Key Methods in a Java Thread

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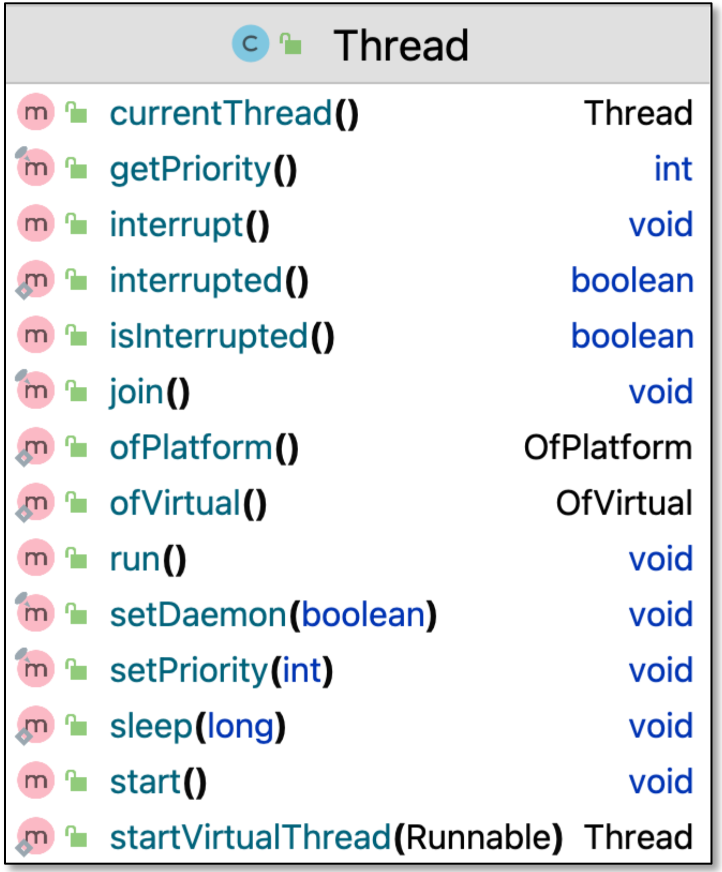
Learning Objectives in this Part of the Lesson

- Know the differences between Java platform & virtual threads
- Recognize common Thread methods
  - We don’t cover all methods in the Java Thread class, just the most commonly used ones



Thread	
currentThread()	Thread
getPriority()	int
interrupt()	void
interrupted()	boolean
isInterrupted()	boolean
join()	void
ofPlatform()	OfPlatform
ofVirtual()	OfVirtual
run()	void
setDaemon(boolean)	void
setPriority(int)	void
sleep(long)	void
start()	void
startVirtualThread(Runnable)	Thread

See jdk20/docs/api/java.base/java/lang/Thread.html

Key Java
Thread Methods

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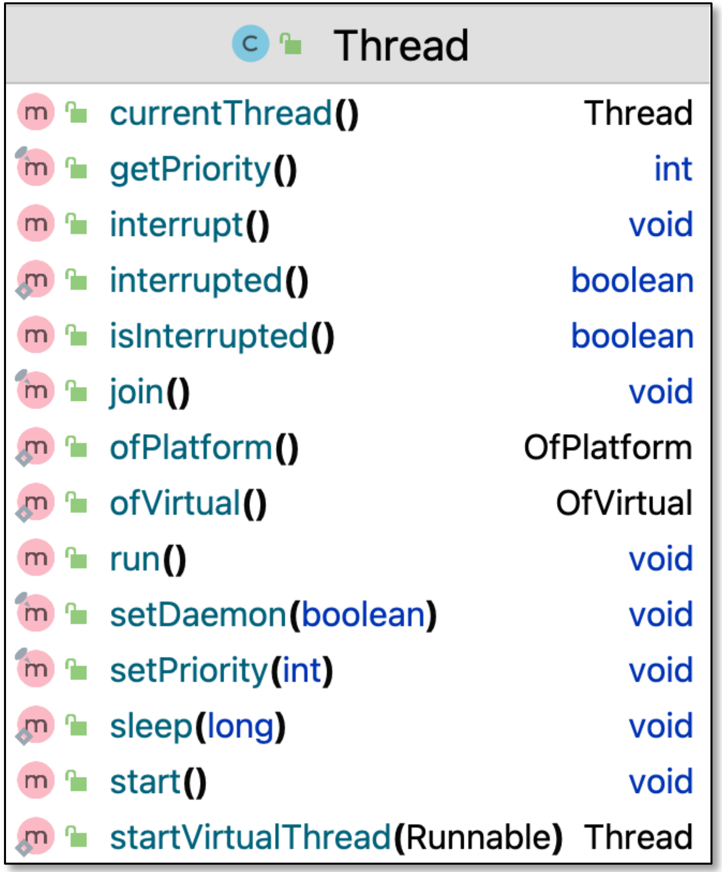
- Certain methods in the Java Thread class are used in many concurrent Java programs



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See docs.oracle.com/en/java/javase/20/docs/api/java.base/java/lang/Thread.html

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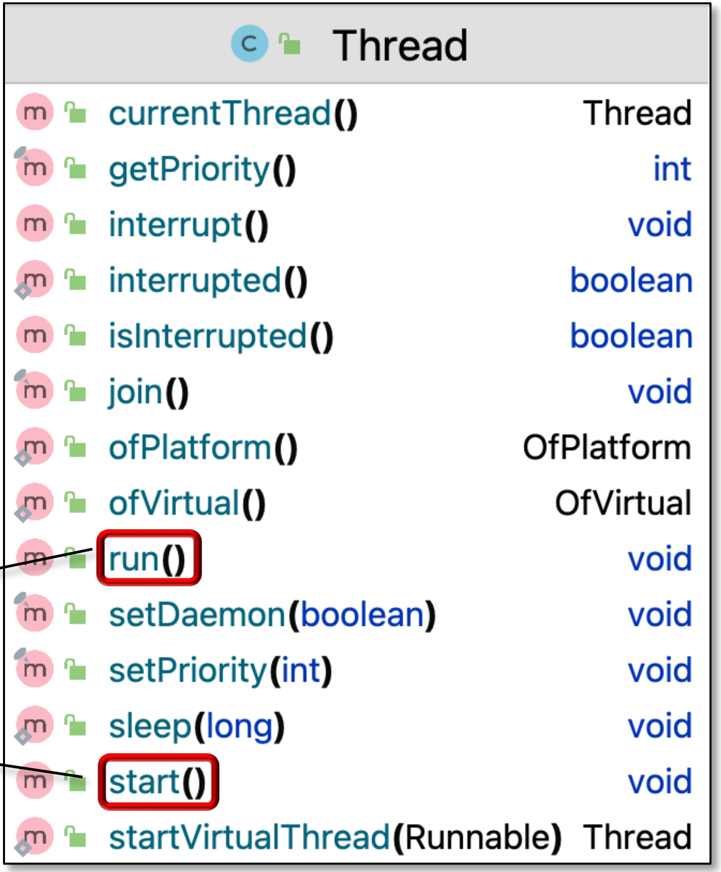

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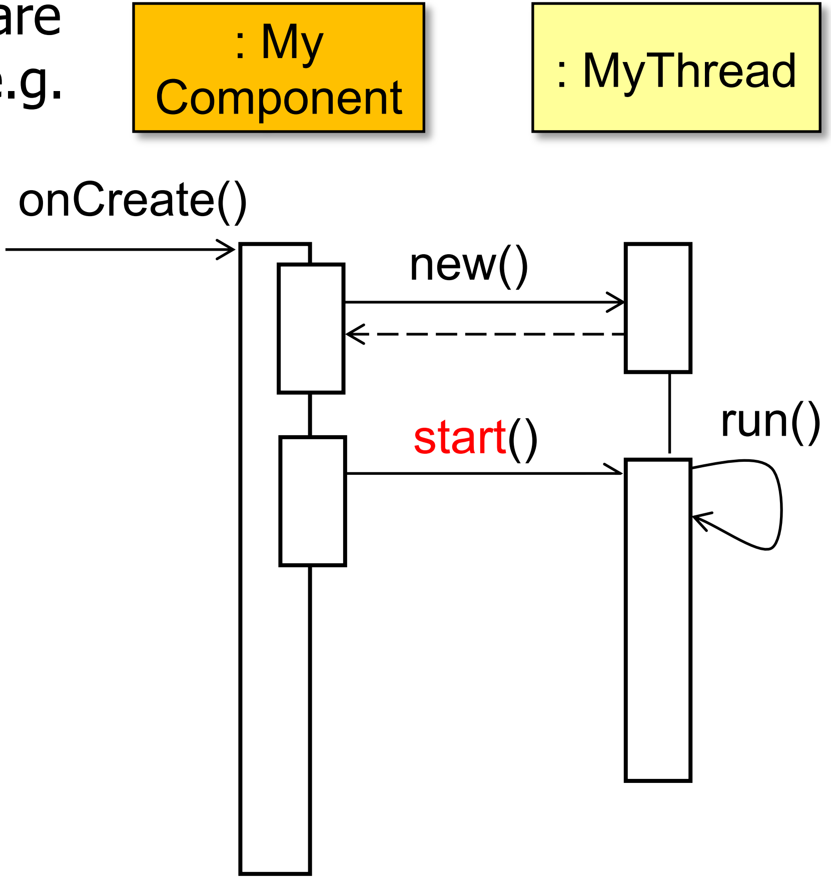
Some methods are practically always used

Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`void start()`**
    - Allocates Thread resources & initiates thread execution by calling the run() hook method



See java/javase/20/docs/api/java.base/java/lang/Thread.html#start

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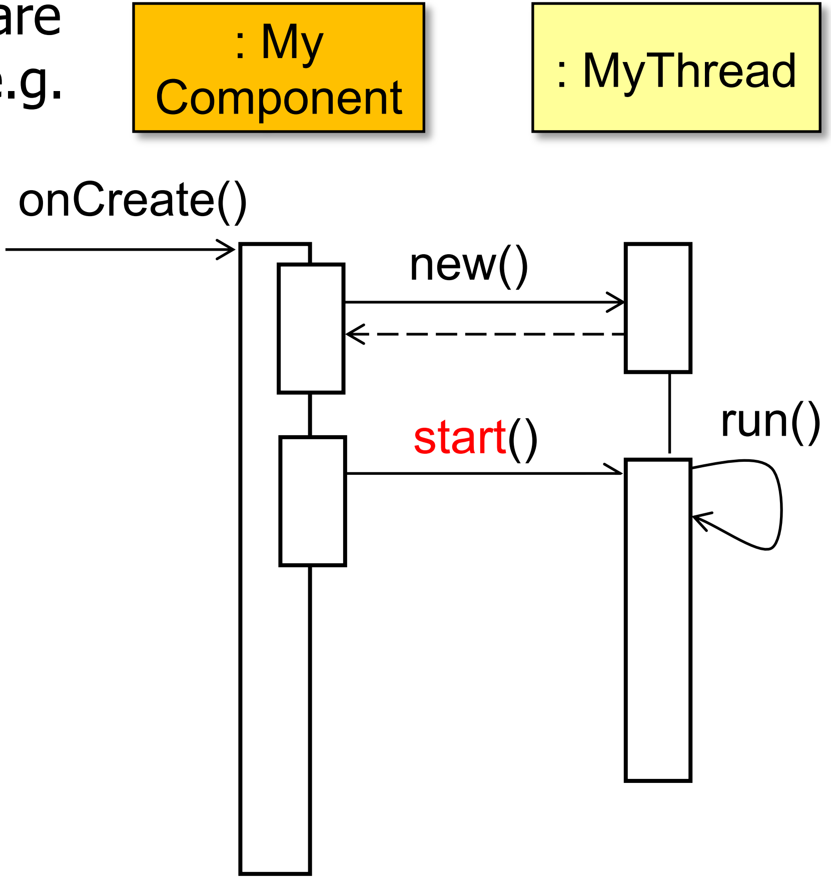
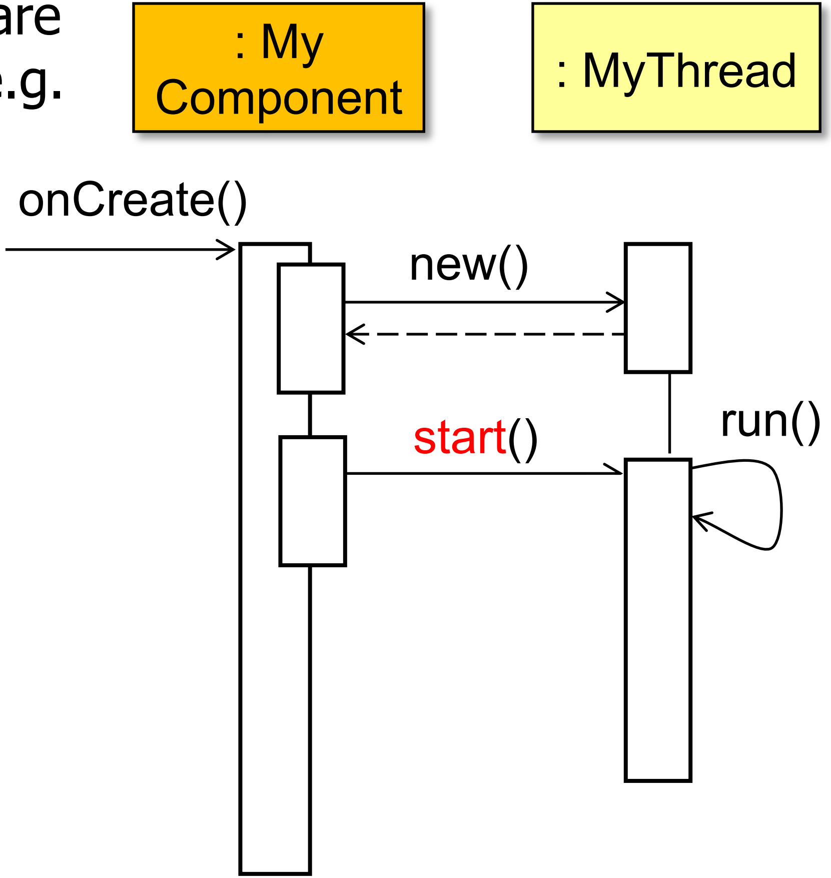


The start() method can only be called once per Thread object

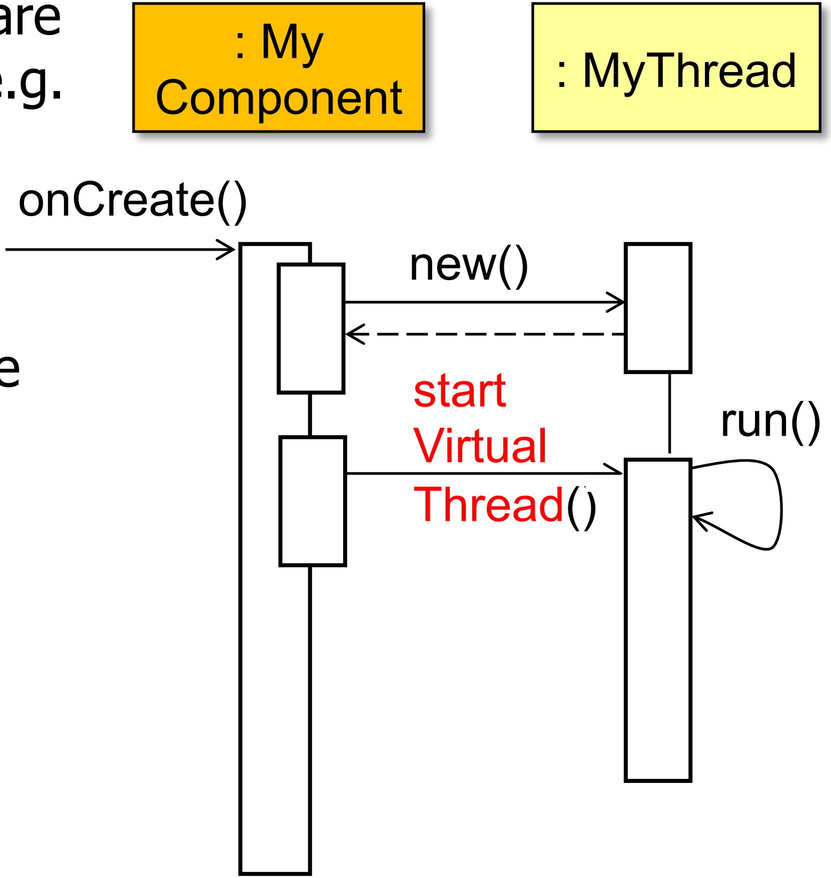
Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`void start()`**
    - Allocates Thread resources & initiates thread execution by calling the run() hook method
      - Can be called to start both platform & virtual Thread objects



Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`static Thread startVirtualThread()`**
    - Allocates virtual thread resources & initiates thread execution by calling the run() hook method



See [javase/20/docs/api/java.base/java/lang/Thread.html#startVirtualThread]()

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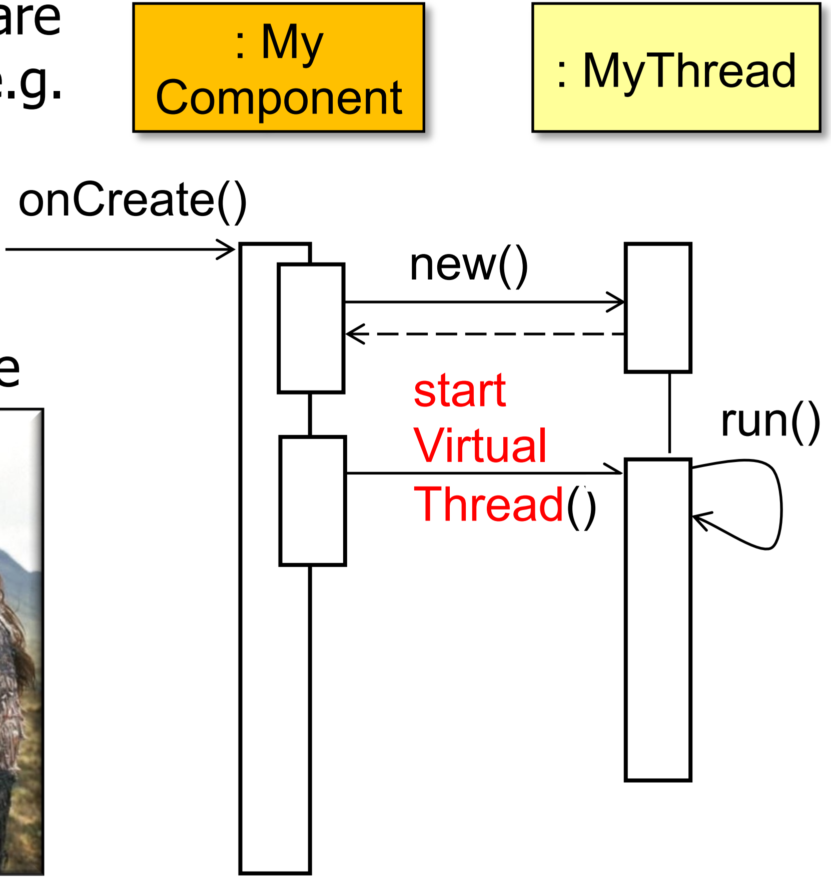

