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Mapa Conceptual: Android

TÓPICOS AVANZADOS DE PROGRAMACIÓN

DANIEL ESPANA GOMEZ
ITSJ,NC:S16070130,CORREO:VIVALARAZAD@GMAIL.COM
DOCENTE: Salvador Acevedo

Exercises

1. Fill in the blanks in each of the following statements:

a) A thread enters the *terminated* state when ____its run method ends_____.

b) To pause for a designated number of milliseconds and resume execution, a thread should call method _____sleep____ of class ___thread_____.

c) Method _____signal_____ of class Condition moves a single thread in an object's *waiting* state to the *runnable* state.

d) Method ____signalAll_____ of class Condition moves every thread in an object's *waiting* state to the *runnable* state.

e) A(n) _____runnable_____ thread enters the ____terminated_____ state when it completes its task or otherwise terminates.

f) A *runnable* thread can enter the ____timed waiting_____ state for a specified interval of time.

g) At the operating-system level, the *runnable* state actually encompasses two separate states, _____ready_____ and ____running_____.

h) Runnables are executed using a class that implements the ____Executor_____ interface.

i) ExecutorService method _____shutdown_____ ends each thread in an ExecutorService as soon as it finishes executing its current Runnable, if any.

j) A thread can call method _____await_____ on a Condition object to release the associated Lock and place that thread in the _____waiting_____ state.

k) In a(n) ___producer/consumer__ relationship, the ___producer_____ generates data and stores it in a shared object, and the ____consumer_____ reads data from the shared object.

l) Class ____ArrayBlockingQueue_____ implements the BlockingQueue interface using an array.

m) Keyword ____synchronized_____ indicates that only one thread at a time should execute on an object.

2. State whether each of the following is *true* or *false*. If *false*, explain why.

a) A thread is not *runnable* if it has terminated. **True.**

b) Some operating systems use timeslicing with threads. Therefore, they can enable threads to preempt threads of the same priority. **False. Timeslicing allows a thread to execute until its timeslice expires. Then other threads of equal priority can execute.**

c) When the thread's quantum expires, the thread returns to the *running* state as the operating system assigns it to a processor. **False. When a thread's quantum expires, the thread returns to the ready state and the operating system assigns to the processor another thread.**

d) On a single-processor system without timeslicing, each thread in a set of equal-priority threads (with no other threads present) runs to completion before other threads of equal priority get a chance to execute. **True.**

3. *(True or False)* State whether each of the following is *true* or *false*. If *false*, explain why.

a) Method sleep does not consume processor time while a thread sleep. **True.**

b) Declaring a method synchronized guarantees that deadlock cannot occur. **False. Deadlocks can occur if the lock on an object is never released.**

c) Once a ReentrantLock has been obtained by a thread, the ReentrantLock object will not allow another thread to obtain the lock until the first thread releases it. **True.**

d) Swing components are thread safe. **False. Swing components are not thread safe. All interactions with Swing GUI components should be performed in the event-dispatching thread.**

4. *(Multithreading Terms)* Define each of the following terms.

a) thread. - An individual execution context of a program

b) multithreading. - The ability of more than one thread to execute concurrently.

c) *runnable* state. - A state in which the thread is capable of running

d) *timed waiting* state. - A state in which the thread cannot use the processor because it is waiting for a time interval to expire or a notification from another thread.

e) preemptive scheduling. - A thread of higher priority enters a running state and is assigned to the processor. The thread preempted from the processor is placed back in the ready state according to its priority.

f) Runnable interface. - An interface that provides a run method. By implementing the Runnable interface, any class can be executed as a separate thread.

g) notifyAll method. - Transitions all threads waiting on an object's monitor to the runnable state.

h) producer/consumer relationship. - A relationship in which a producer and a consumer share common data. The producer typically wants to "produce" (add information) and the consumer wants to "consume" (remove information).

i) quantum. **-** A small amount of processor time, also called a time slice.

5. ***(Multithreading Terms)*** Define each of the following terms in the context of Java's threading mechanisms:

a) synchronized. - When a method or block is declared synchronized and it is running, the object is locked. Other threads cannot access the other synchronized methods of the object until the lock is released.

b) producer. - A thread that writes data to a shared memory resource.

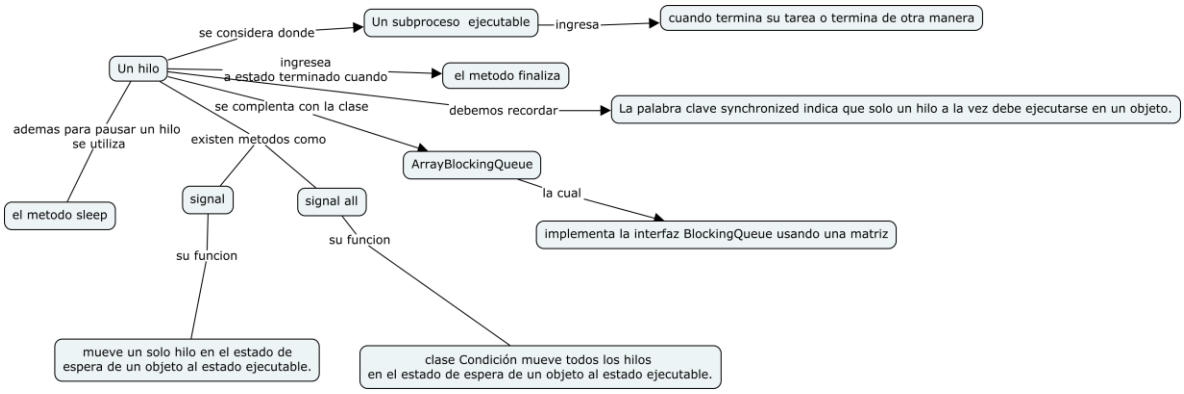
c) consumer. - A thread that reads data from a shared memory resource.

d) wait. - Places a thread in the waiting state until another thread call notify or notifyAll on the same object or until a specified amount of time elapses.

e) notify. - Wake a thread currently waiting on the given object.

f) Lock. - An interface implemented by objects that control access to a resource shared among multiple threads.

g) Condition. - Objects of this interface represent condition variables that can be used with Locks to manage access to a shared resource



Referencias Bibliográficas.

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