SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institutions)

19CST102 - OBJECT ORIENTED PROGRAMMING

I YEAR / II SEMESTER

UNIT IV – MULTITHREADING IN JAVA

TOPIC : INTER THREAD COMMUNICATION

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Java Threads

- Threads allows a program to operate more efficiently by doing multiple things at the same time.
- Threads can be used to perform complicated tasks in the background without interrupting the main program.

Inter-thread Communication in Java

- Inter thread communication is all about allowing threads to communicate with each other.
- It is implemented by following methods of Object class:
    - Wait()
    - Notify()
    - NotifyAll()

Wait() method

- The wait() method causes current thread to release the lock and wait until either another thread invokes the notify() method or the notifyAll() method for this object,or a specified amount of time has elapsed.
- The current thread must own this objects monitor,so it must be called from the synchronized method only otherwise it will throw exception.

Notify() method

- The notify() method wakes up a single thread that is waiting on this object’s monitor.
- If any threads are waiting on this object,one of them is choosen to be awakened.

Syntax:

```
Public final void notify()
```

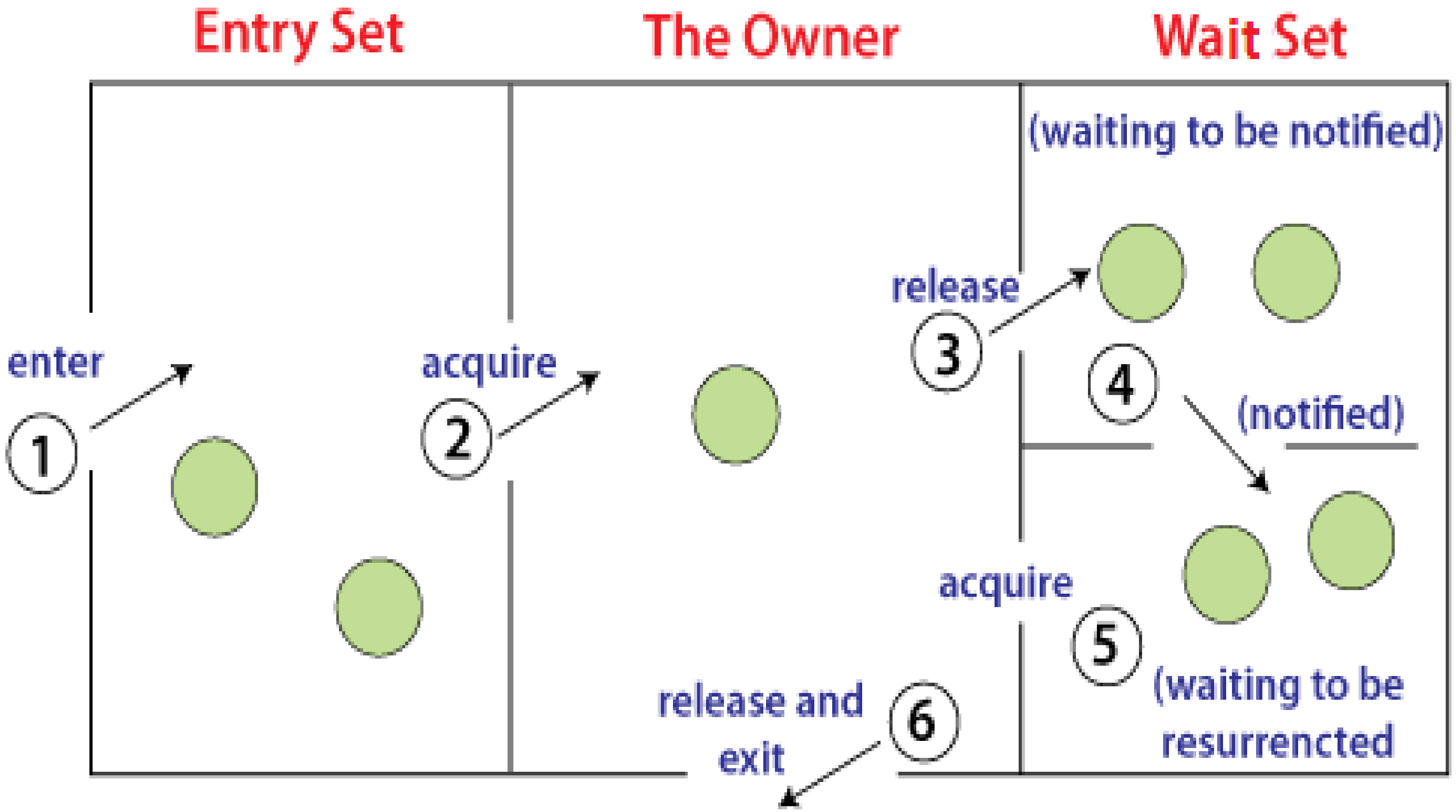
NotifyAll() method

- Wakes up all threads that are waiting on this object’s monitor.

Syntax:

Public final void notifyAll()

Understanding the process of inter-thread communication



Understanding the process of inter-thread communication

- The point to point explanation of the above diagram is as follows:
- Threads enter to acquire lock.
- Lock is acquired by on thread.
- Now thread goes to waiting state if you call wait() method on the object. Otherwise it releases the lock and exits.
- If you call notify() or notify All() method, thread moves to the notified state (runnable state).
- Now thread is available to acquire lock.
- After completion of the task, thread releases the lock and exits the monitor state of the object.

Difference between wait and sleep

wait()	sleep()
The wait() method releases the lock.	The sleep() method doesn't release the lock.
It is a method of Object class	It is a method of Thread class
It is the non-static method	It is the static method
It should be notified by notify() or notifyAll() methods	After the specified amount of time, sleep is completed.

Program

```
Class Customer
{
Int amount=10000;
Synchronized void withdraw(int amount){
System.out.println(“going to withdraw….”);
If(this.amount<amount){
System.out.println(“less balance;Waiting for deposit….”);
}
This.amount-=amount;
System.out.println(“withdraw completed….”);
}
Synchronized void deposit(int amount){
System.out.println(“going to deposit….”);
This.amount+=amount;
System.out.println(“deposit completed…”);
Notify();
}
}
Class Test{
Public staic void main(String args[]){
New Thread(){
Public void run(){c.withdraw(15000);}
}.start();
New Thread(){
Public void run(){c.deposit(10000);}
}.start();
}}
```

OUTPUT

```
going to withdraw….
less balance;waiting for deposit…..
going to deposit…..
deposit completed….
withdraw completed
```

THANK YOU