This static factory method returns a "started" virtual Thread object

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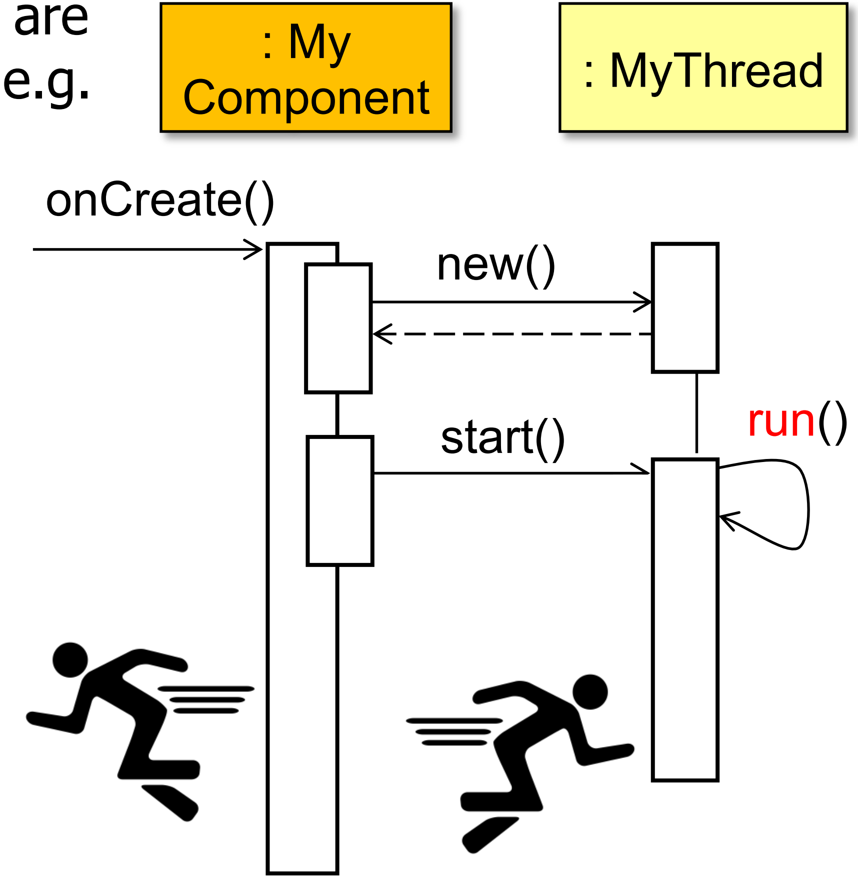
  - **`void run()`**
    - This method supplies user code to a Thread



See java/javase/20/docs/api/java.base/java/lang/Thread.html#run

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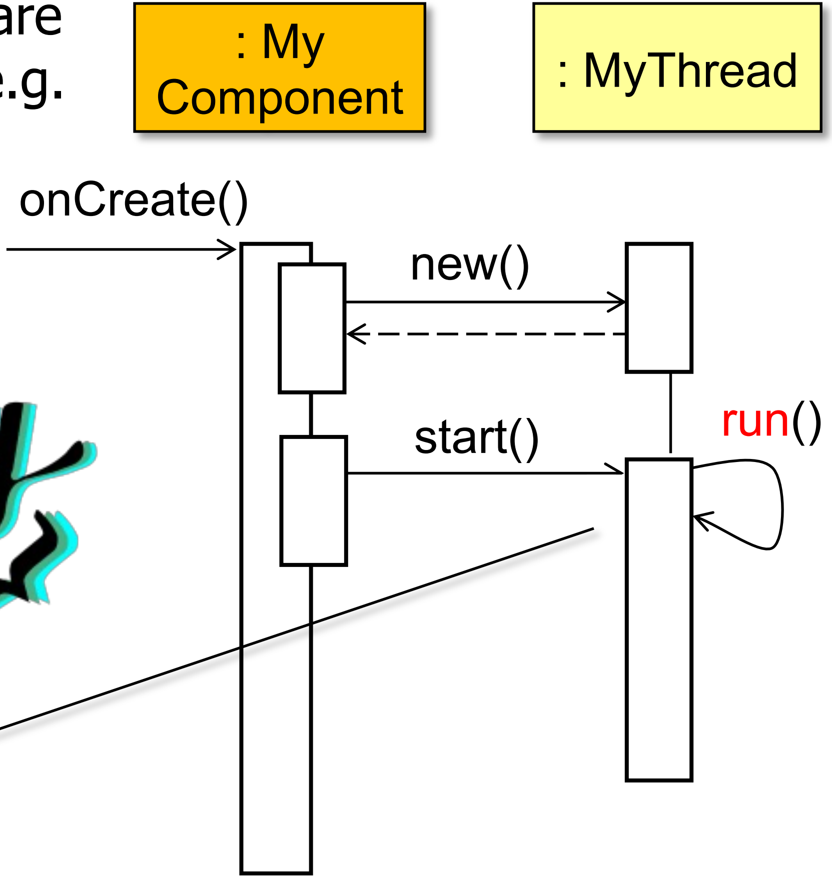
  - **`void run()`**
    - This method supplies user code to a Thread
      - It is a "hook method" that can run any type of code

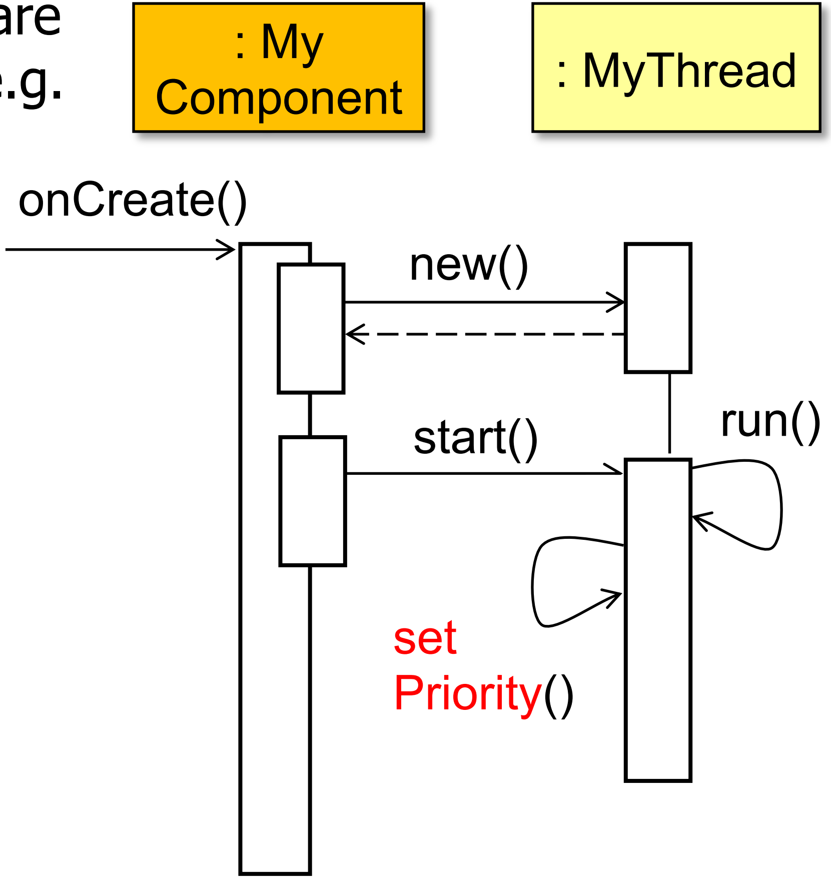


```
public void run(){
  // code to run goes here
}
```

See wiki.c2.com/?HookMethod

Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`void setPriority(int newPriority)` & `int getPriority()`**
    - Set & get the priority of a Thread



