**🆚 Multitasking vs Multithreading**

Both **Multitasking** and **Multithreading** allow multiple operations to run **simultaneously**, but they work differently.

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| Feature | Multitasking | Multithreading |
| Definition | Running multiple **processes** at the same time | Running multiple **threads** within a single process |
| Resource Sharing | Each process has **separate memory** and resources | Threads share the **same memory & resources** |
| Communication | Slow (Inter-process communication needed) | Fast (Threads share data easily) |
| Execution Speed | Slower (More overhead) | Faster (Less overhead) |
| CPU Usage | More CPU-intensive | Less CPU usage |
| Example | Running **Chrome + Spotify + Notepad** at the same time | A **text editor** running **UI updates + Auto-save + Spell-check** simultaneously |
| Used in | Operating Systems, Multi-app execution | Parallel computing, Real-time applications |

**🚀 When to Use What?**

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| Use Multitasking When... | Use Multithreading When... |
| Running multiple independent apps (Chrome, Spotify, VS Code) | Running **multiple tasks inside the same app** (UI updates, Auto-save, File processing) |
| Requires separate memory allocation | Needs **fast communication & shared memory** |
| Example: OS scheduling processes | Example: **Game rendering, Real-time apps** |

**🆚 Process-Based vs Thread-Based Multitasking**

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| Feature | Process-Based Multitasking | Thread-Based Multitasking |
| Definition | Multiple programs running separately. | Multiple threads running within a single program. |
| Memory Usage | High (each process has separate memory). | Low (threads share memory). |
| Communication | Difficult (Inter-Process Communication needed). | Easy (Threads share data). |
| Speed | Slower (Heavy context switching). | Faster (Lightweight context switching). |
| Example | Running Chrome, Spotify, VS Code together. | A single app handling UI updates, file saving, and processing together. |