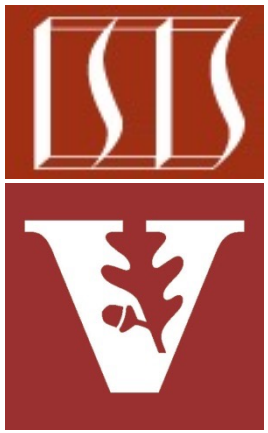
Types of Java Threads (Part 1)

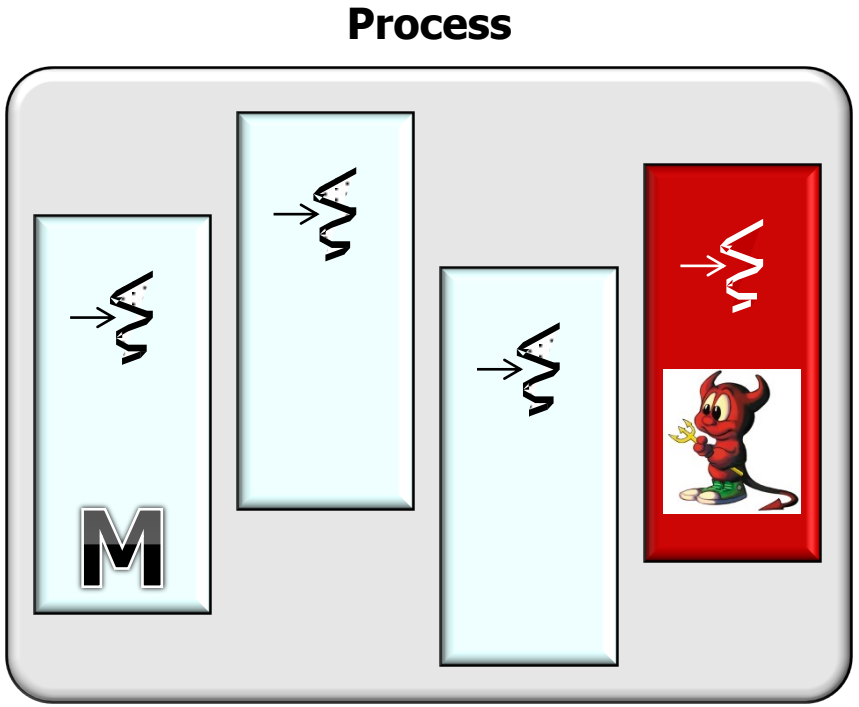


Douglas C. Schmidt
d.schmidt@vanderbilt.edu
www.dre.vanderbilt.edu/~schmidt

Institute for Software
Integrated Systems
Vanderbilt University
Nashville, Tennessee, USA

Learning Objectives in this Part of the Lesson

- Understand how Java threads support concurrency
- Learn how our case study app works
- Know alternative ways of giving code to a thread
- Learn how to pass parameters to a Java thread
- Know the differences between Java platform & virtual threads
- Be aware of how a Java thread starts & runs
- Recognize common thread methods
- Be aware of the different types of Java threads



Types of Java Threads

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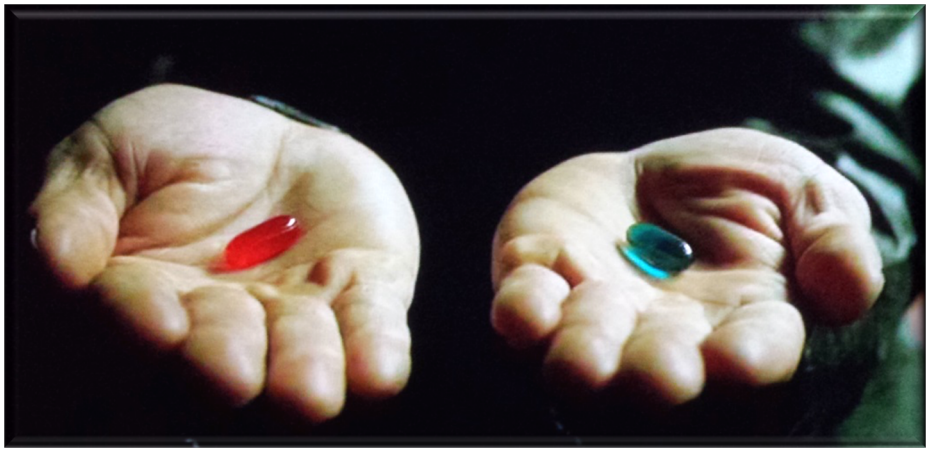
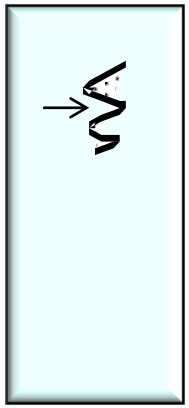
- There are two types of threads in Java:
  user threads & daemon threads



