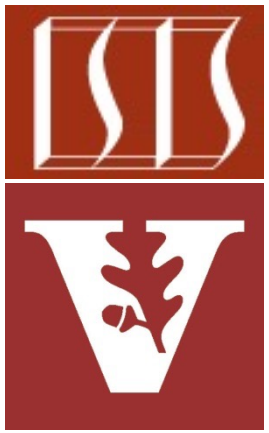
Introduction to Java Threads



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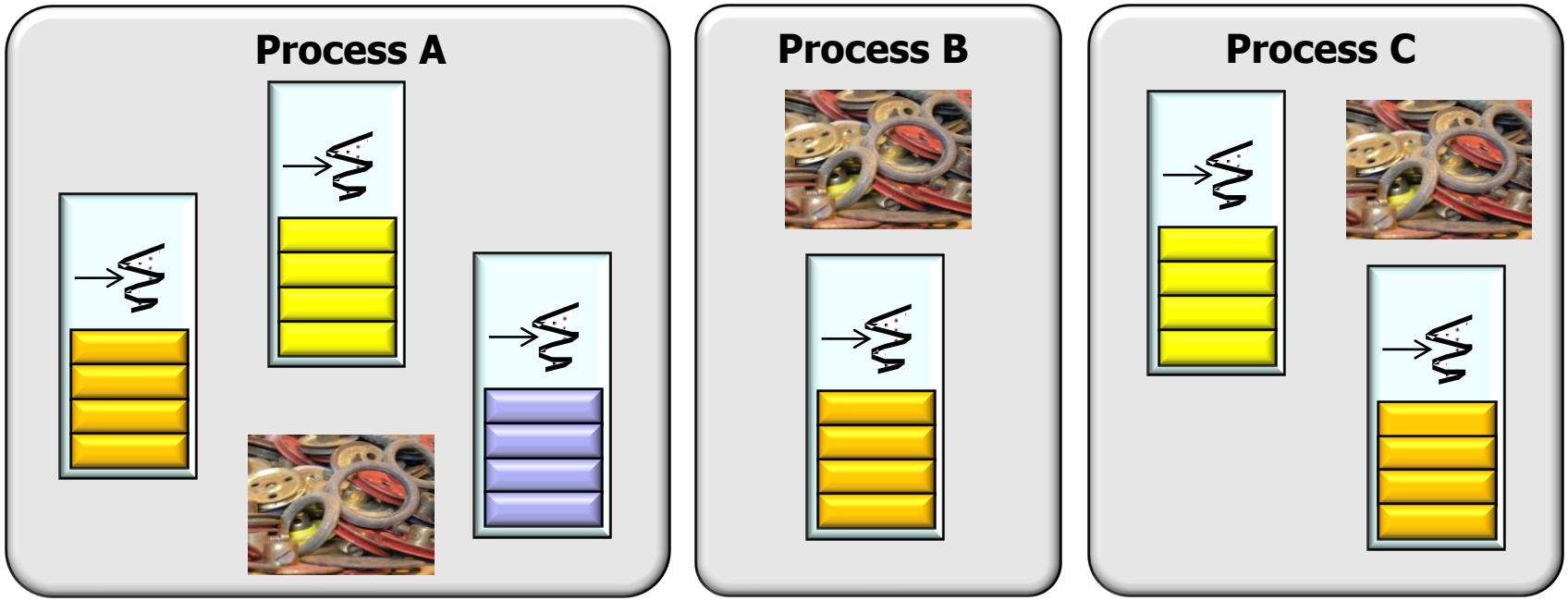
Learning Objectives in this Part of the Lesson

