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Programming - Level 2
Process vs Thread
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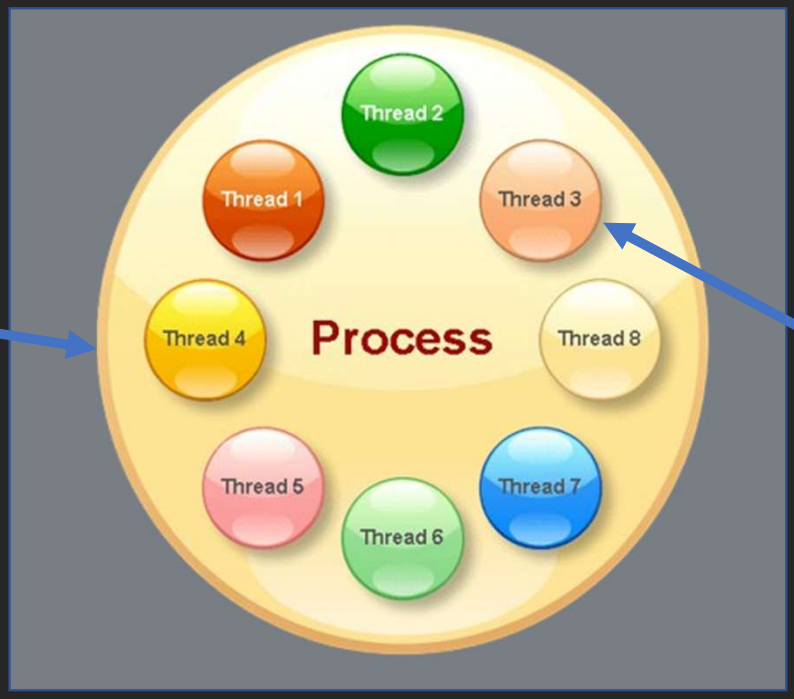
Process vs Thread?

A process is an independent and self-contained unit of execution

A process has it's own main thread, so your program is a thread.



A thread is the smallest unit of execution within a process

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Process vs Thread - Definition

- Process: A process is an independent and self-contained unit of execution in a computer system. It is an instance of a running program that includes its own memory space, resources, and system state.
- Thread: A thread is the smallest unit of execution within a process. It shares the same resources and memory space as other threads within the same process.

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Process vs Thread – Memory Space

- Process: Each process has its own separate memory space. Processes do not share memory with other processes by default.
- Thread: Threads within the same process share the same memory space. They can directly access the memory of other threads within the same process.

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Process vs Thread - Resource Allocation

- Process: Processes are allocated system resources, including CPU time, memory, file handles, and more. Each process operates independently of other processes.
- Thread: Threads within a process share the same resources. They can efficiently communicate with each other through shared memory.

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Process vs Thread – Communication

- Process: Inter-process communication (IPC) mechanisms, such as message passing or shared memory, are required for processes to communicate with each other.
- Thread: Threads within the same process can communicate directly through shared variables and data structures. No special mechanisms are required for communication.

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Process vs Thread - Isolation

- Process: Processes are isolated from each other, meaning that the failure of one process does not affect the execution of other processes.
- Thread: Threads within the same process are not fully isolated. The failure of one thread can potentially affect the entire process.

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Process vs Thread – Overhead

- Process: Processes have a higher overhead compared to threads due to the isolation and resource allocation.
- Thread: Threads have lower overhead compared to processes because they share resources and memory.

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Process vs Thread - Creation and Termination

- Process: Creating and terminating processes is generally more time-consuming than creating and terminating threads.
- Thread: Creating and terminating threads is generally faster than creating and terminating processes.

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