See java/lang/Thread.html#setPriority & java/lang/Thread.html#getPriority

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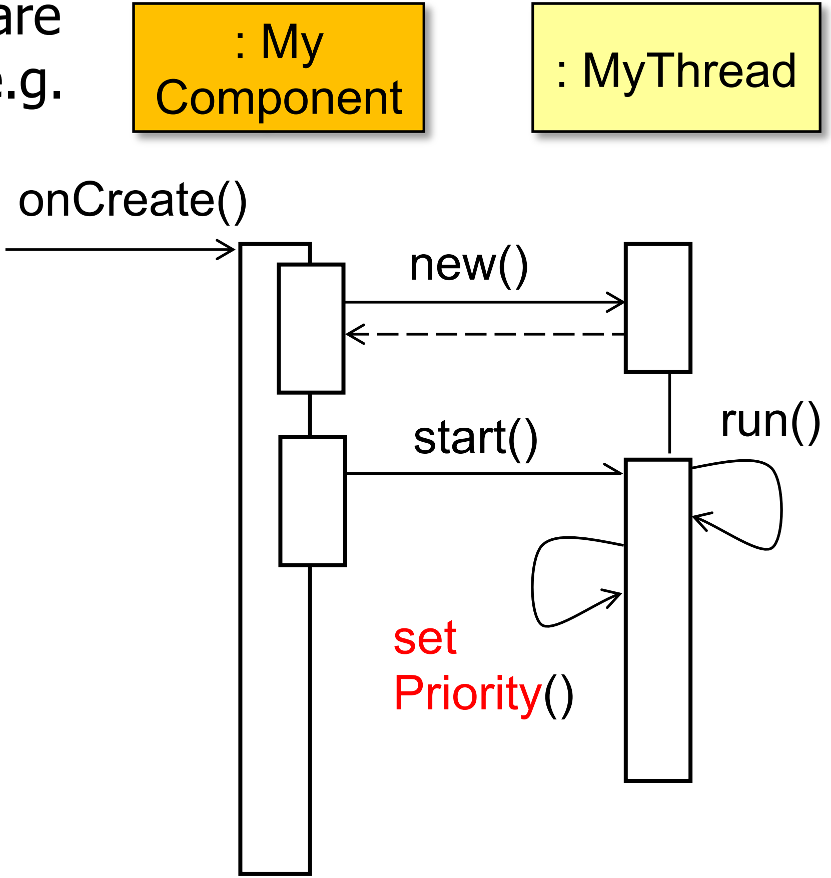

Higher values of **`newPriority`** result in higher priority threads

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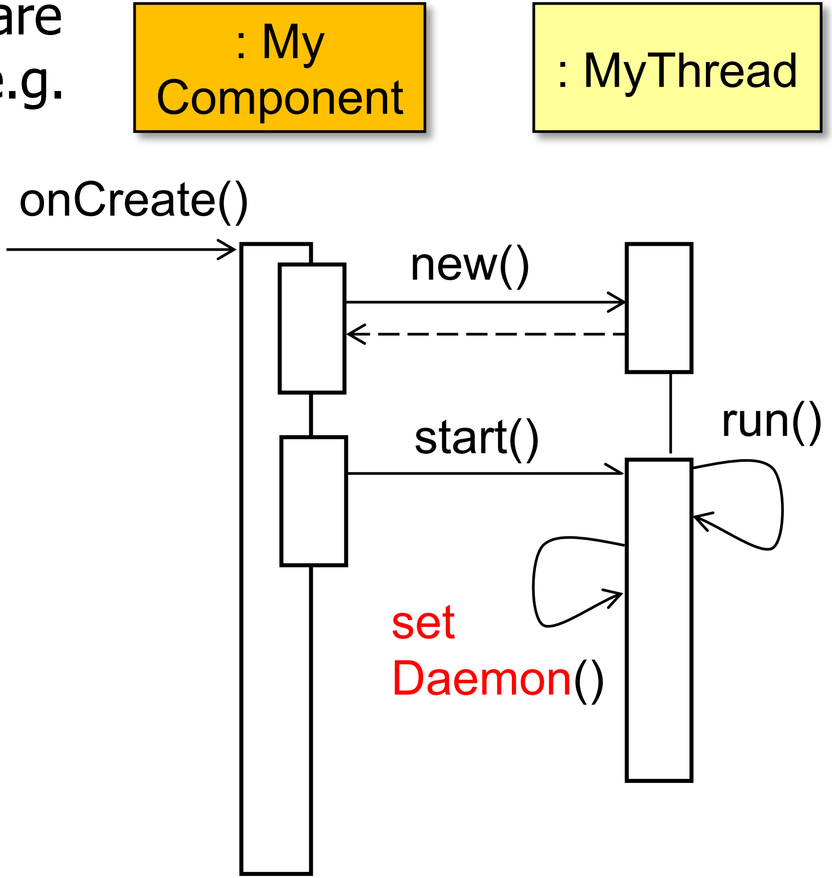
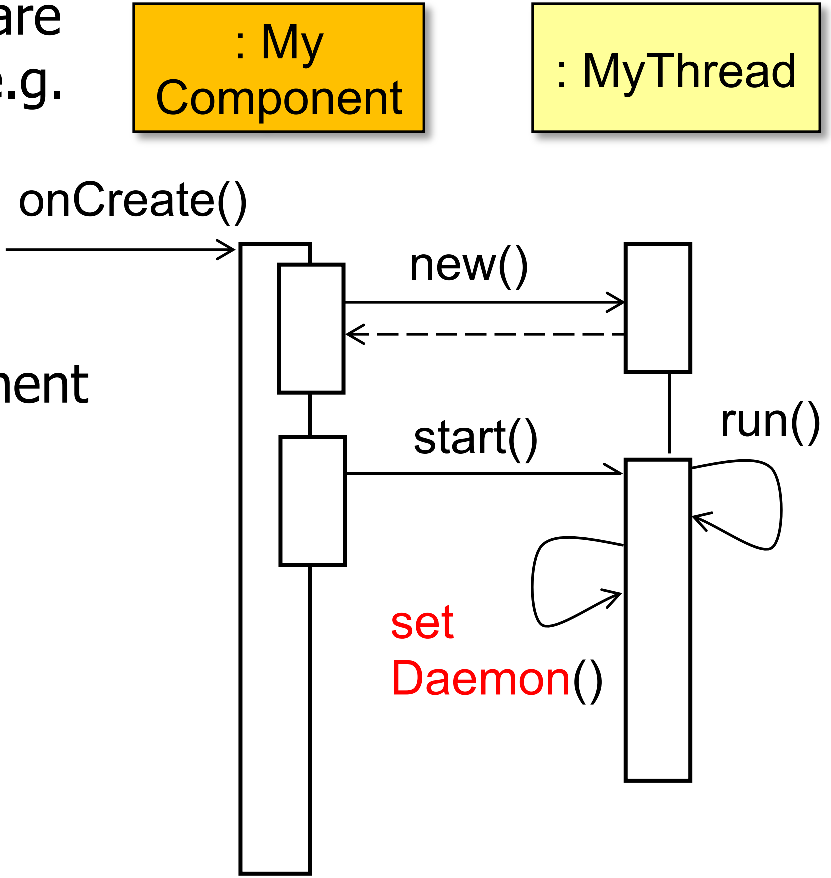
  - **`void setDaemon()`**
    - Marks thread as a "daemon"



See java/javase/20/docs/api/java.base/java/lang/Thread.html#setDaemon

Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`void setDaemon()`**
    - Marks thread as a "daemon"
      - A background Thread that does not prevent the Java execution environment from exiting when all user Thread objects have finished running



See javarevisited.blogspot.com/2012/03/what-is-daemon-thread-in-java-and.html

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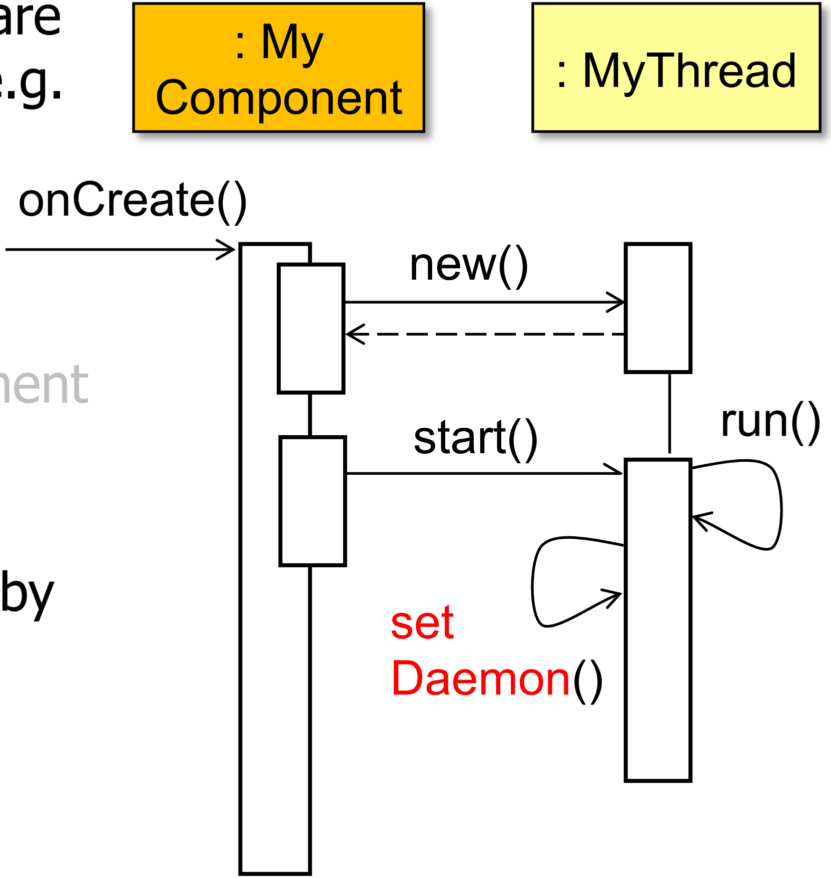
  - **`void setDaemon()`**
    - Marks thread as a "daemon"
      - A background Thread that does not prevent the Java execution environment from exiting when all user Thread objects have finished running
      - Daemon threads are often provided by libraries or frameworks that perform background services "invisibly" on behalf of other user apps