- Understand how Java threads support concurrency

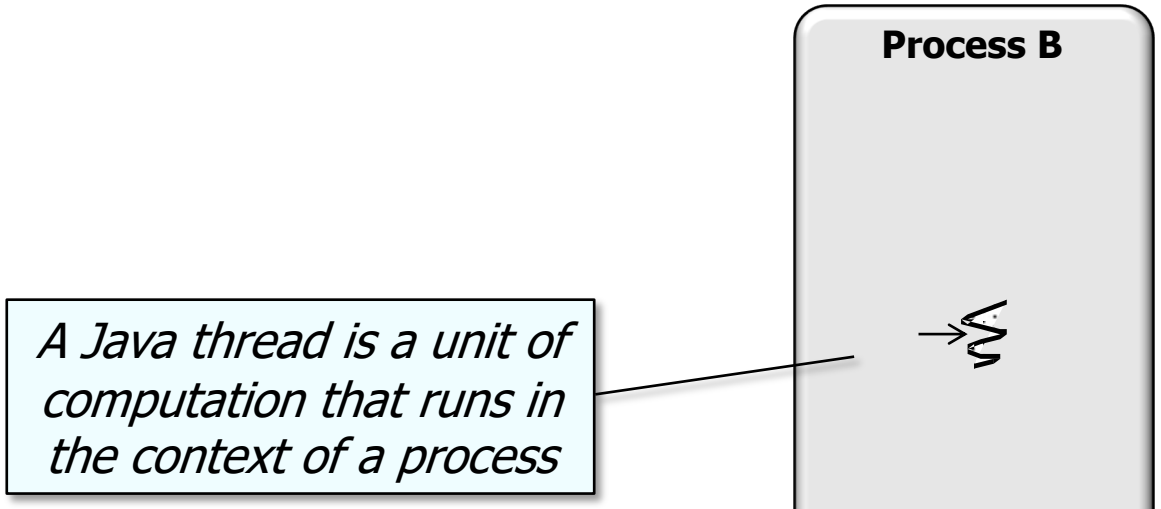


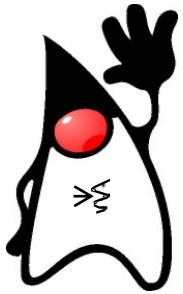
Concurrent apps use multiple threads to simultaneously run computations that often interact with each other

Introduction to Java Threads

Introduction to Java Threads

- Threads are the most basic way of obtaining concurrency in Java





See en.wikipedia.org/wiki/Thread_(computing)

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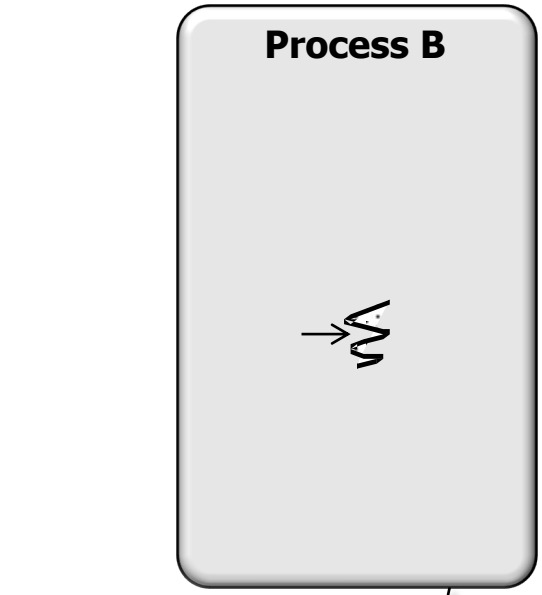

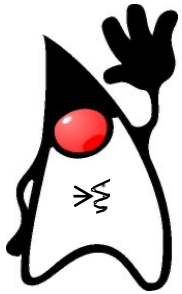

See en.wikipedia.org/wiki/Process_(computing)

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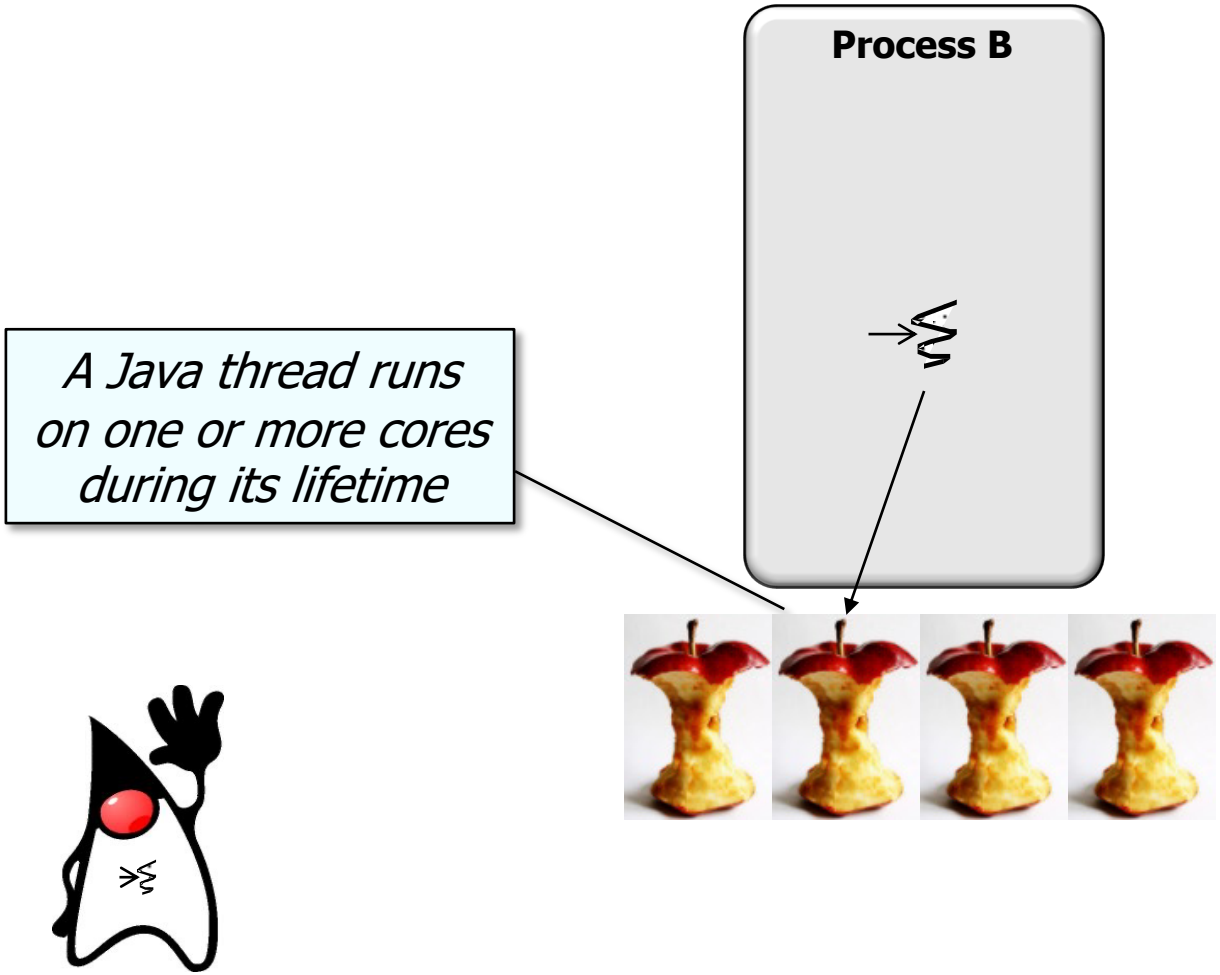