See www.geeksforgeeks.org/daemon-thread-java

Types of Java Threads

- There are two types of threads in Java: user threads & daemon threads
  - A user thread is a “high-priority” thread
    - The Java execution environment waits for user threads to complete their tasks before terminating them



Types of Java Threads

- There are two types of threads in Java: user threads & daemon threads
  - A user thread is a "high-priority" thread
  - A daemon thread is a "low-priority" thread
    - Its only purpose is to provide services to user threads

Types of Java Threads

- There are two types of threads in Java: user threads & daemon threads
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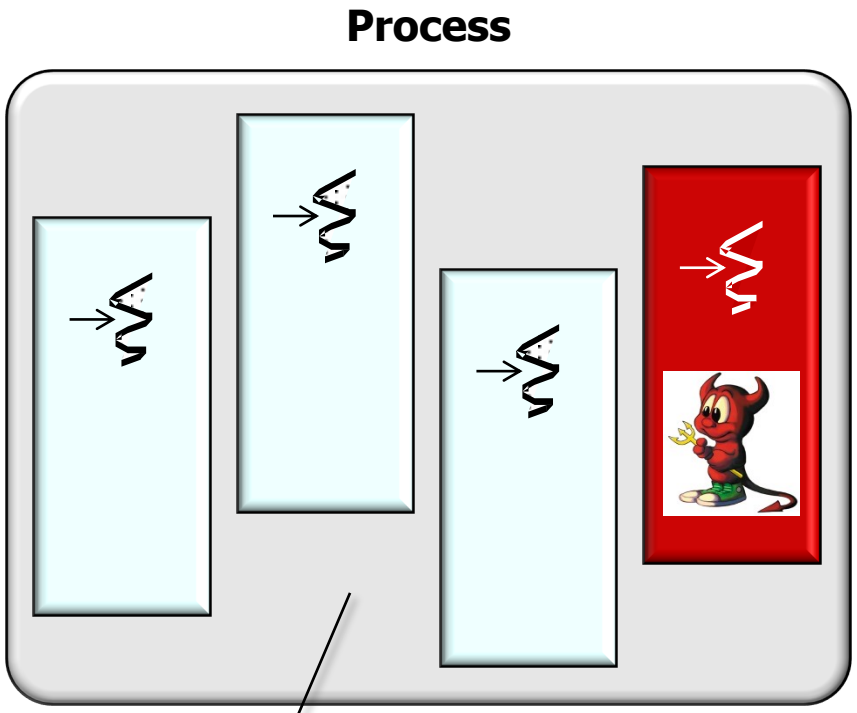
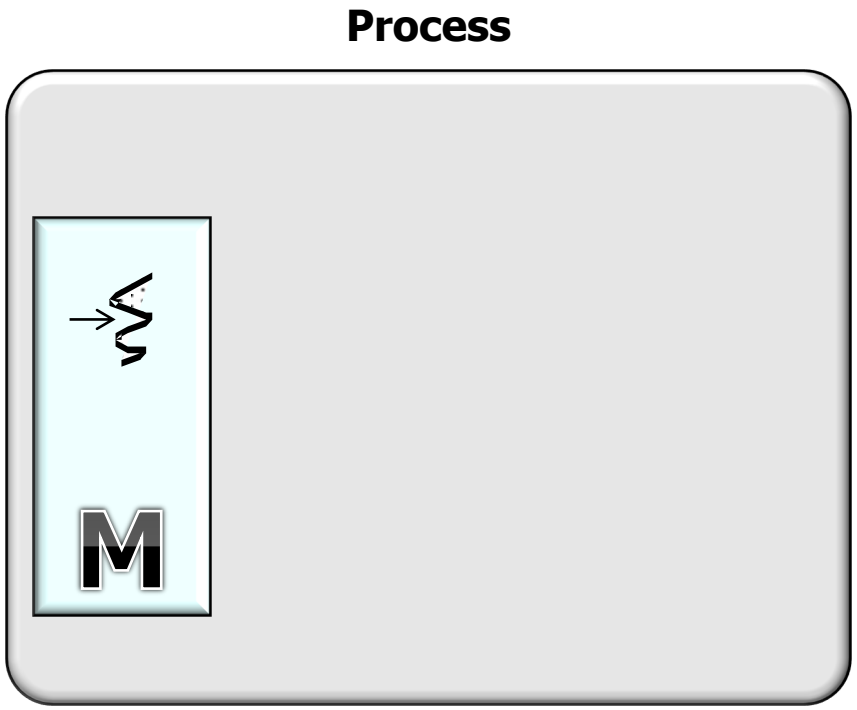