Key Java Thread Methods

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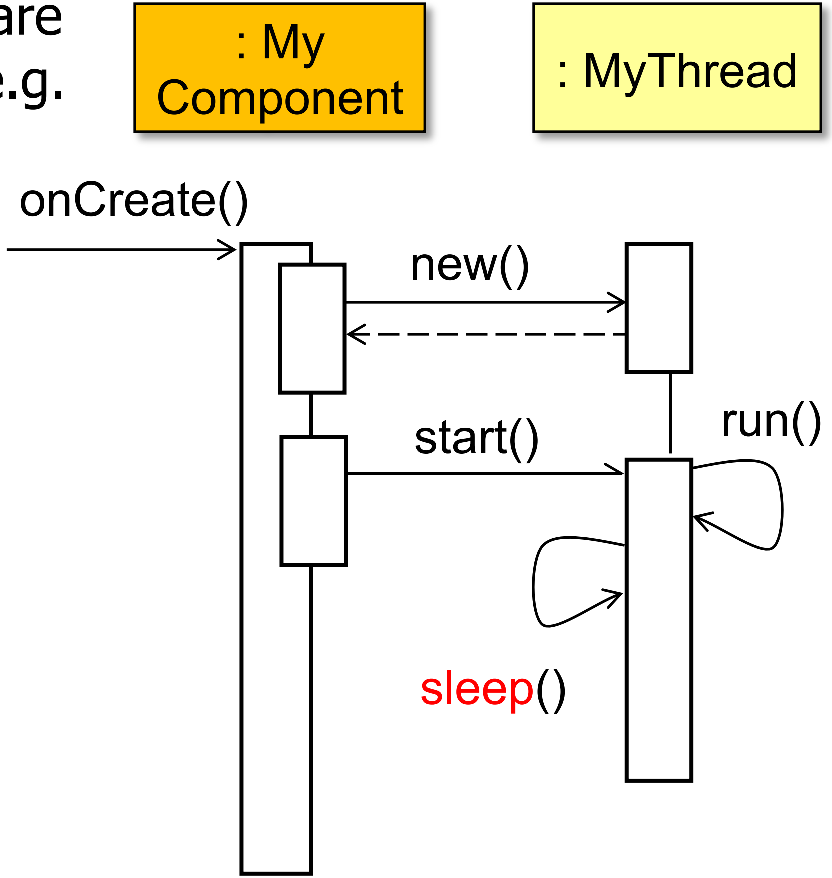
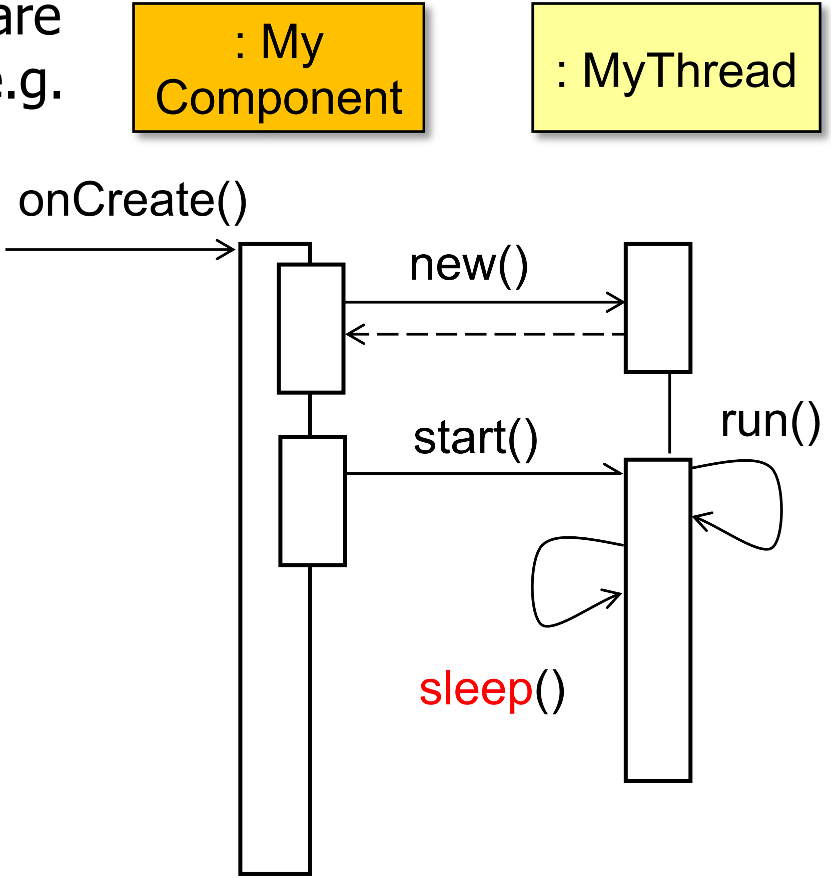
  - **`void sleep(long time)`**
    - Sleeps for given time in millisecs



See java/javase/20/docs/api/java.base/java/lang/Thread.html#sleep

Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`void sleep(long time)`**
    - Sleeps for given time in millisecs
      - Primality useful for stubbing out code in examples or tests & not much else..



See medium.com/my-random-thoughts-in-software-engineering/get-rid-of-thread-sleep-e2abf3cadb6

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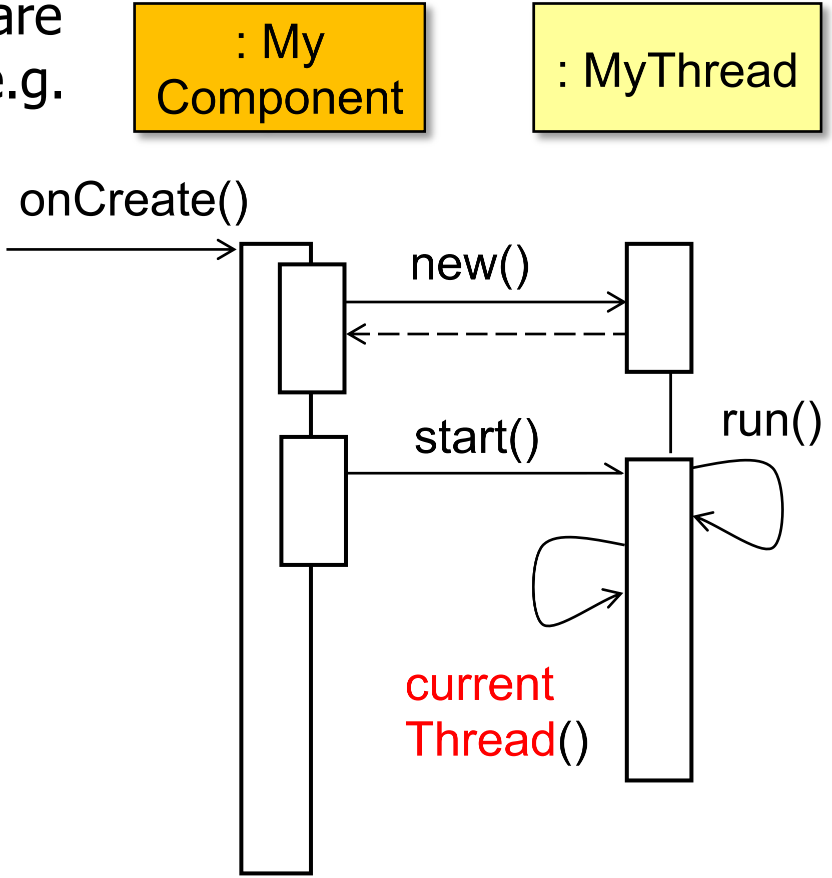
  - **`static Thread currentThread()`**
    - Obtains the object associated with the calling Thread



See [java/javase/20/docs/api/java.base/java/lang/Thread.html#currentThread]

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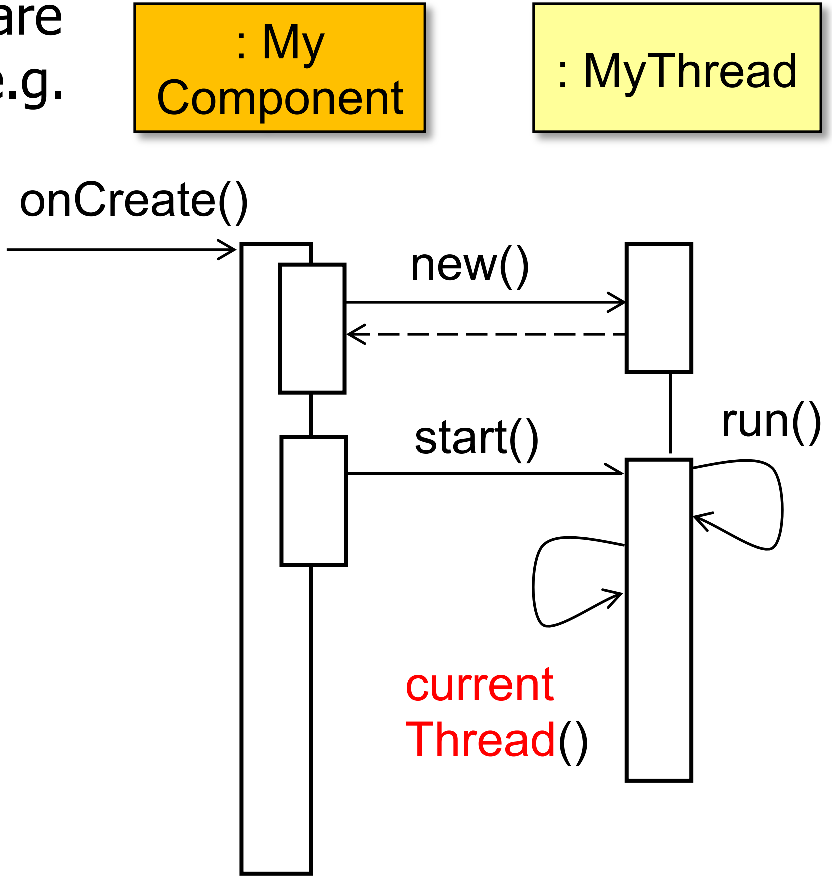
    - Obtains the object associated with the calling Thread
      - Often used for debugging & logging



