

# 40 Lecture - CS501

## Important Subjective

### 1. **What is virtual memory?**

Virtual memory is a memory management technique that allows a computer to use more memory than it physically has by temporarily transferring data from the RAM to the hard disk.

#### **What are the benefits of using virtual memory?**

Virtual memory allows a computer to run more programs simultaneously, enhances the performance of the computer, and helps to prevent crashes due to a shortage of physical memory.

#### **What is the page file?**

The page file is a portion of the hard disk that is reserved for virtual memory use.

#### **How is virtual memory allocated?**

Virtual memory is allocated in fixed-size blocks called pages.

#### **What is a page fault?**

A page fault occurs when the data that is needed by the CPU is not present in physical memory and needs to be fetched from the hard disk.

#### **What is the role of the operating system in virtual memory management?**

The operating system manages the virtual memory by allocating and deallocating pages, mapping virtual addresses to physical addresses, and handling page faults.

#### **What is thrashing?**

Thrashing is a phenomenon in which the computer spends most of its time swapping data between the RAM and the hard disk, resulting in poor performance.

#### **How does the size of the page affect virtual memory performance?**

A larger page size can improve the performance of virtual memory by reducing the number of page faults, but it can also lead to more wasted space.

#### **What is the difference between demand paging and pre-paging?**

Demand paging loads only the pages that are required by the program, while pre-paging loads additional pages in anticipation of their need.

What are some strategies to optimize virtual memory performance?

Strategies to optimize virtual memory performance include increasing physical memory, adjusting the page file size, using SSDs for the page file, and optimizing the program's memory usage.