We'll employ a running example to demonstrate the differences between user & daemon threads

See github.com/douglascraigschmidt/LiveLessons/tree/master/UserOrDaemonThread

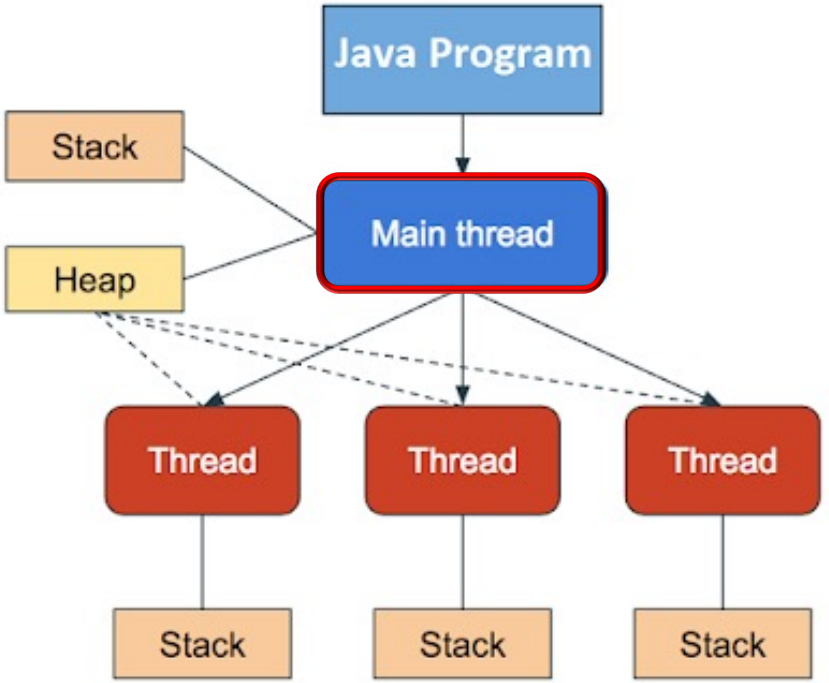
Types of Java Threads

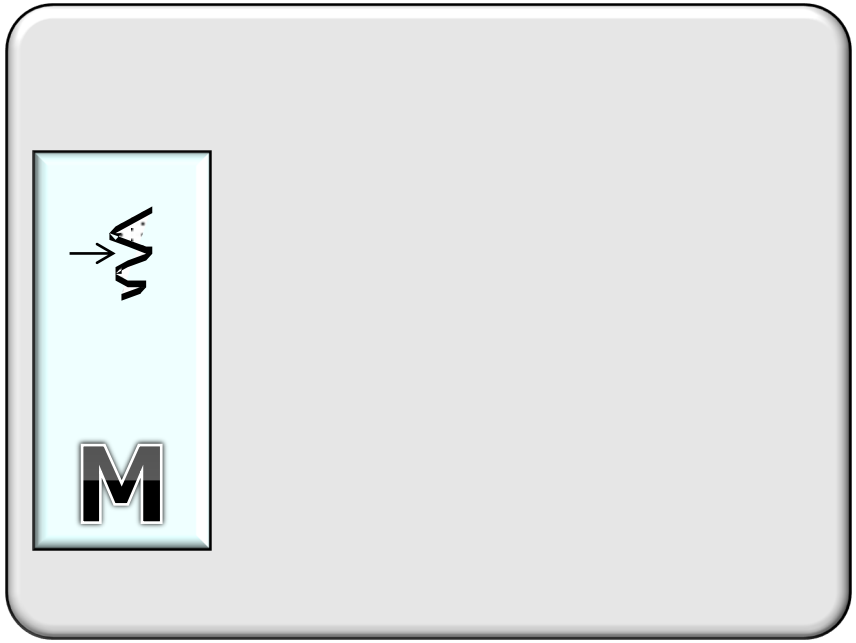
- When a Java program starts it contains a single user thread



Types of Java Threads

- When a Java program starts it contains a single user thread
  - Known as the "main thread"