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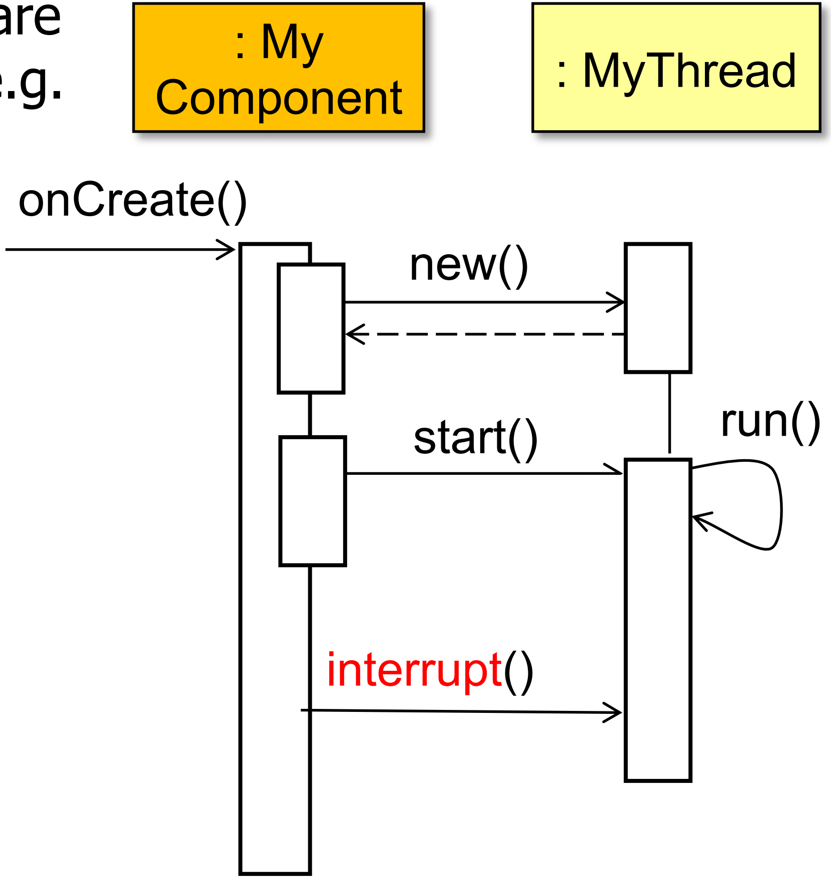
  - **`void interrupt()`**
    - Post an interrupt request to the designated Thread object indicating that its *interrupt status* is enabled



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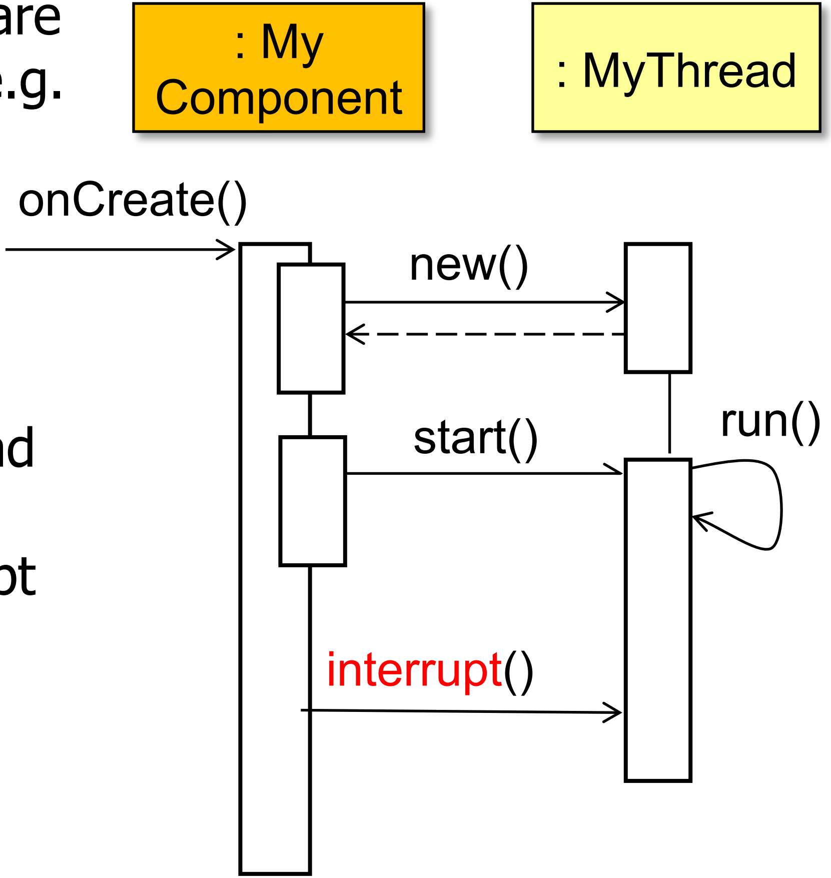
      - Provides a mechanism for one Thread to signal another Thread to stop its current activity & handle the interrupt



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

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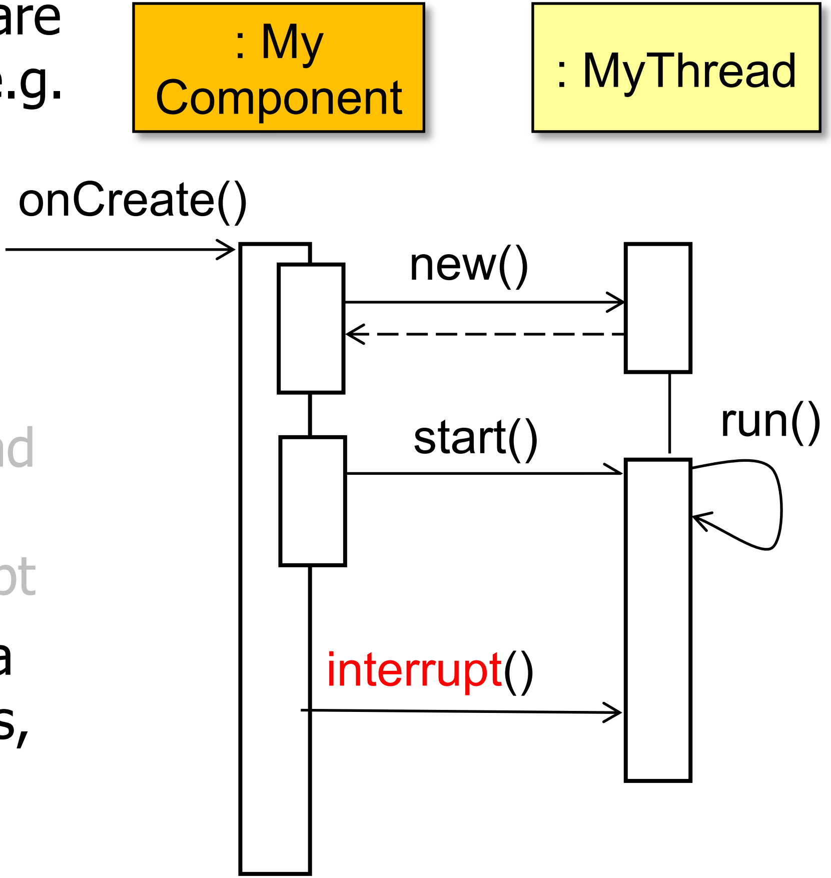
      - Provides a mechanism for one Thread to signal another Thread to stop its current activity & handle the interrupt
      - Unlike operating system interrupts, a Java Thread interrupt is synchronous, non-preemptive, & voluntary



See blog.e-zest.com/interrupting-threads-in-java

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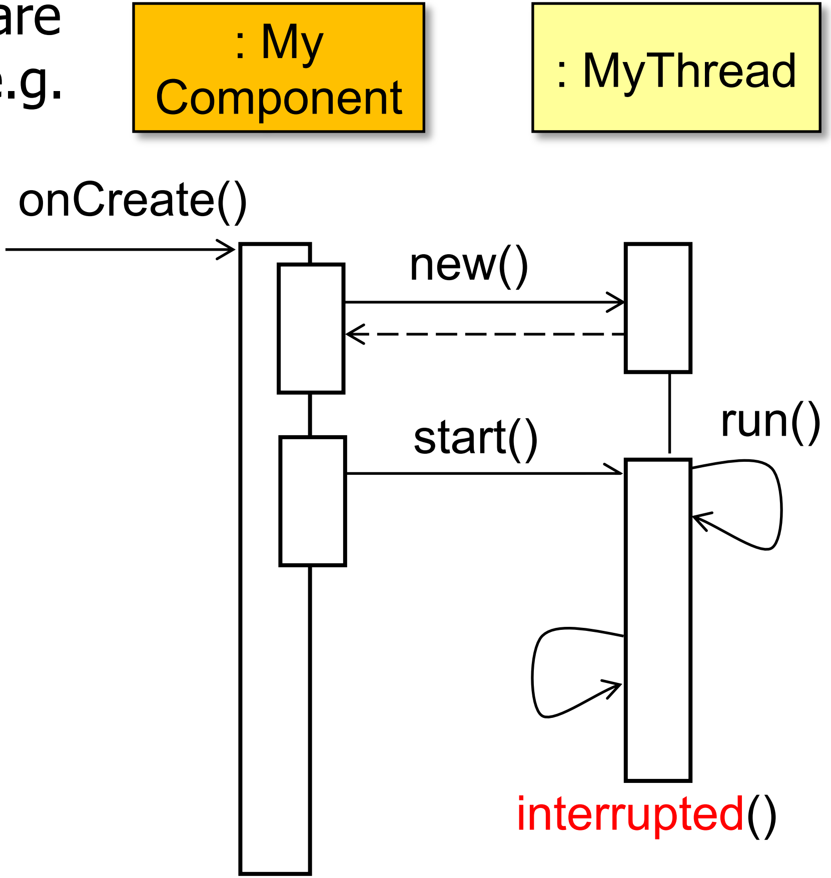
  - `static boolean interrupted()`
    - Tests whether current Thread has been interrupted