See en.wikipedia.org/wiki/Multi-core_processor

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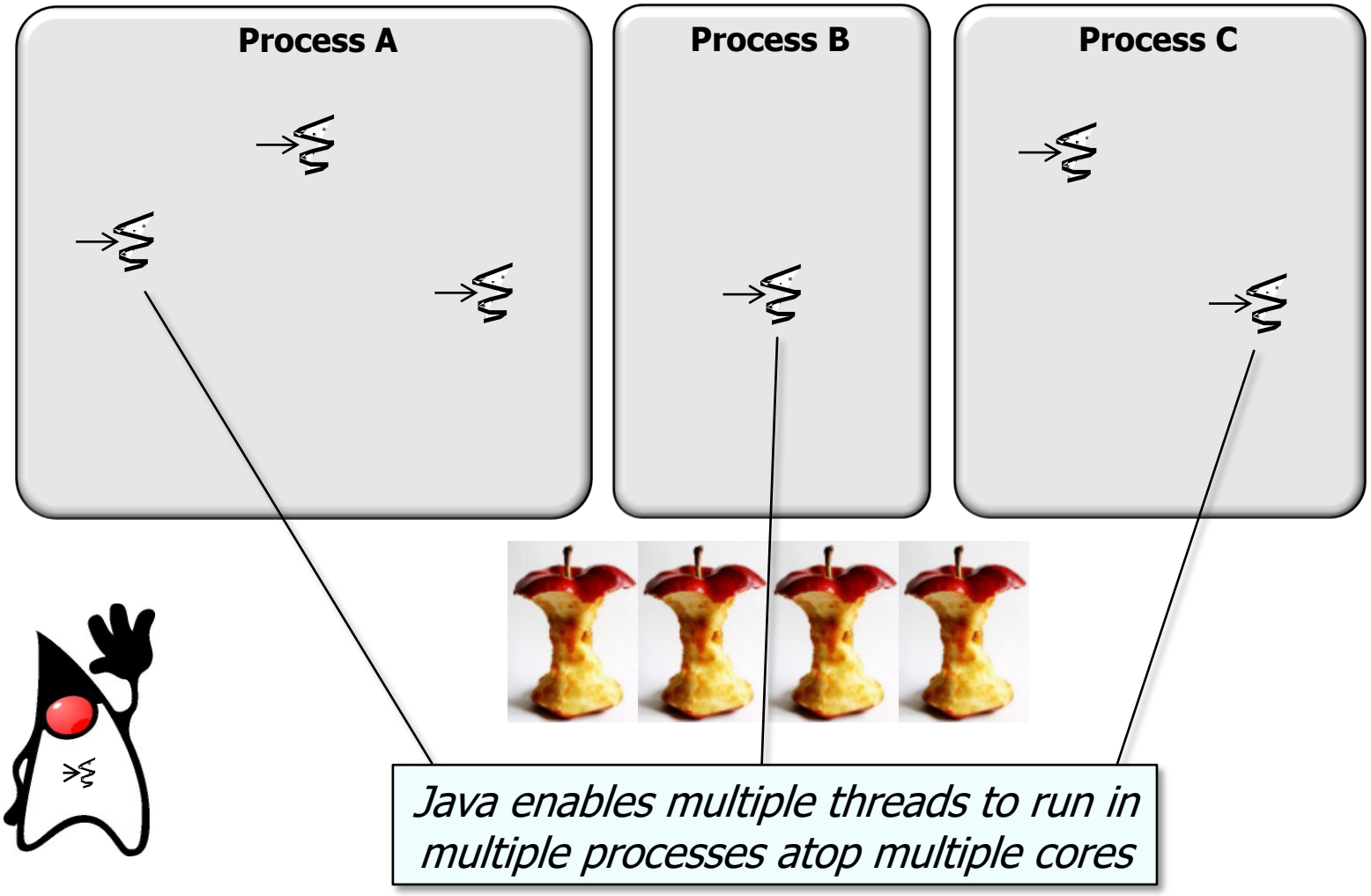