See www.geeksforgeeks.org/main-thread-java

Types of Java Threads

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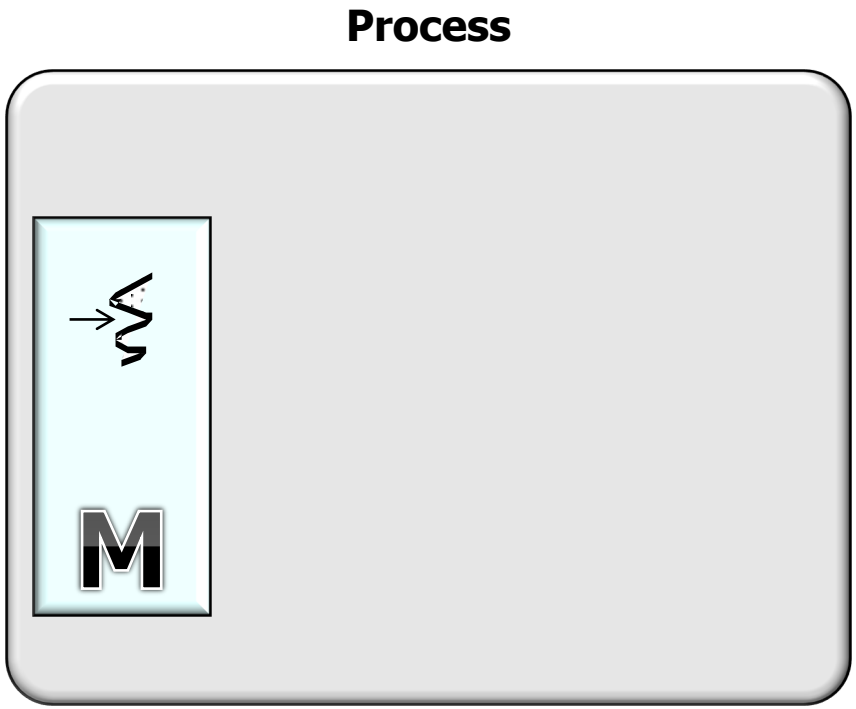
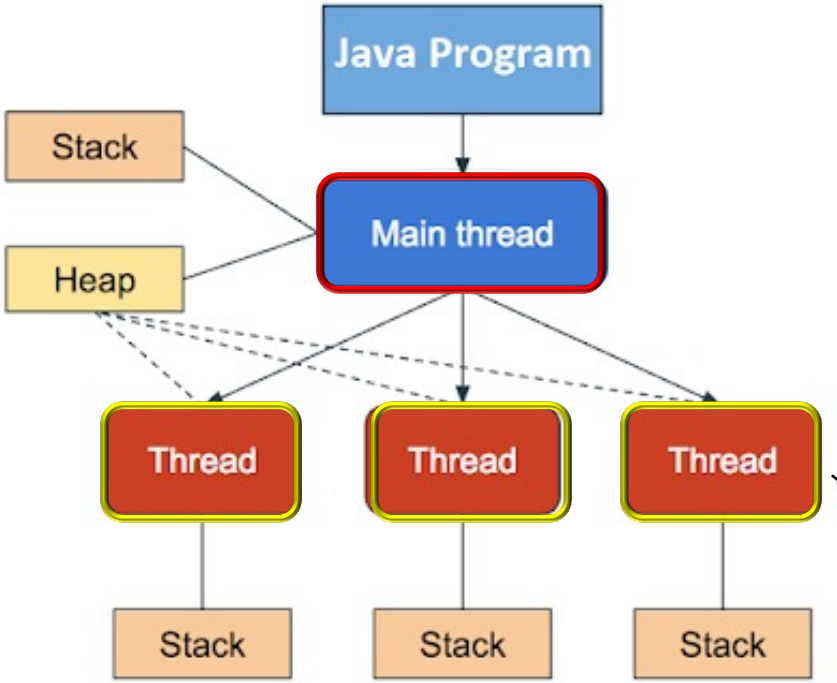
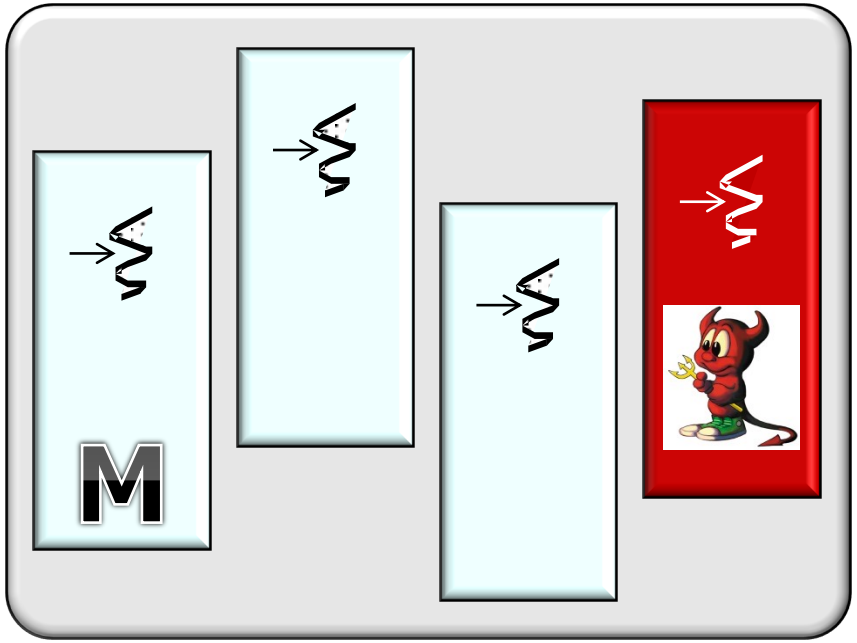




