Threads' cooperation

- Definition
- wait, notify and notifyAll
- wait and monitor

Definition

Cooperation enables threads to work together towards a common goal

It is supported in the Java virtual machine via the wait and notify methods of class Object

wait, notify and notifyAll

wait() causes the current thread to wait until another thread invokes the notify() method or the notifyAll() method for this object

Example:

Several threads (producers) add tasks to a queue and another (consumers) retrieve them from the queue

If queue is empty, all consumers wait on the queue

wait and monitor

wait() method should only be called by a thread that is the owner of this object's monitor.

JVM uses so called a "Wait and Notify" monitor.

In this kind of monitor, a thread that currently owns the monitor can suspend itself inside the monitor by executing a wait command.

When a thread executes a wait, it releases the monitor and enters a wait set.

The thread will stay suspended in the wait set until some time after another thread executes a notify command inside the monitor.

After a thread does a notify (the signal) it retains ownership of the monitor and continues executing the monitor region