See docs.oracle.com/javase/tutorial/essential/concurrency/procthread.html

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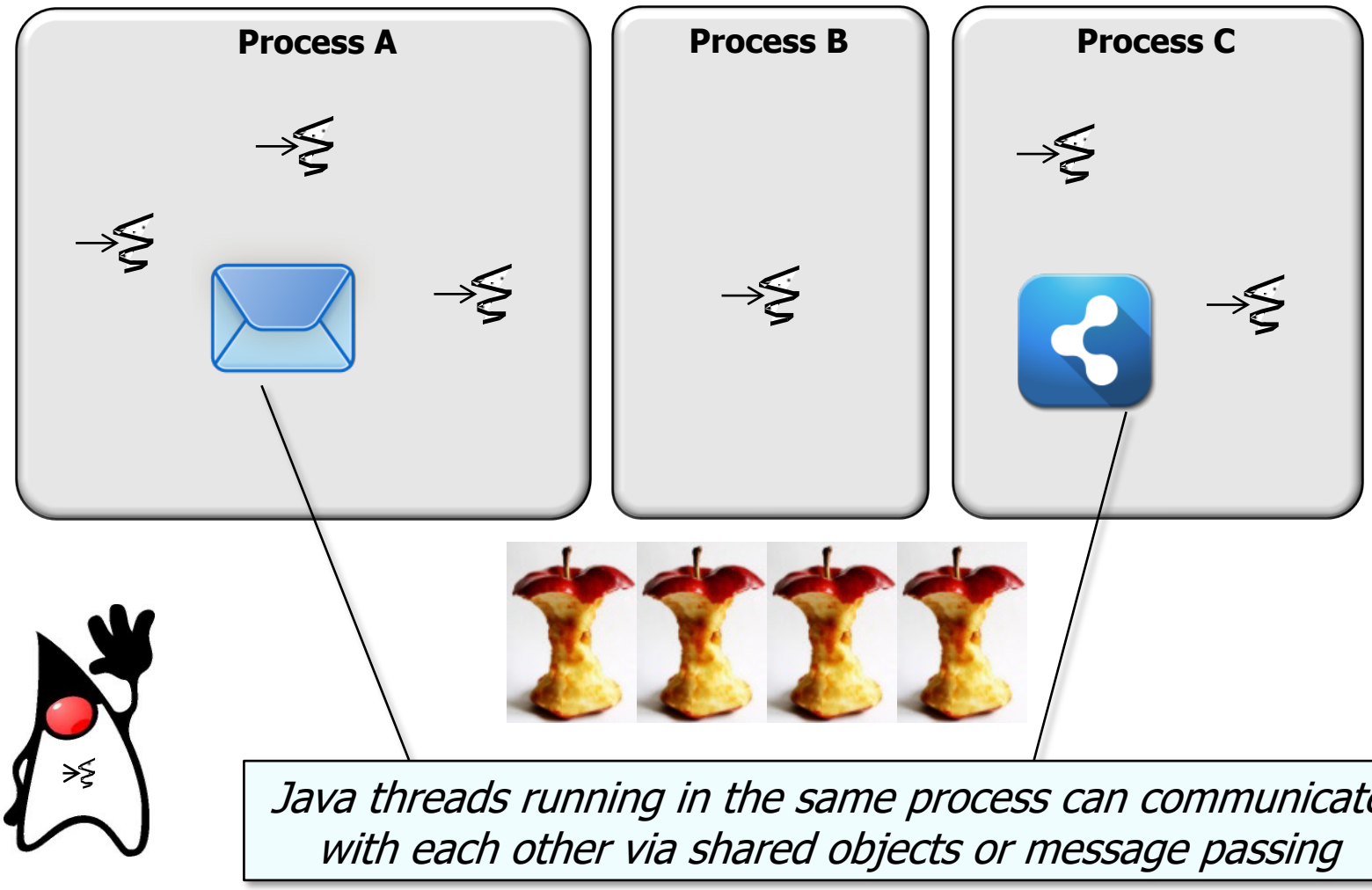

