**What is Fragmentation when it occurs**

Fragmentation refers to the phenomenon that occurs when a file or data is divided into non-contiguous parts or fragments scattered throughout a storage medium, such as a hard disk drive or solid-state drive. It can happen due to various reasons and can occur in different contexts. Here are a few examples:

1. File System Fragmentation: When files are created, modified, or deleted on a storage device, the file system may allocate space for them in non-contiguous chunks. Over time, as files are added and removed, gaps or free spaces are created between the fragments. This is known as file system fragmentation. It can lead to slower file access times since the drive's read/write head needs to move to different locations to access all the fragments of a file, reducing overall efficiency.
2. Disk Fragmentation: Disk fragmentation refers to the fragmentation of files and data on a hard disk drive. As files are created, modified, and deleted, the operating system may allocate space for them in available sectors on the disk. If contiguous space is not available, the file will be stored in non-contiguous clusters. This can result in fragmented data across the disk, affecting read and write performance.
3. Memory Fragmentation: In computer memory management, fragmentation can occur when memory is allocated and deallocated dynamically. There are two types of memory fragmentation: external fragmentation and internal fragmentation. External fragmentation occurs when free memory blocks are scattered throughout the memory space, making it difficult to allocate larger contiguous blocks of memory. Internal fragmentation happens when allocated memory blocks are larger than the actual data they hold, resulting in wasted memory space within each block.

Fragmentation can impact system performance, especially in terms of data access and memory management. To mitigate fragmentation-related issues, various techniques like defragmentation (reorganizing file/data layout) and memory allocation algorithms (to minimize fragmentation) are employed by operating systems and file systems.