

## Operating System | Segmentation

A process is divided into Segments. The chunks that a program is divided into which are not necessarily all of the same sizes are called segments. Segmentation gives user's view of the process which paging does not give. Here the user's view is mapped to physical memory.

There are types of segmentation:

### 1. Virtual memory segmentation –

Each process is divided into a number of segments, not all of which are resident at any one point in time.

### 2. Simple segmentation –

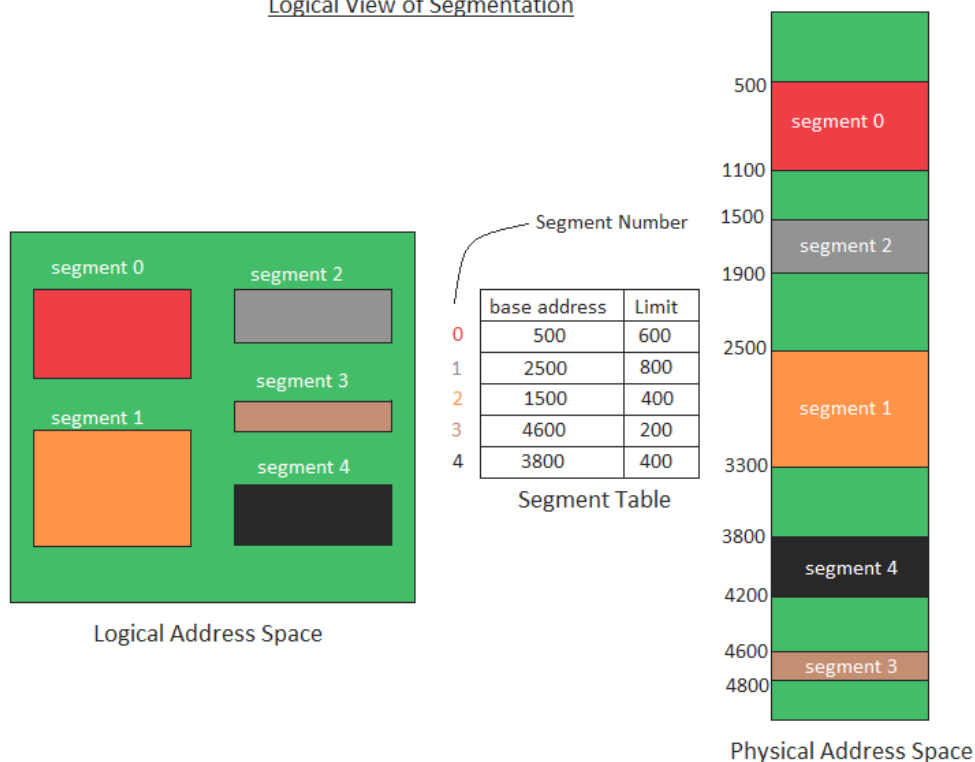
Each process is divided into a number of segments, all of which are loaded into memory at run time, though not necessarily contiguously.

There is no simple relationship between logical addresses and physical addresses in segmentation. A table stores the information about all such segments and is called Segment Table.

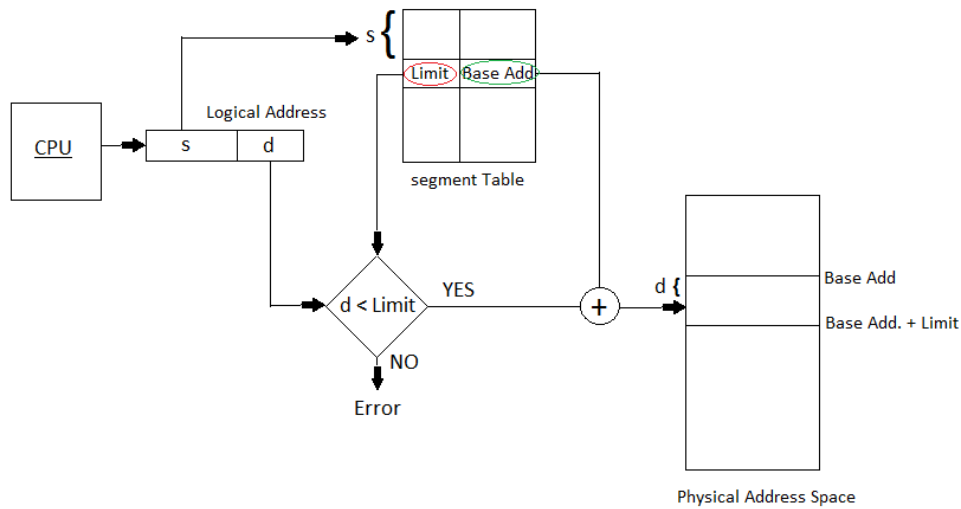
**Segment Table** – It maps two-dimensional Logical address into one-dimensional Physical address. It's each table entry has:

- **Base Address:** It contains the starting physical address where the segments reside in memory.
- **Limit:** It specifies the length of the segment.