See www.javatpoint.com/inter-thread-communication-example & web.mit.edu/6.005/www/fa14/classes/20-queues-locks/message-passing

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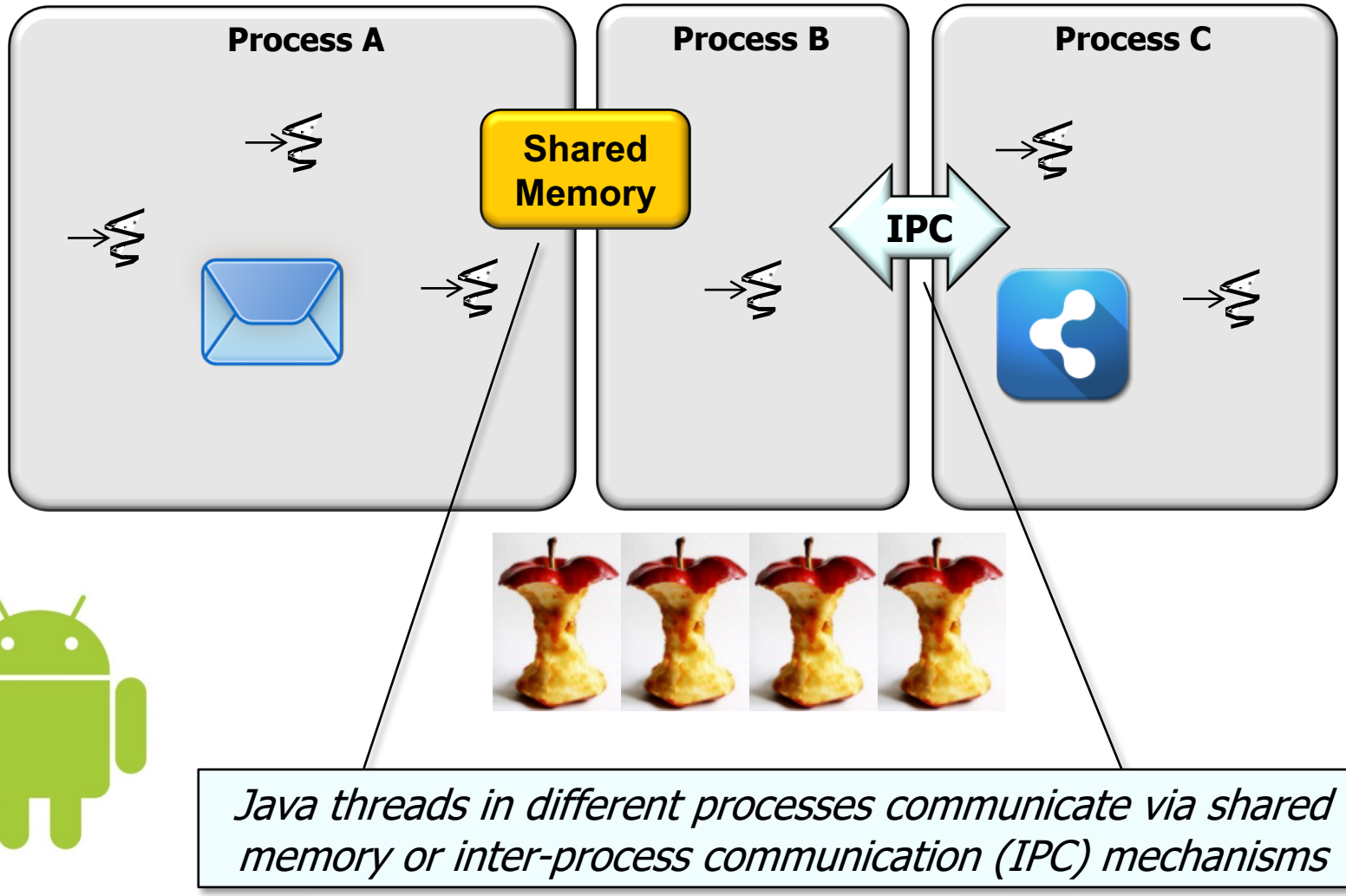