See java/javase/20/docs/api/java.base/java/lang/Thread.html#interrupted

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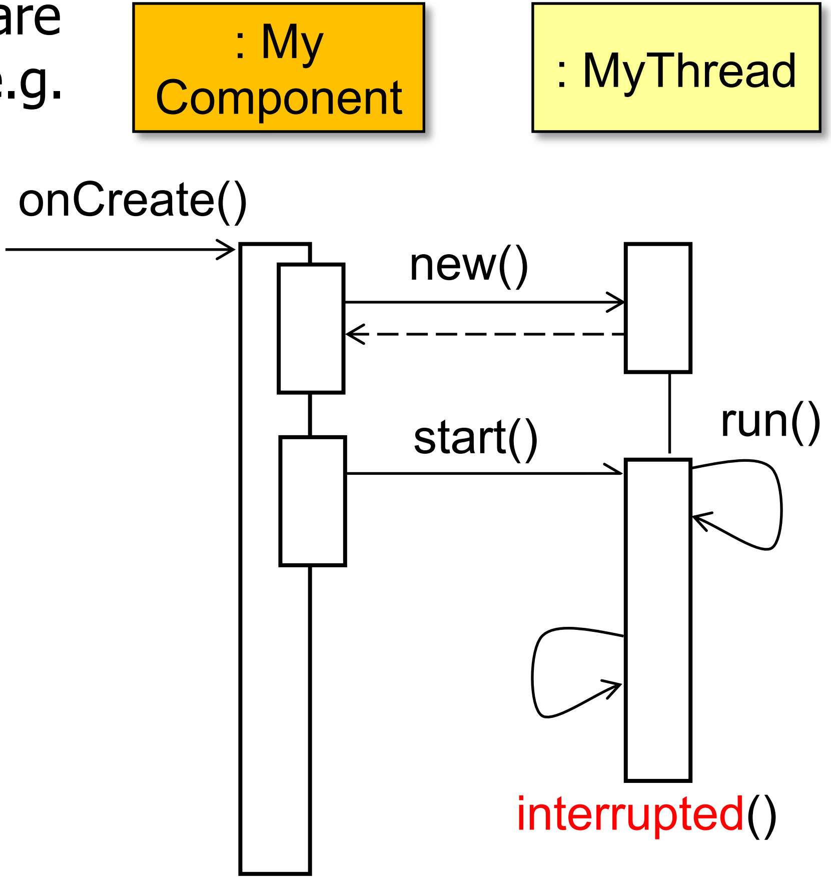

interrupted() clears the *interrupted status* the first time it's called

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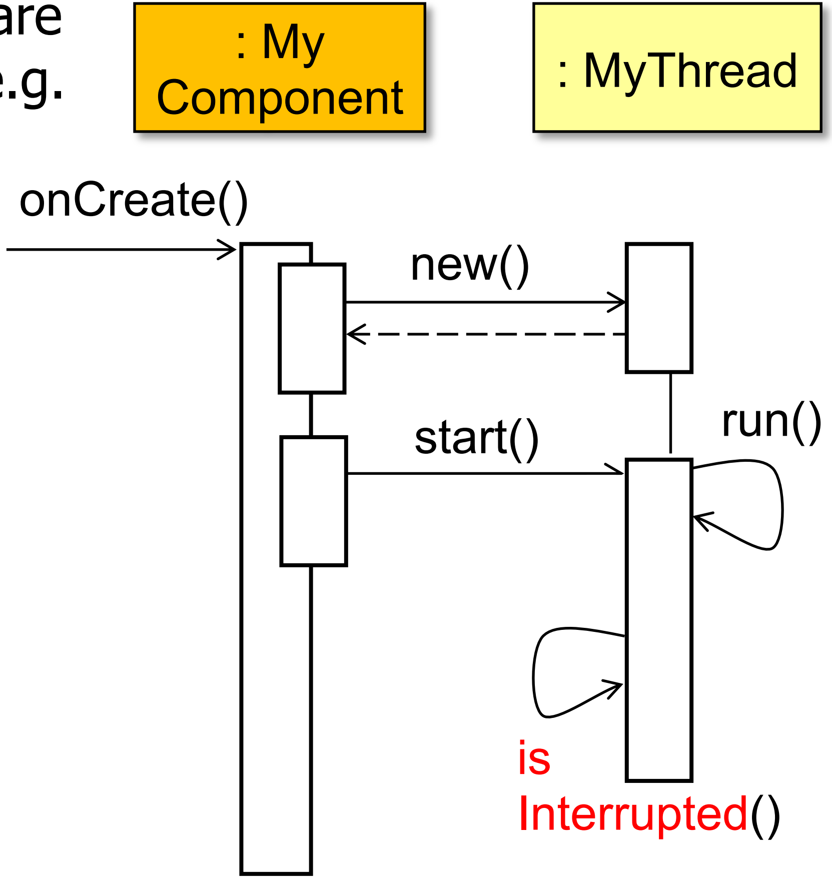
  - **`boolean isInterrupted()`**
    - Tests whether the designated Thread has been interrupted



See java/javase/20/docs/api/java.base/java/lang/Thread.html#isInterrupted

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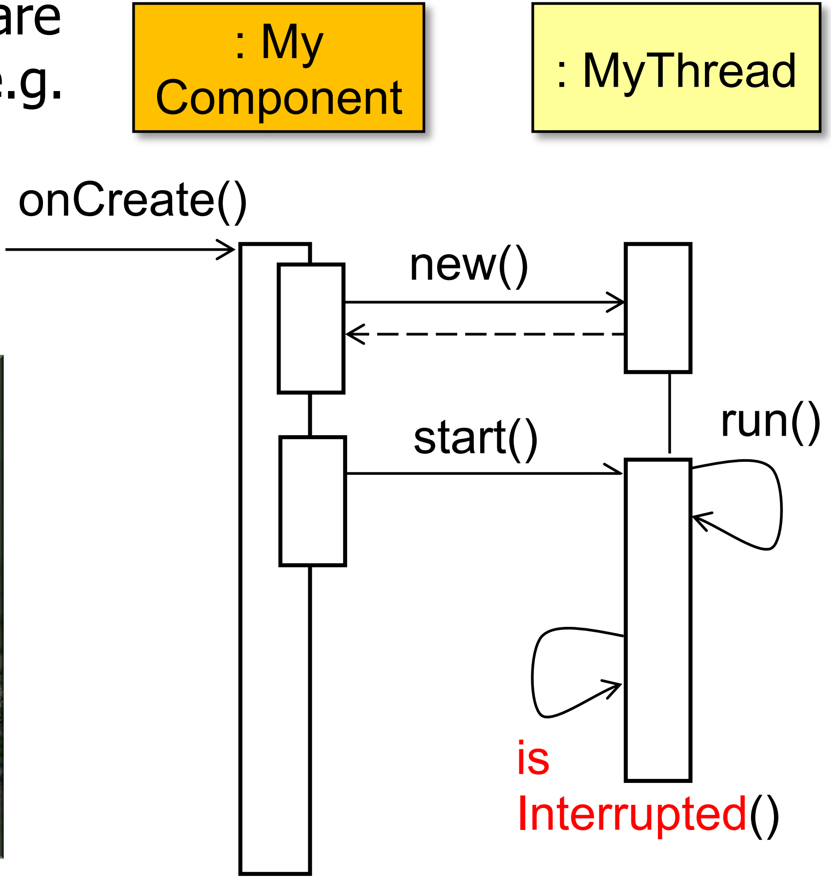

isInterrupted() can be called multiple times w/out affecting *interrupted status*

