

# THREAD OBJECTS

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IN JAVA, EACH THREAD IS ASSOCIATED WITH AN INSTANCE OF THE CLASS `Thread`.

THE STATIC `Thread.currentThread()` METHOD WILL RETURN THE CURRENTLY EXECUTING THREAD AT ANY POINT IN TIME.

IN THE OLD-SCHOOL WAY OF CONCURRENT PROGRAMMING IN JAVA, THREAD OBJECTS WERE VERY IMPORTANT.

(OLD-SCHOOL)

## 2 WAYS OF STARTING A NEW THREAD

1. WRITE A CLASS THAT IMPLEMENTS THE RUNNABLE INTERFACE
2. INSTANTIATE A THREAD OBJECT AND PASS IN THE RUNNABLE OBJECT IN THE CONSTRUCTOR
3. CALL THE .START() METHOD ON THE THREAD OBJECT

1. WRITE A SUB-CLASS OF THREAD AND OVERWRITE THE 'RUN' METHOD
2. CALL THE .START() METHOD ON THE THREAD OBJECT

CREATING A RUNNABLE OBJECT IS THE PREFERRED SOLUTION, BECAUSE IT NICELY SEPARATES THE THREAD FROM THE TASK TO BE RUN ON THE THREAD.

## THREAD.SLEEP

THE STATIC THREAD.SLEEP METHOD CAN BE USED TO PAUSE EXECUTION FOR A SPECIFIED TIME (IN MILLISECONDS OR NANOSECONDS)

PUTTING A THREAD TO SLEEP IS AN EFFICIENT WAY TO WAIT (FOR INSTANCE WHILE ANOTHER TASK COMPLETES)

BTW, THERE IS NO GUARANTEE THAT THE THREAD WILL SLEEP FOR EXACTLY THE SPECIFIED PERIOD - THAT'S CONTROLLED BY THE SYSTEM

THREAD.SLEEP THROWS AN EXCEPTION, INTERRUPTEDEXCEPTION, WHICH IS THROWN IF SOME OTHER THREAD WAKES UP THE SLEEPING THREAD.

# THREAD INTERRUPTS

JAVA PROVIDES A WAY FOR THREADS TO INTERRUPT OTHER THREADS, AND TO CHECK IF THEY THEMSELVES HAVE BEEN INTERRUPTED

TO INTERRUPT ANOTHER A THREAD, CALL THE '.INTERRUPT()' MEMBER FUNCTION ON THAT THREAD

(YOU MIGHT DO THIS IF FOR INSTANCE SOME THREAD IS TAKING TOO LONG TO DO SOMETHING THAT IT OUGHT TO)

LIKEWISE, A THREAD CAN CHECK IF IT HAS BEEN INTERRUPTED AND RESPOND APPROPRIATELY

THERE ARE TWO WAYS FOR A THREAD TO CHECK IF IT HAS BEEN INTERRUPTED

1. CATCH AN INTERRUPTED EXCEPTION
2. CALL THE STATIC 'THREAD.INTERRUPTED' MEMBER FUNCTION TO SEE IF THE CURRENT THREAD HAS BEEN INTERRUPTED (RETURNS TRUE IF YES)

IF A THREAD DETECTS IT HAS BEEN INTERRUPTED, IT CAN CHANGE ITS ACTIONS ACCORDINGLY - FOR INSTANCE CANCEL WHATEVER ITS DOING, OR ON THE OTHER HAND, SIMPLY IGNORE THE INTERRUPTION

# THREAD JOIN

THE JOIN METHOD OF A THREAD CLASS IS A WAY OF WAITING UNTIL THE THREAD FINISHES EXECUTION OF ITS RUN METHOD

CALLING JOIN ON ANOTHER THREAD IS SIMILAR TO CALLING SLEEP ON THE CURRENT THREAD UNTIL THAT OTHER THREAD FINISHES EXECUTING

LIKE .SLEEP(), THE .JOIN() METHOD THROWS AN INTERRUPTED EXCEPTION IF THE THREAD IS INTERRUPTED BEFORE IT FINISHES EXECUTION