See developer.android.com/guide/components/aidl

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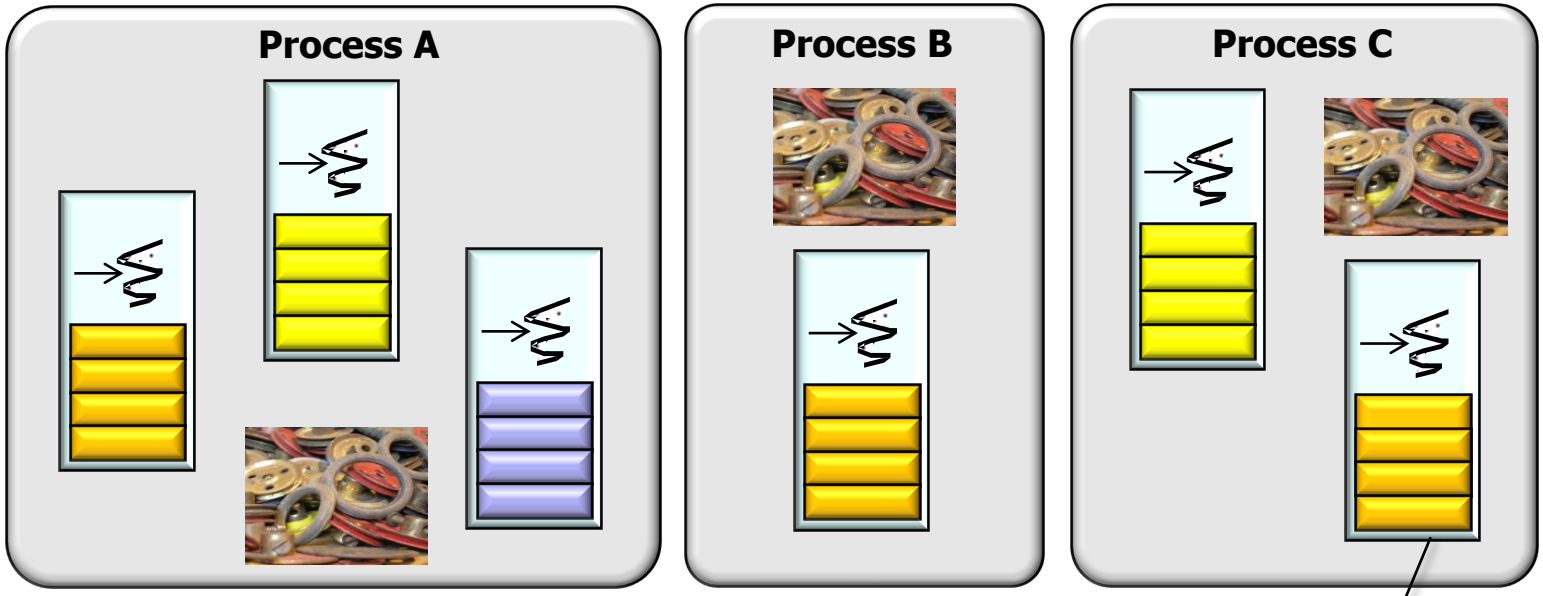

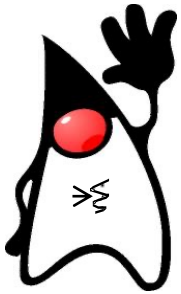

Traditionally a Java thread is associated with an OS kernel thread & contains unique "state," e.g., an id, name, stack, priority, current thread state, thread-local storage, instruction counter, & other registers

See en.wikipedia.org/wiki/Thread_(computing)#Processes.2C_kernel_threads.2C_user_threads.2C_and_fibers