### Logical View of Segmentation



Translation of Two dimensional Logical Address to one dimensional Physical Address.



Address generated by the CPU is divided into:

- **Segment number (s):** Number of bits required to represent the segment.
- **Segment offset (d):** Number of bits required to represent the size of the segment.

#### Advantages of Segmentation –

- No Internal fragmentation.
- Segment Table consumes less space in comparison to Page table in paging.

#### Disadvantage of Segmentation –

- As processes are loaded and removed from the memory, the free memory space is broken into little pieces, causing External fragmentation.

This article has been contributed by [Vikash Kumar](#). Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above

#### Recommended Posts:

[Operating System | Buddy System - Memory allocation technique](#)  
[Operating System | Requirements of memory management system](#)  
[Operating System | Introduction of Operating System - Set 1](#)  
[Operating System | Semaphores in operating system](#)  
[Operating System | Starvation and Aging in Operating Systems](#)  
[Operating System | Introduction of System Call](#)  
[Operating System | Unix File System](#)  
[Operating System | Kernel I/O Subsystem \(I/O System\)](#)  
[Operating System | Types of Operating Systems](#)  
[Operating System | Thread](#)  
[Operating System | Microkernel](#)  
[Operating System | Multithreading](#)  
[Operating System | Paging](#)  
[Functions of Operating System](#)  
[Operating System | Recovery From Deadlock](#)

Improved By : [VaibhavRai3](#)

Article Tags : [GATE](#) [Operating Systems](#) [memory-management](#)

Practice Tags : [Operating Systems](#)



☐ To-do ☐ Done

2.5

Based on 31 vote(s)

[Feedback/ Suggest Improvement](#)

[Add Notes](#)

[Improve Article](#)

Please write to us at [contribute@geeksforgeeks.org](mailto:contribute@geeksforgeeks.org) to report any issue with the above content.

Previous

Last Minute Notes – Operating Systems

Next

Mathematics | Eigen Values and Eigen Vectors

Writing code in comment? Please use [ide.geeksforgeeks.org](https://ide.geeksforgeeks.org), generate link and share the link here.

[Load Comments](#)

**FREE**

# THE MUCH-AWAITED PLACEMENT PREPARATION COURSE IS BACK

Starting from **10<sup>th</sup> June 2019**

**SUDO**  
PLACEMENT  
2019

**Register Now**



## Most popular in GATE CS

Digital Logic | 5 variable K-Map

Computer Network | Classless Inter Domain Routing (CIDR)

Computer Network | Finding Network ID of a Subnet (using Subnet Mask)

GATE CS 2020 Important (Tentative) Dates

Data Structures and Algorithms | Set 38

## Most visited in Operating Systems

Logical vs Physical Address in Operating System

Operating System | The Linux Kernel

Difference between Virtual memory and Cache memory

Operating System | Recovery From Deadlock

Message Passing in Java

**Geeksforgeeks**



is about to change  
the **scenario of placements**

**Placement**

Coming Soon...

**Know More**

More updates will be released on **21st June 2019**

Advertise Here

# GeeksforGeeks

A computer science portal for geeks

5th Floor, A-118,  
Sector-136, Noida, Uttar Pradesh - 201305  
[feedback@geeksforgeeks.org](mailto:feedback@geeksforgeeks.org)

## COMPANY

[About Us](#)  
[Careers](#)  
[Privacy Policy](#)  
[Contact Us](#)

## LEARN

[Algorithms](#)  
[Data Structures](#)  
[Languages](#)  
[CS Subjects](#)  
[Video Tutorials](#)

## PRACTICE

[Courses](#)  
[Company-wise](#)  
[Topic-wise](#)  
[How to begin?](#)

## CONTRIBUTE

[Write an Article](#)  
[Write Interview Experience](#)  
[Internships](#)  
[Videos](#)