Difference Between Multithreading and Multitasking

While multithreading facilitates the concurrent execution of several threads within a single process, multitasking allows the CPU to perform multiple tasks (threads, processes, programmes, and tasks). Variety of questions can be seen in the GATE exam as well from these topics. Let us now see the subtle difference between multithreading and multitasking.

Multithreading	Multitasking
A task is divided into multiple threads and then executed completely.	It allows multiple tasks to execute on the CPU at the same time.
CPU switches between the threads of the process.	CPU switches between the processes.
Execution speed is faster because of threading.	Execution is comparatively slow than in multithreading environments.
Does not allow multiprocessing.	It allows multiprocessing.
They share the same memory space allocated by the system.	The system allocated separate memory and resources to the processes.
Completion or termination takes less time.	Completion or termination takes more time.

Multithreading and Multitasking

The fundamental limitation of single threading systems is that only one task can be carried out simultaneously. Multithreading, which enables the execution of many tasks, helps to address this limitation. The comprehensive multitasking feature of modern operating systems enables multiple programs to run simultaneously without interfering. Both Multithreading and Multitasking are important asper the GATE syllabus as well.

What is Multithreading?

After checking the difference between multithreading and multitasking, let us discuss multithreading. The use of multithreading enables the application to split up its task into separate threads. Several threads can carry out the same process or task in multithreading, or we can say that the task is carried out by more than one thread. Multitasking is possible with the use of multithreading. This adds to the difference between multithreading and multitasking.

What is Multitasking?

The ability to run numerous programs simultaneously is a logical extension of a multiprogramming system. Multitasking in an operating system enables a user to handle multiple computer tasks simultaneously. Several activities are referred to as processes sharing similar processing resources, such as a CPU. You can switch between these jobs without losing any progress because the operating system monitors your performance in each of them. This reflects the subtle difference between multithreading and multitasking.

Additionally, a lot of operating system activities can operate concurrently. Multitasking is divided into two types:

- Preemptive multitasking
- Non-preemptive multitasking