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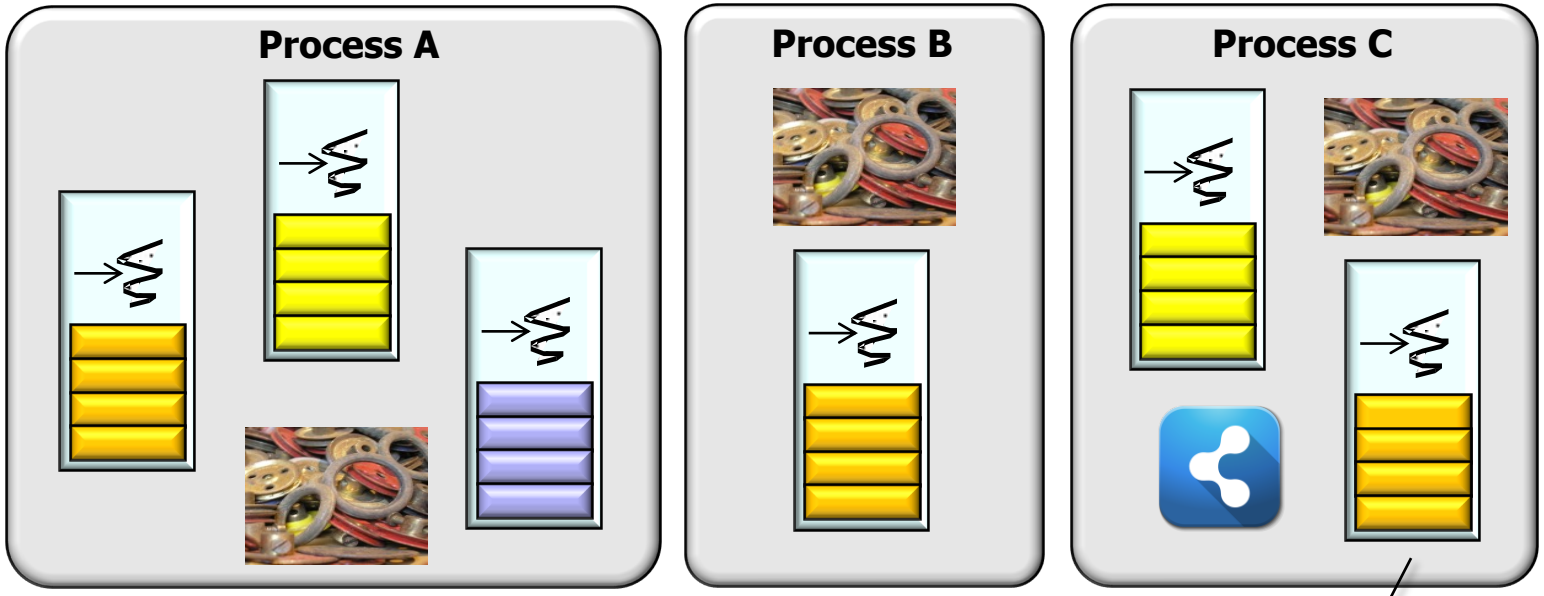

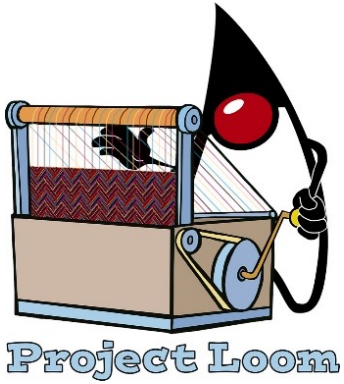

In Project Loom traditional Java Thread objects are now called "platform threads"

See download.java.net/java/early_access/loom/docs/api/java.base/java/lang/Thread.html

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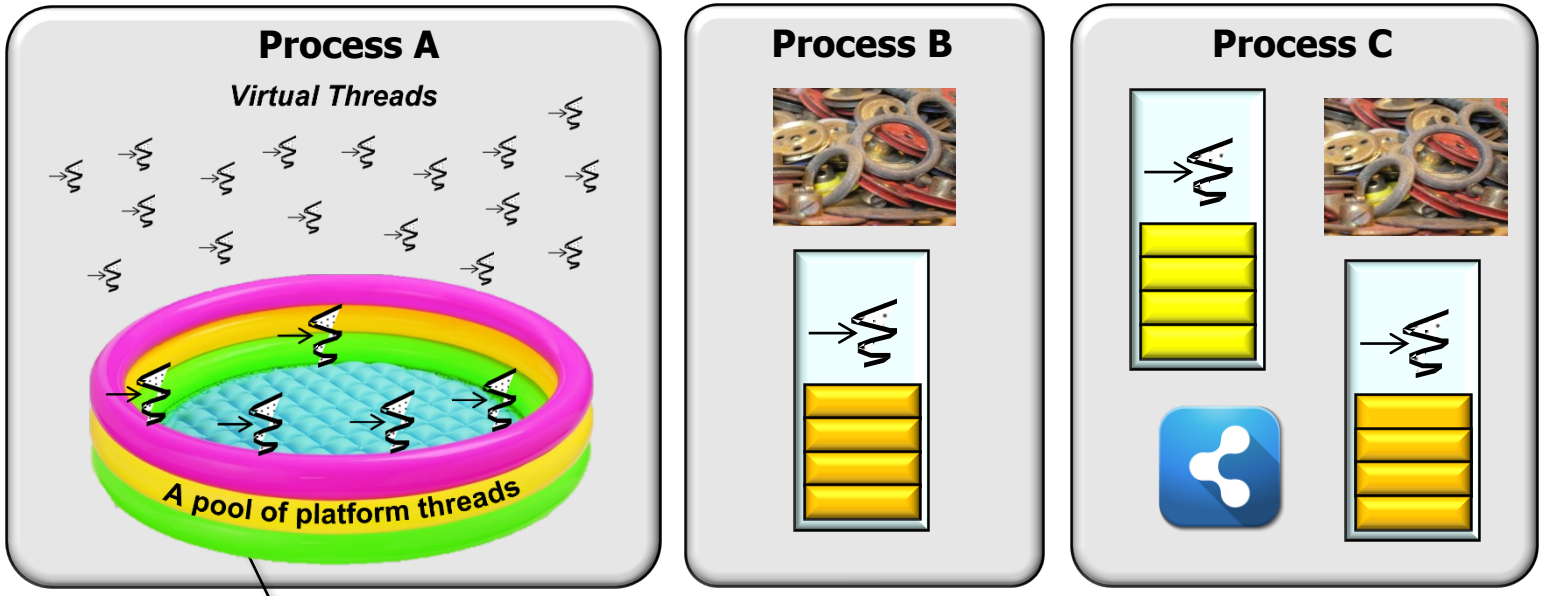

