

# Interrupting Threads

## Interrupted Exception

You'll often come across this exception being thrown from functions. When a thread `wait()`-s or `sleep()`-s then one way for it to give up waiting/sleeping is to be interrupted. If a thread is interrupted while waiting/sleeping, it'll wake up and immediately throw `InterruptedException`.

The `Thread` class exposes the `interrupt()` method which can be used to interrupt a thread that is blocked in a `sleep()` or `wait()` call. Note that invoking the `interrupt` method only sets a flag that is polled periodically by `sleep` or `wait` to know the current thread has been interrupted and an `InterruptedException` should be thrown.

Below is an example, where a thread is initially made to sleep for an hour but then interrupted by the main thread.

```
class Demonstration {  
  
    public static void main(String args[]) throws InterruptedException {  
        InterruptExample.example();  
    }  
}  
  
class InterruptExample {  
  
    static public void example() throws InterruptedException {  
  
        final Thread sleepyThread = new Thread(new Runnable() {  
  
            public void run() {  
                try {  
                    System.out.println("I am too sleepy... Let me sleep for an hour.");  
                    Thread.sleep(1000 * 60 * 60);  
                } catch (InterruptedException ie) {  
                    System.out.println("The interrupt flag is cleared: " + Thread.interrupted());  
                }  
            }  
        })  
        sleepyThread.start();  
        Thread.sleep(1000 * 60 * 60);  
        sleepyThread.interrupt();  
    }  
}
```

```

        System.out.println("The interrupt flag is cleared : " + Thread.currentThread().isInterrupted());
        Thread.currentThread().interrupt();
        System.out.println("Oh someone woke me up ! ");
        System.out.println("The interrupt flag is set now : " + Thread.currentThread().isInterrupted());
    }
}

});

sleepyThread.start();

System.out.println("About to wake up the sleepy thread ...");
sleepyThread.interrupt();
System.out.println("Woke up sleepy thread ...");

sleepyThread.join();
}
}

```



Take a minute to go through the output of the above program. Observe the following:

- Once the interrupted exception is thrown, the interrupt status/flag is cleared as the output of line-19 shows.
- On line-20 we again interrupt the thread and no exception is thrown. This is to emphasize that merely calling the interrupt method isn't responsible for throwing the interrupted exception. Rather the implementation should periodically check for the interrupt status and take appropriate action.
- On line 22 we print the interrupt status for the thread, which is set to true because of line 20.
- Note that there are two methods to check for the interrupt status of a thread. One is the static method `Thread.interrupted()` and the other is `Thread.currentThread().isInterrupted()`. The important difference between the two is that the static method would return the interrupt status and also clear it at the same time. On line 22 we deliberately call the object method first followed by the static method. If we reverse the ordering of the two method calls on line 22, the output for the line would be *true* and *false*, instead of *true* and *true*.

