar with**



# Prerequisites

**You should be familiar with**

- ▶ **C tutorials**



# Prerequisites

You should be familiar with

- ▶ C tutorials
- ▶ For relevant tutorials please visit our website: <http://spoken-tutorial.org>



# Introduction to typedef



# Introduction to typedef

- Used to give symbolic name to an existing type or user defined datatypes



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- ▶ Used to give symbolic name to an existing type or user defined datatypes
- ▶ It is a way to define alias to the commands



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# Introduction to typedef

- ▶ Used to give symbolic name to an existing type or user defined datatypes
- ▶ It is a way to define alias to the commands
- ▶ It helps to provide clarity to the code
- ▶ It makes the code easier to understand and change



# Syntax



# Syntax

- ▶ **typedef existing\_name alias\_name**
- ▶ **ex:**
  - ▶ **typedef unsigned int uint;**



# Introduction to Union



# Introduction to Union

- ▶ **Union is a collection of different datatypes grouped together**



# Introduction to Union

- ▶ **Union is a collection of different datatypes grouped together**
- ▶ **Union allocates one common storage space for all its members**



# Introduction to Union

- ▶ Union is a collection of different datatypes grouped together
- ▶ Union allocates one common storage space for all its members
- ▶ We can access only one member of union at a time



# Syntax1





# Syntax1

```
► union union_name  
{  
    members;  
    members;  
}  
union_variable;
```



# Syntax2



# Syntax2

```
► union union_name  
{  
    members;  
    members;  
};  
union union_name union_variable;
```



# Difference



# Difference

- ▶ **Union allocates a common storage space for all its members**



# Difference

- ▶ **Union allocates a common storage space for all its members**
- ▶ **Structure allocates seperate storage space for all its members**



# Difference

- ▶ **Union allocates a common storage space for all its members**
- ▶ **Structure allocates seperate storage space for all its members**
- ▶ **Union occupies lower memory space**



# Difference

- ▶ Union allocates a common storage space for all its members
- ▶ Structure allocates separate storage space for all its members
- ▶ Union occupies lower memory space
- ▶ Structure occupies higher memory space





# Union example



# Union example

```
► union student  
{  
    int marks;  
    char name[6];  
    double average;  
};
```



# Union example



# Union example

- ▶ **Memory allocation for union variable will be 8bytes**
- ▶ **As double data type will occupy the maximum memory space**



# Structure example



# Structure example

```
► struct student  
{  
    int marks;  
    char name[6];  
    double average;  
};
```



# Structure example



# Structure example

- ▶ **Memory allocation for structure variable will be:**
- ▶  **$2\text{bytes} + 6\text{bytes} + 8\text{bytes} = 16\text{bytes}$**





# Summary



# Summary

We learnt,

- ▶ **typedef**
- ▶ **union**
- ▶ **Difference between union and structure**



# Assignment

- ▶ Write a program, to display records of an employee
- ▶ Like name, address, salary
- ▶ Define a union named employee
- ▶ Give an alias name as emp using typedef



# About the Spoken Tutorial Project

- ▶ Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Acknowledgements

- ▶ **Spoken Tutorial Project is a part of the Talk to a Teacher project**
- ▶ **It is supported by the National Mission on Education through ICT, MHRD, Government of India**
- ▶ **More information on this Mission is available at:**

<http://spoken-tutorial.org/NMEICT-Intro>