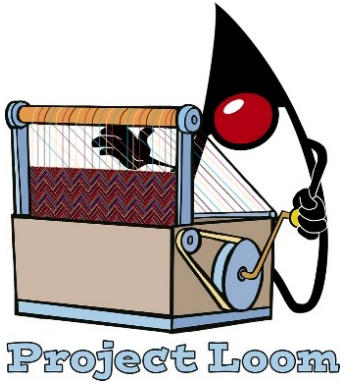

Conversely, Project Loom defines new "virtual threads" that are "lightweight" concurrency objects that can be multiplexed atop one or more platform threads

See download.java.net/java/early_access/loom/docs/api/java.base/java/lang/Thread.html

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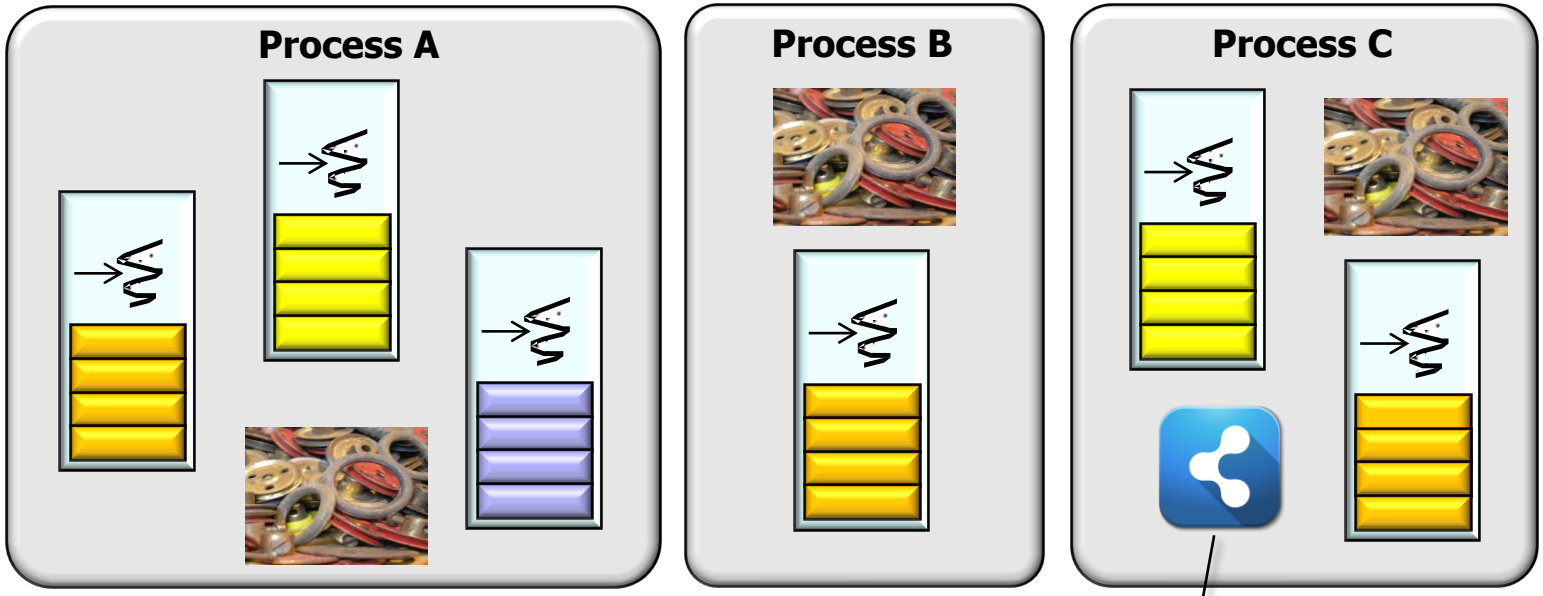

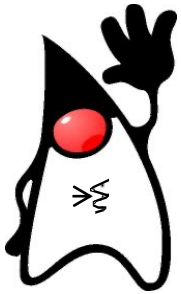

Java dynamic & static objects can be shared across any type of Java threads (i.e., this "state" is common)

See en.wikipedia.org/wiki/Thread_(computing)#Processes.2C_kernel_threads.2C_user_threads.2C_and_fibers

End of Introduction to Java Threads