

Storage Class Specifiers

Talk to a Teacher

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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Learning Objectives



Learning Objectives

We will learn about



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- ▶ **Storage class specifiers**



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- ▶ **auto keyword**



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- ▶ **static keyword**



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- ▶ **auto keyword**
- ▶ **static keyword**
- ▶ **extern keyword**
- ▶ **register keyword**



System Requirements



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- ▶ **Ubuntu Operating System version 11.10**

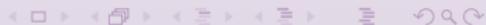


System Requirements

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



Prerequisites



Prerequisites

You should be familiar with



Prerequisites

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- ▶ C tutorials



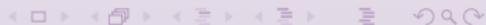
Prerequisites

You should be familiar with

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



Introduction



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- ▶ **Specifiers tell the compiler where to store a variable**



Introduction

- ▶ **Specifiers tell the compiler where to store a variable**
- ▶ **How to store the variable**



Introduction

- ▶ **Specifiers tell the compiler where to store a variable**
- ▶ **How to store the variable**
- ▶ **What is the initial value of the variable**



Introduction

- ▶ **Specifiers tell the compiler where to store a variable**
- ▶ **How to store the variable**
- ▶ **What is the initial value of the variable**
- ▶ **Life time of the variable**



Syntax

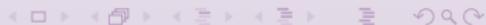


- ▶ **storage_specifier data_type variable_name**



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Types



Types of storage class specifiers are:



Types

Types of storage class specifiers are:

- ▶ **auto**



Types

Types of storage class specifiers are:

- ▶ **auto**
- ▶ **static**



Types

Types of storage class specifiers are:

- ▶ **auto**
- ▶ **static**
- ▶ **extern**



Types

Types of storage class specifiers are:

- ▶ **auto**
- ▶ **static**
- ▶ **extern**
- ▶ **register**



auto



auto

- ▶ **Auto keyword declares an automatic variable**



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auto

- ▶ **Auto keyword declares an automatic variable**
- ▶ **It has a local scope**



auto

- ▶ **Auto keyword declares an automatic variable**
- ▶ **It has a local scope**
- ▶ **Keywords are not initialized automatically**



auto

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- ▶ **Keywords are not initialized automatically**
- ▶ **You should explicitly initialize keywords while declaring**



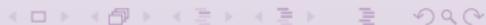
auto

- ▶ **Auto keyword declares an automatic variable**
- ▶ **It has a local scope**
- ▶ **Keywords are not initialized automatically**
- ▶ **You should explicitly initialize keywords while declaring**
- ▶ **Storage space of keywords is CPU memory**



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static



static

- ▶ **static variables are initialized to 0**



static

- ▶ **static variables are initialized to 0**
- ▶ They are not destroyed even after program control exits from the block



static

- ▶ **static variables are initialized to 0**
- ▶ **They are not destroyed even after program control exits from the block**
- ▶ **Value of the variable persists between different function calls**

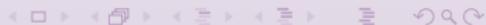


static

- ▶ **static variables are initialized to 0**
- ▶ **They are not destroyed even after program control exits from the block**
- ▶ **Value of the variable persists between different function calls**
- ▶ **Storage space is CPU memory**



extern



extern

- ▶ **Scope of extern variable is throughout the main program**



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- ▶ **Definition for extern variable might be anywhere in the C program**



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- ▶ **extern variables are initialized to 0 by default**
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- ▶ **Scope of extern variable is throughout the main program**
- ▶ **Definition for extern variable might be anywhere in the C program**
- ▶ **extern variables are initialized to 0 by default**
- ▶ **They can be accessed by all functions in the program**
- ▶ **Stored in CPU memory**



register



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- ▶ Register variables will be accessed very faster than normal variables



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- ▶ They are stored in register memory rather than main memory



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- ▶ Register variables will be accessed very faster than normal variables
- ▶ They are stored in register memory rather than main memory
- ▶ Limited number of variables can be used since register size is very low

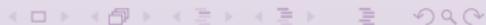


register

- ▶ Register variables will be accessed very faster than normal variables
- ▶ They are stored in register memory rather than main memory
- ▶ Limited number of variables can be used since register size is very low
- ▶ (16 bits, 32 bits or 64 bits)



Summary



Summary

We learnt,

- ▶ **Storage class specifiers**
- ▶ **auto keyword**
- ▶ **static keyword**
- ▶ **extern keyword**
- ▶ **register keyword**



Assignment

- ▶ **Write a program, to print the sum of first 5 numbers**
- ▶ **Declare both the keywords auto and static in the program**



About the Spoken Tutorial Project

- ▶ Watch the video available at 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



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>

