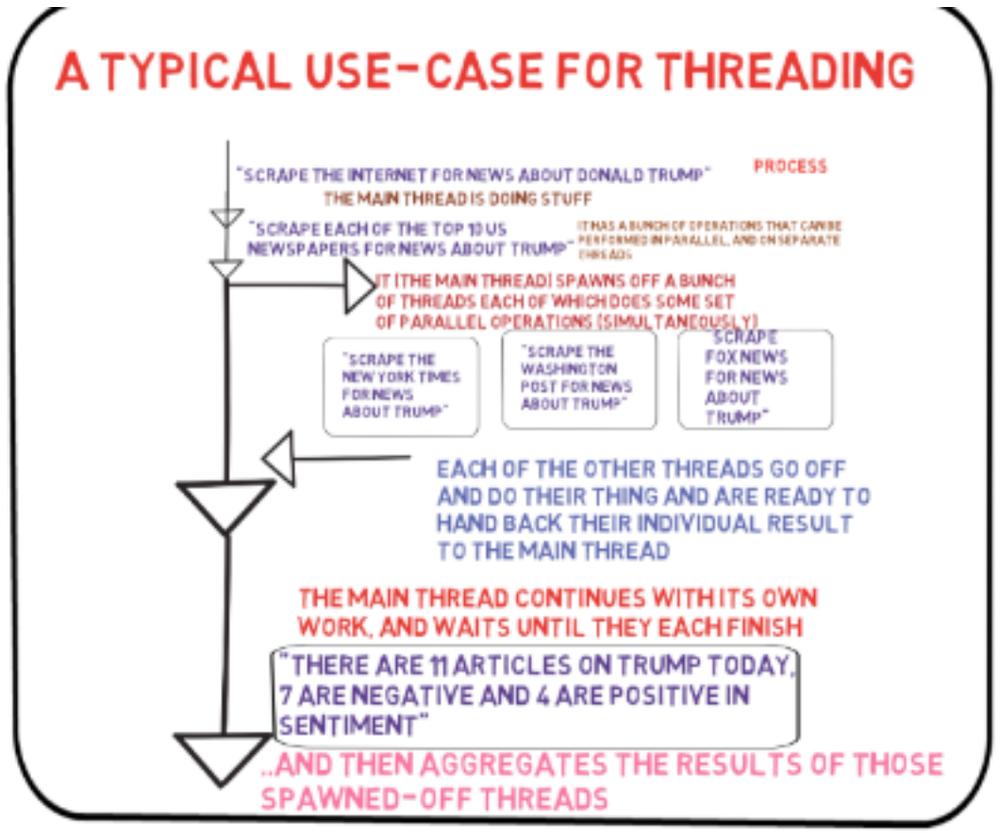
THREADING - OLD SCHOOL VS NEW SCHOOL


A TYPICAL USE-CASE FOR THREADING
"SCRAPE THE INTERNET FOR NEWS ABOUT DONALD TRUMP"
PROCESS
THE MAIN THREAD IS DOING STUFF
"SCRAPE EACH OF THE TOP 10 US NEWSPAPERS FOR NEWS ABOUT TRUMP"
IT HAS A BUNCH OF OPERATIONS THAT CAN BE PERFORMED IN PARALLEL, AND ON SEPARATE THREADS
IT (THE MAIN THREAD) SPAWNS OFF A BUNCH OF THREADS EACH OF WHICH DOES SOME SET OF PARALLEL OPERATIONS (SIMULTANEOUSLY)
"SCRAPE THE NEW YORK TIMES FOR NEWS ABOUT TRUMP"
"SCRAPE THE WASHINGTON POST FOR NEWS ABOUT TRUMP"
"SCRAPE FOX NEWS FOR NEWS ABOUT TRUMP"
EACH OF THE OTHER THREADS GO OFF AND DO THEIR THING AND ARE READY TO HAND BACK THEIR INDIVIDUAL RESULT TO THE MAIN THREAD
THE MAIN THREAD CONTINUES WITH ITS OWN WORK, AND WAITS UNTIL THEY EACH FINISH
"THERE ARE 11 ARTICLES ON TRUMP TODAY, 7 ARE NEGATIVE AND 4 ARE POSITIVE IN SENTIMENT"
..AND THEN AGGREGATES THE RESULTS OF THOSE SPAWNED-OFF THREADS

IN JAVA THERE ARE 2 WAYS IN WHICH
THIS COULD BE ACCOMPLISHED

OLD-SCHOOL

RUNNABLE INTERFACE

IS IMPLEMENTED BY A CLASS WITH THE OPERATIONS TO BE CARRIED OUT ON THE OTHER THREADS

"THREAD" IN-BUILT CLASS

OBJECTS OF THE THREAD CLASS TAKE IN THE RUNNABLE OBJECTS AND RUN THEM ON INDIVIDUAL THREADS

"THREAD.JOIN()" ON THE THREADS

THE MAIN CLASS CALLS THE .JOIN METHOD ON EACH THREAD WHICH WILL WAIT UNTIL THE THREAD FINISHES

NEW SCHOOL

CALLABLE INTERFACE

IS IMPLEMENTED BY A CLASS WITH THE OPERATIONS TO BE CARRIED OUT ON THE OTHER THREADS

"EXECUTORS" IN-BUILT CLASS

JAVA PROVIDES HELPER OBJECTS THAT KNOW HOW TO START, MANAGE AND STOP 'CALLABLE' OBJECTS

"FUTURE.GET()"

FUTURES ARE OBJECTS WHICH WILL HOLD RESULTS IN THE FUTURE (I.E. ONCE THE CALLABLE OBJECT FINISHES WHATEVER STUFF IT HAD TO DO ON THE OTHER THREAD)

BOTH THESE WAYS DIRECTLY MAKE USE OF THE COMMAND PATTERN

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RECALL THAT THE COMMAND PATTERN SEPARATES THE EXECUTION OF AN ACTION FROM THE ACTION ITSELF

IN THREADING, WE DEFINE THE ACTION THAT WE WOULD LIKE THE NEW THREAD TO UNDERTAKE -

AND WRAP THAT ACTION IN THE BODY OF AN OBJECT THAT IMPLEMENTS AN INTERFACE WITH JUST ONE METHOD

WE THEN ASK THAT THIS OBJECT "DO ITS THING" (I.E. EXECUTE ITS ACTION) ON A SEPARATE THREAD

Callable

Runnable