The main thread can create other threads

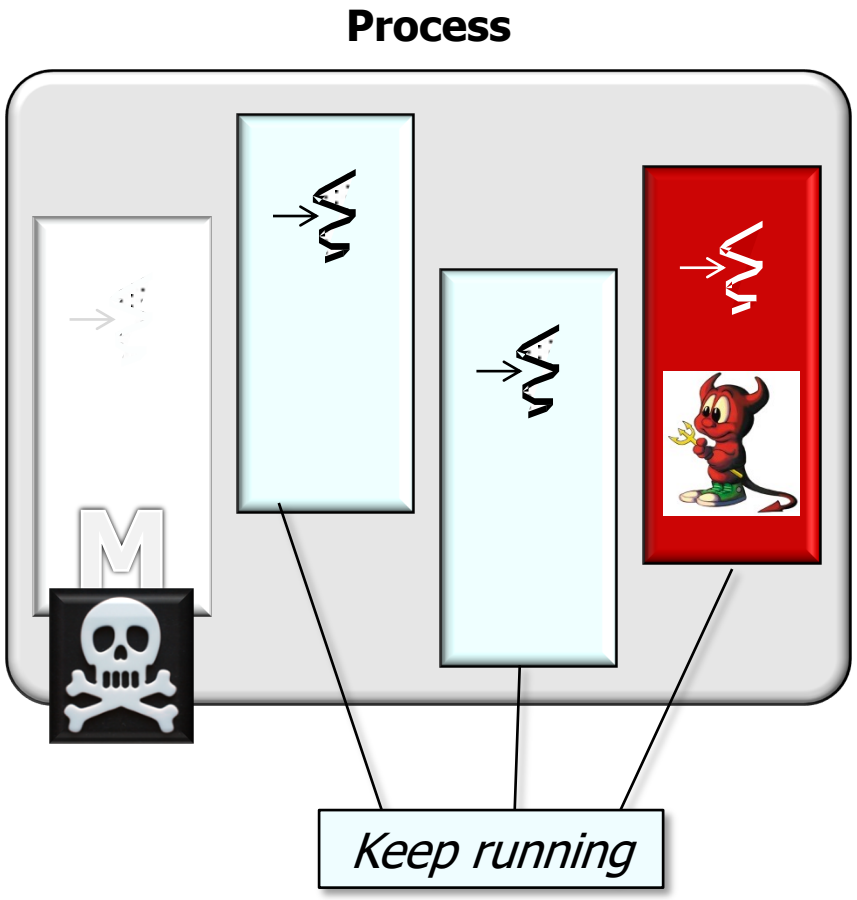
Types of Java Threads

- User threads & daemon threads differ in what happens when they exit



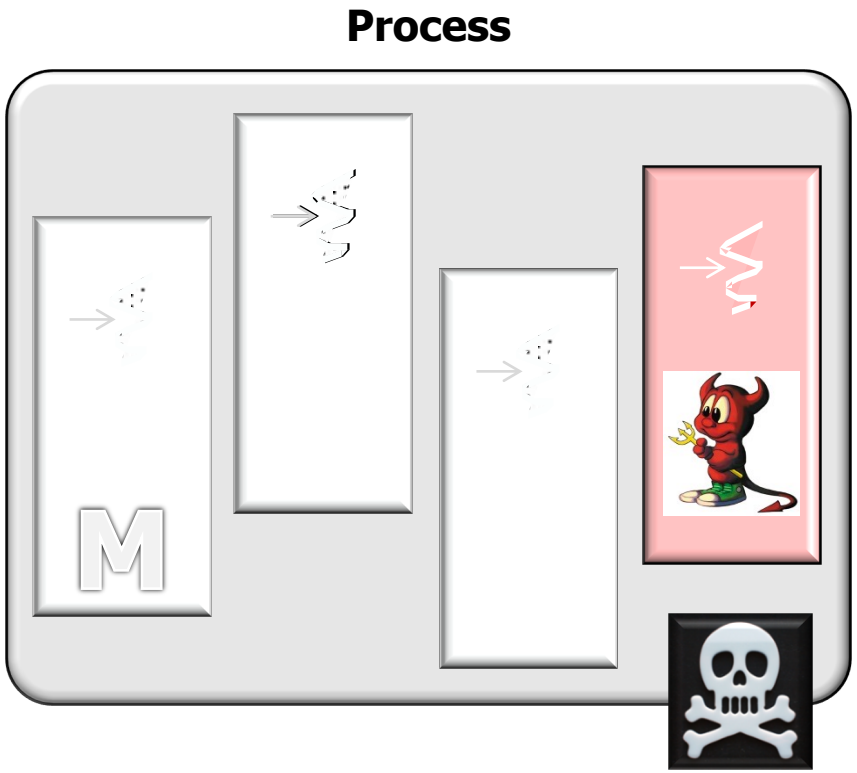
Types of Java Threads

- User threads & daemon threads differ in what happens when they exit
  - The lifecycle a user thread can outlive the main thread