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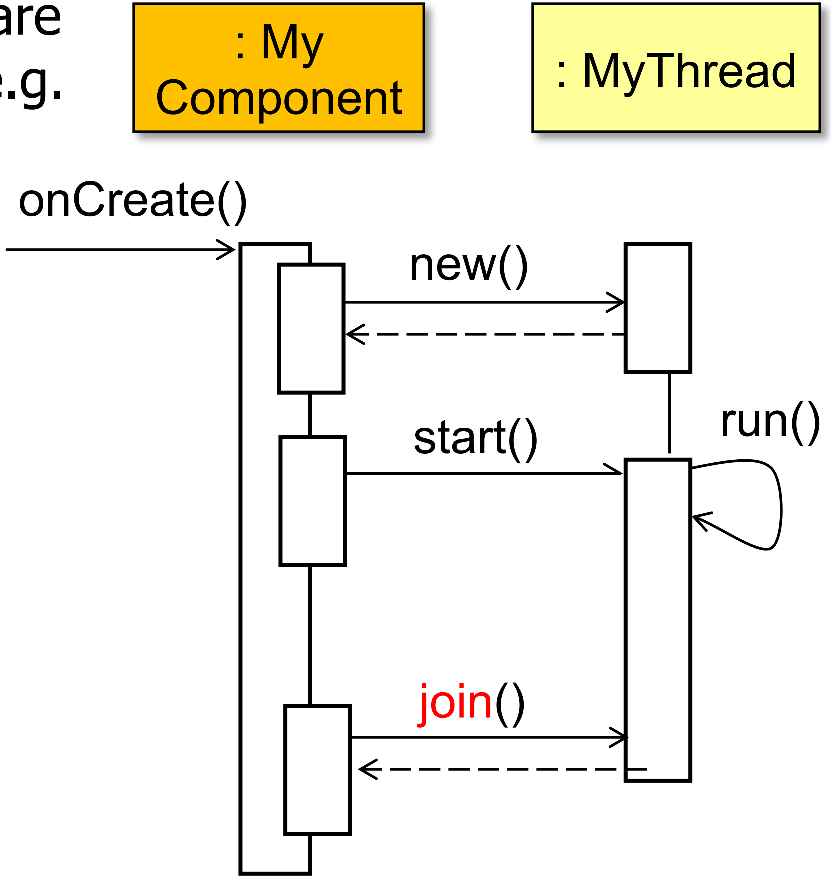
  - **`void join()`**
    - Wait for a Thread to finish



See java/javase/20/docs/api/java.base/java/lang/Thread.html#join

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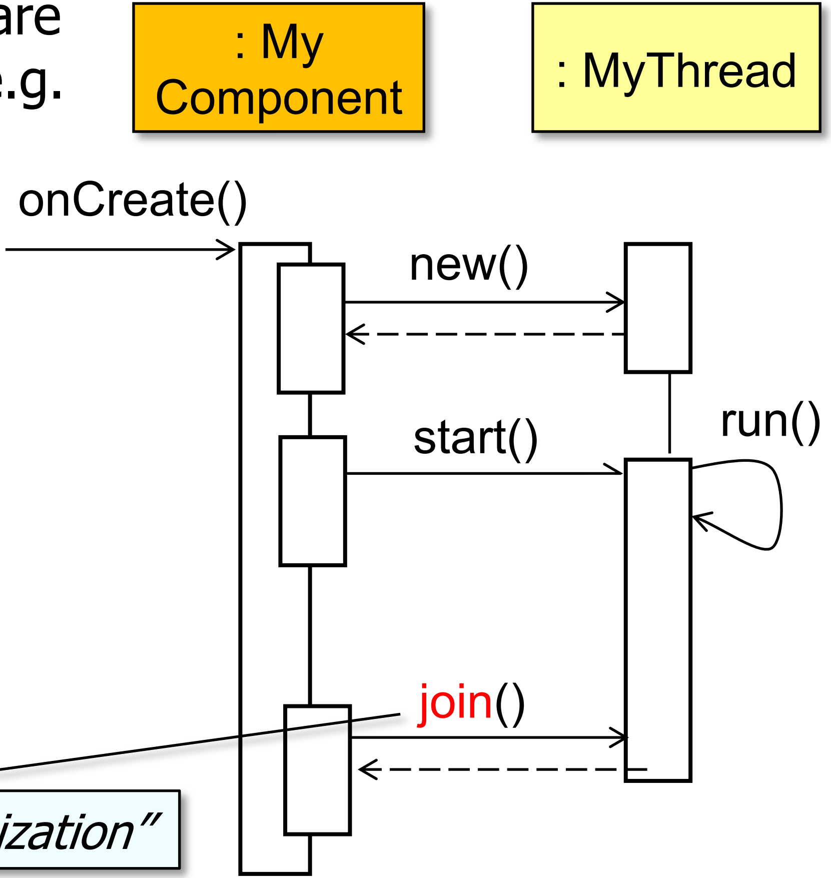
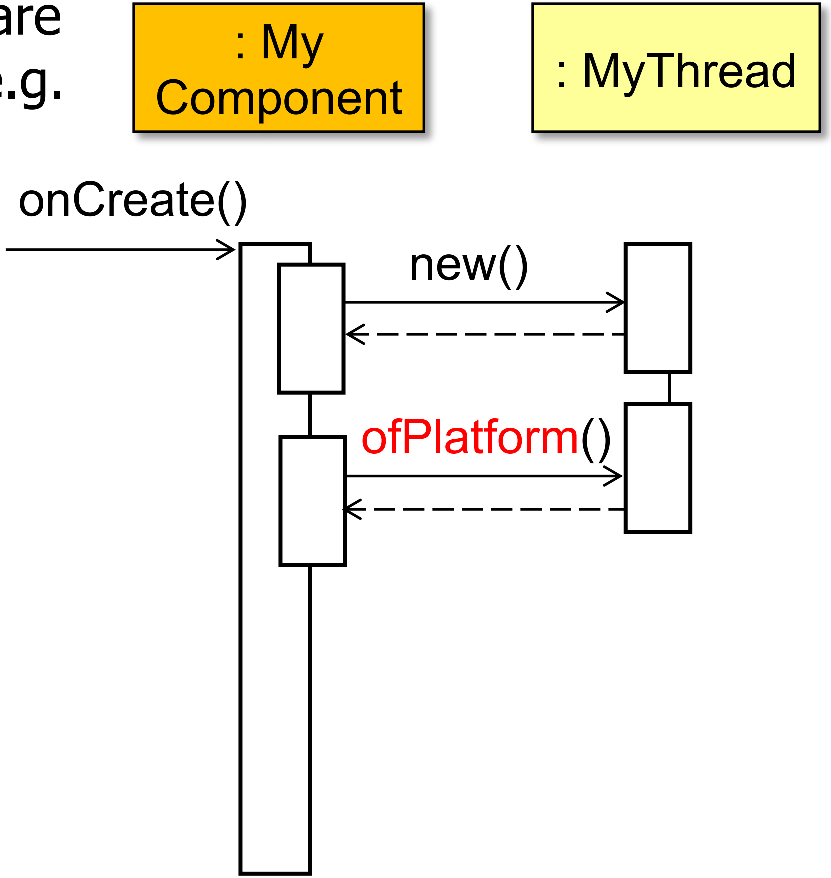


Provides a simple form of "barrier synchronization"

See en.wikipedia.org/wiki/Barrier_(computer_science)

Key Java Thread Methods

- Certain methods in the Java Thread class are used in many concurrent Java programs, e.g.
  - **`OfPlatform ofPlatform()`**
    - Returns a builder for creating a platform Thread or ThreadFactory that creates platform threads



See java/javase/20/docs/api/java.base/java/lang/Thread.html#ofPlatform

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  - **`OfVirtual ofVirtual()`**
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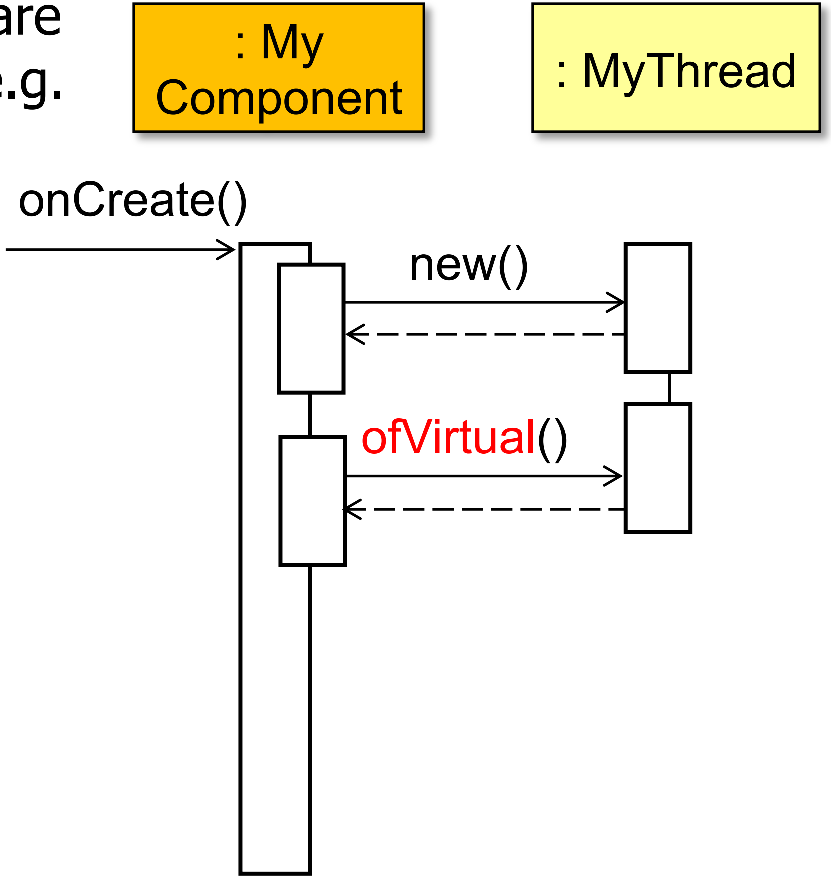

See java/javase/20/docs/api/java.base/java/lang/Thread.html#ofVirtual

End of Key Methods in a Java Thread