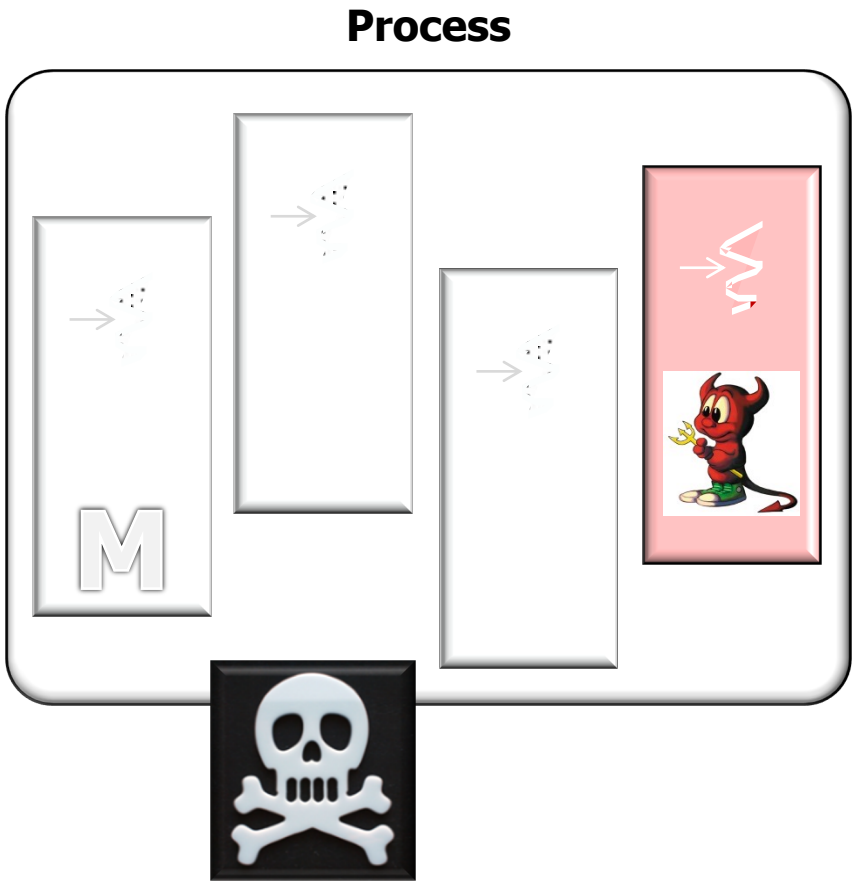
Types of Java Threads

- User threads & daemon threads differ in what happens when they exit
  - The lifecycle a user thread can outlive the main thread
  - Conversely, all daemon threads terminate automatically when all user threads terminate



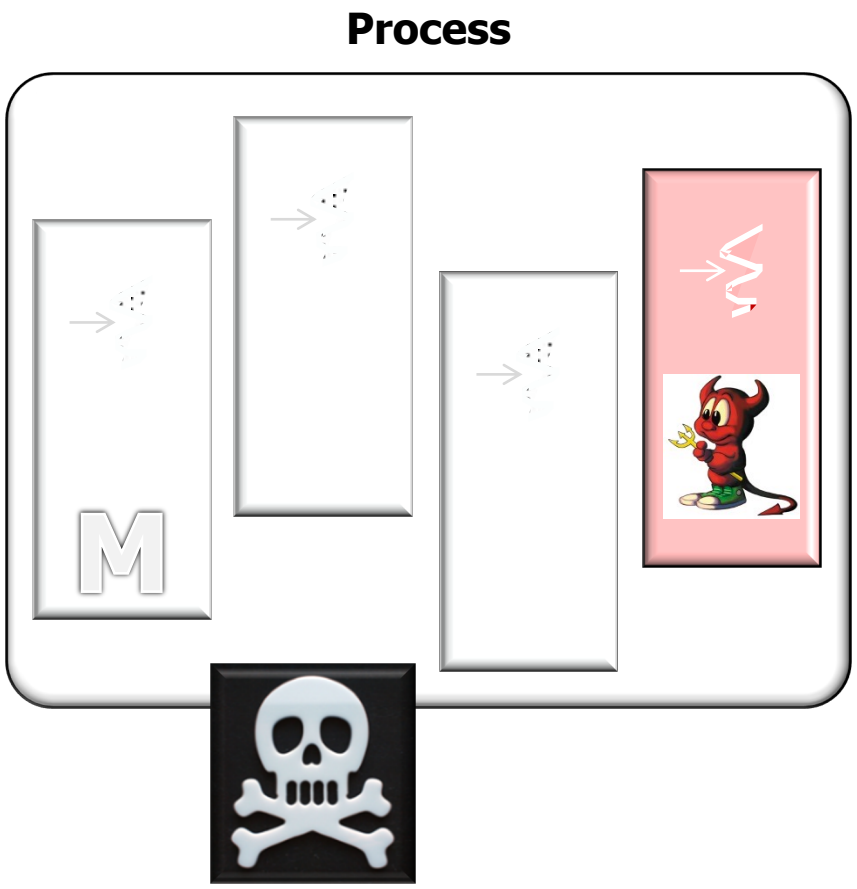
Types of Java Threads

- The Java program exits when all user threads have exited & any remaining threads are all daemon threads



Types of Java Threads

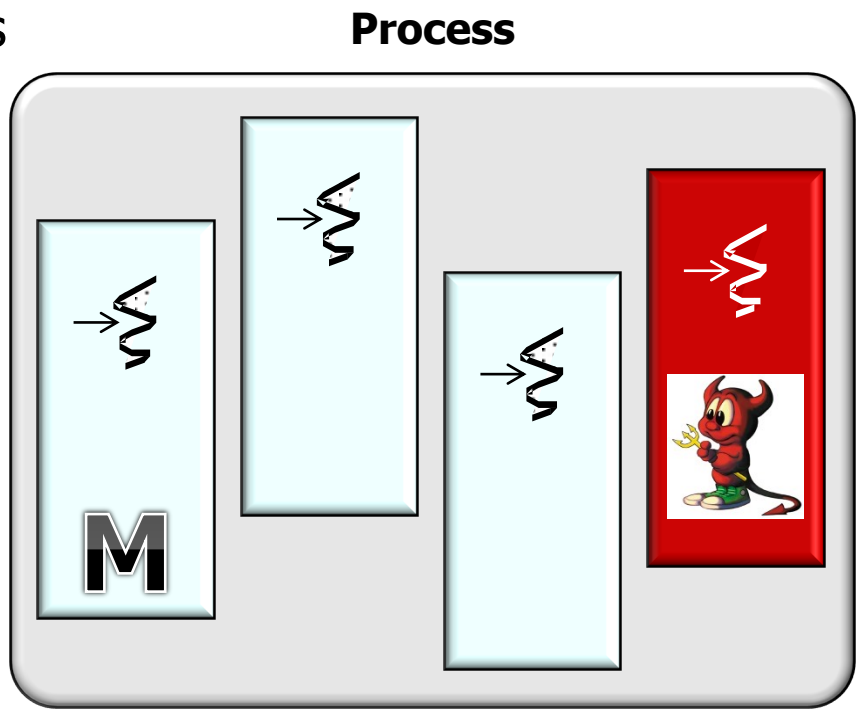
- The Java program exits when all user threads have exited & any remaining threads are all daemon threads
  - Unless a thread calls Runtime.exit(), which terminates the current Java execution environment by initiating its shutdown sequence



See docs.oracle.com/javase/8/docs/api/java/lang/Runtime.html#exit-int-

Types of Java Threads

- Java uses daemon threads in utility roles in the java.util.concurrent package
  - e.g., the ForkJoinPool & Timer classes



See java/util/Timer.java & java/util/concurrent/ForkJoinPool.java

End of Types of Java Threads (Part 1)